THESIS FOR THE DEGREE OF DOCTOR OF ENGINEERING

Value Creation as Educational Practice

- Towards a new Educational Philosophy grounded in Entrepreneurship?

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Cover:
Revised and simplified version of the figure on page 69 in the kappa of this doctoral thesis, illustrating how entrepreneurship guides the movement between opposing philosophical positions. The cyclical eight-shape shows how entrepreneurship provides teachers with the culture / "music" to a philosophically boundary-spanning movement / "dance" that their students can learn from.

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ABSTRACT

Purpose

The role of entrepreneurship as a major engine for innovation, economic growth and job creation has made policymakers argue for infusing entrepreneurship into all levels of education. It is argued that citizens must develop their entrepreneurial skills in order to cope with our increasingly globalized, fast-paced and uncertain world. Making the leap of faith from entrepreneurship into education is however rife with challenges and failures. Most attempts have resulted in isolated initiatives impacting only a small number of interested students on higher levels of education. Common challenges to wider adoption are lack of definitional clarity around what exactly signifies "entrepreneurial" education, impeding organizational structures, lack of resources, assessment difficulties and fear of capitalism. To address these challenges, the purpose of this thesis is to articulate and qualify a tentatively new educational philosophy grounded in entrepreneurship, allowing teachers to use value creation as a stepping stone between entrepreneurship and education when attempting to infuse entrepreneurship into education.

Result

An educational philosophy grounded in entrepreneurship has been defined in this thesis as letting students learn through creating value for others, giving teachers prescriptive advice on *what*, *how* and *why* issues in education. This is inherently entrepreneurial in its reliance on a widespread view of entrepreneurship as being about new value creation for others and constituted by a set of teachable entrepreneurial methods. The resulting process is rich with interaction between people and triggers a multitude of emotional learning events, allowing for more engaged students and deeper learning of entrepreneurial as well as subject specific knowledge, skills and attitudes.

Method

The tentatively new educational philosophy proposed here was developed through an abductive five-year action research process of constant iterations between theory and practice. A total of nine empirical studies on all levels of education were drawn from, involving a few hundred primary, secondary, tertiary and continuing education teachers, around 2000 students and around 100 different educational institutions in three European countries. Two main action research cycles were conducted, each spanning 3-4 years in time. Theory from entrepreneurship and education guided the research, as well as theory from fields such as psychology, philosophy, anthropology, economics and methodology. A number of methodological developments were made in the research process, such as a new "proxy" theory of assessing entrepreneurial education, a mobile app based experience sampling informed interview technique and analytical frameworks for key emotional events and entrepreneurial competencies.

Novelty

This is the first attempt that has been made to propose an educational philosophy grounded in entrepreneurship. Questions explored in order to qualify it included why educational philosophy is important when infusing entrepreneurship into education and what is new with an educational philosophy grounded in entrepreneurship. Compared to existing educational philosophies such as traditional, progressive and experiential education, it can contribute with a purposeful movement between often unconnected and opposing philosophical positions rather than being yet another flag on the philosophical playing field of education. Whether this makes it an entirely new educational philosophy or merely a novel combination of established ones remains to be determined.

Limitations

Some important challenges and limitations with the proposed educational philosophy have emerged. It could be viewed as too excluding to view entrepreneurial education as being solely about education that includes value creation attempts. Asking students to focus on knowledge that can be useful for others could also be viewed as an overly utilitarian emphasis. The interdisciplinary challenge of bridging the two very different scholarly fields of education and entrepreneurship was also shown to be significant. It remains to be seen whether value creation as a stepping stone will allow scholars and practitioners to keep their feet dry when attempting to infuse entrepreneurship into education.

Keywords: Entrepreneurship, Value Creation, Education, Educational Philosophy, Assessment.

LIST OF PUBLICATIONS

This thesis is based on the following papers:

i. Lackéus, M., Williams Middleton, K. 2015. Venture Creation Programs – Bridging Entrepreneurship Education and Technology Transfer. Published in *Education + Training, Vol. 57 No. 1, pp. 48-73.*

ii. Lackéus, M. 2014. An emotion based approach to assessing entrepreneurial education. Published in *International Journal of Management Education, Vol 12, No. 3, pp. 374-396.*

iii. Lackéus M., Sävetun, C. 2015. How 'entrepreneurial' is Swedish compulsory education? Submitted to *Journal of the Learning Sciences*.

iv. Lackéus, M., Lundqvist, M, Williams Middleton, K. 2015. Bridging the Traditional versus Progressive Education Rift through Entrepreneurship. Submitted to *International Journal of Entrepreneurial Behaviour & Research*.

v. Lackéus, M. 2015. Entrepreneurship in Education – What, Why, When, How. Background paper published by *OECD Publishing, Paris*.

vi. Lackéus, M. 2015. Two Flavors of Entrepreneurial Education. Presented at entrepreneurship research conference *RENT in Zagreb, 19-20 November.*

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To my wife, Karin

&

To our children

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1 Introduction

Entrepreneurship is seen as a major engine for innovation, economic growth and job creation (Wong et al., 2005; OECD, 2015), with entrepreneurial competencies highly sought after by policy-makers and practitioners (Hofer et al., 2010). Competencies deemed entrepreneurial include knowledge about how entrepreneurs create value; skills in marketing, resource acquisition and opportunity identification; and attitudes such as entrepreneurial passion, self-efficacy, proactiveness and tenacity (Fisher et al., 2008). There is today widespread consensus among scholars that entrepreneurial competencies are not something people are only born with but can be significantly developed over the course of people's lives (Neck et al., 2014; Ramoglou, 2013; Rae et al., 2012; Hindle, 2007; Fayolle, 2007). This has drawn the attention of policy-makers to the potential role of educational institutions, advocating for infusing entrepreneurship into all levels of education from preschool to university and continuing education (European Commission, 2012; Ball, 1989; Hofer and Delaney, 2010; Mahieu, 2006; Volkmann et al., 2009; Valerio et al., 2014). In addition to the stated importance for society of such infusion in terms of alleged resulting innovation and growth, it is also often pictured as a necessity for the individual. The common argument is that citizens must develop their entrepreneurial competencies in order to cope with our increasingly globalized, fast-paced and uncertain world (Surlemont, 2007; Gibb, 2002; Jones and Iredale, 2010).

1.1 Challenges in infusing entrepreneurship into education

Making the leap of faith from entrepreneurship into education is however rife with challenges and failures. Most attempts to infuse entrepreneurship into education have resulted in isolated courses or programs on secondary and higher education level where those very few students[1] who volunteer get to learn *about* entrepreneurship, viewed narrowly as starting a business and becoming an *entrepreneur* (Pittaway and Edwards, 2012). A broader view of learning *through* entrepreneurship, where entrepreneurial processes are embedded into existing curriculum structures for the purpose of making people more *entrepreneurial,* is arguably more relevant to all students and is often advocated by policy-makers. It has however had significant difficulties spreading from policy into practice. Common challenges are lack of definitional clarity, impeding organizational structures, lack of resources, assessment difficulties and fear of capitalism (Johannisson, 2010; Surlemont, 2007; Sagar, 2013; Komulainen et al., 2011). Impact so far is limited if at all knowable, given that most evaluation focus is on narrow outcomes in terms of how many people start (or contemplate starting) a business after their education (see for example Chatzichristou et al., 2015).

When faced with the policy-makers' desire to infuse entrepreneurship into education, most teachers willingly agree that instilling passion, self-efficacy, proactiveness and tenacity into students is indeed worthwhile and important. Their problem is rather to distinguish and appreciate the inherently *entrepreneurial* aspect of such attempts in relation to other change initiatives. Many teachers state that they already have a focus on skills and attitudes now labeled "entrepreneurial" (Holmgren et al., 2005; Berglund and Holmgren, 2007). Similarities in

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[1] In this thesis the term "student" is used for learners on all levels of education, in line with U.S. English.

advocated "entrepreneurial" educational practices are indeed striking with the well-known progressive education principles, often described as active, process-based, collaborative, self-directed and experiential approaches to education (Dewey, 1938; Labaree, 2005; Tynjälä, 1999). While having shaped how we talk about education, progressive education remains more marginal in terms of what teachers do (Labaree, 2005; Cuban, 2007; Carr, 2009). This is primarily due to the inherent complexity teachers encounter when trying to connect theoretical curriculum content to each student's own unique experience (Smith and Ragan, 1999; Dewey, 1938; Darling-Hammond, 2012). Traditional education principles relying on transmitting inert knowledge to passive learners have largely prevailed across centuries due to their relative easiness of implementation, consisting of standardized content and learning outcomes easy to measure (Labaree, 2005; Dewey, 1938). Teachers trying to infuse entrepreneurship into their daily work risk ending up in a challenging cause together with the marginal progressive approaches, currently limited to a minority of teachers and to specialized schools inspired by John Dewey, Maria Montessori and Rudolf Steiner.

1.2 The potential role of educational philosophy

The impact of teachers' philosophical belief systems (i.e. epistemology, ontology and axiology) upon their teaching styles and course designs is arguably strong but not always acknowledged (Ardalan, 2008; Beatty et al., 2009). Dewey (1938) has stated that overcoming the destructive battle between traditional and progressive education requires "a well thought-out philosophy" (p.21) constituting a plan for *what* to do, *how* to do it and *why*. Educational philosophy can indeed be defined in such practical terms, constituting a written articulation of a thoughtful and coherent description and justification of an educational practice (Burbules, 2000, p.4). Far from being a topic merely for detached philosophers, many schools today ask potential teachers to articulate their own personal teaching philosophy as a formal part of the recruitment process (O'Neal et al., 2007; Goodyear and Allchin, 1998). Educational philosophy is also an important subject in the education of prospective teachers, providing help to think more clearly about their future worklife (Darling-Hammond, 2012; Frankena, 2003). Some common educational philosophies available today giving advice on *what*, *how* and *why* issues in education include letting students learn from reading and repetition of content (traditionalism or essentialism, see Englund, 2000; Apps, 1973) or from problem-solving and experimenting in authentic projects (progressivism, see Apps, 1973; Dewey, 1938).

Educational philosophy scholars have acknowledged an inability of schools to prepare their students for today's increasingly complex and uncertain society, aggravated by the declining ability of foundational theories to predict and guide practice (Blake et al., 2008, p.8-12; Noddings, 2007, p.80). As a response to this, Kyrö (2005) has anticipated an emerging entrepreneurship-based educational philosophy to be established, supporting students in developing their risk-taking and creative abilities. This is however not the current focus of educational philosophers; in a recent ten-year content analysis of articles in leading philosophy of education journals there was no mention of the word entrepreneurship (Hayden, 2012). This leaves those teachers wanting to infuse entrepreneurship into their teaching in the awkward situation of either having to invent their own personal teaching philosophy apt for the task, or resort to existing educational philosophies, arguably lacking a firm grounding in the field of entrepreneurship and adding to the confusion. This is further aggravated by entrepreneurship

and education being very different scholarly fields, where few if any people possess the required dual expertise to articulate an educational philosophy that can guide teachers (Béchard and Grégoire, 2005). A few entrepreneurship scholars have identified the importance of educational philosophy when infusing entrepreneurship into education (Hannon, 2006; Gibb, 2011; Taatila, 2010; Hindle, 2007; Kyrö, 2005), but no attempt has yet been made to propose a coherent and practically applicable educational philosophy firmly grounded in entrepreneurship. This means that current and future teachers are given little philosophical support in the task of developing young people's entrepreneurial competencies required in today's globalized, complex and uncertain world, despite the increasing policy pressure to do so. Instead teachers are often interpreting such policy pressure as a covert introduction of capitalist and neoliberal values into education, leading to confusion, resistance and mistrust towards policy-makers (Komulainen et al., 2011; Korhonen et al., 2012; Berglund, 2013; Johannisson, 2010).

1.3 Purpose and research questions

In an attempt to remedy the many challenges of infusing entrepreneurship into education, the research leading up to this thesis started out by drawing on a small number of promising but marginal examples in Europe and USA where students learn through creating real-life value to stakeholders outside their program (Janssen and Bacq, 2010; Barr et al., 2009; Thursby et al., 2009; Ollila and Williams-Middleton, 2011; Meyer et al., 2011; Lockyer and Adams, 2014). The strong impact not only on developed entrepreneurial competencies but also on student motivation in general and deep learning also of competencies unrelated to entrepreneurship triggered the emerging articulation of a hypothesis that *value creation* could perhaps be a stepping stone when infusing entrepreneurship into education. An emerging educational philosophy was abductively developed from this point, tentatively offering teachers wanting to infuse entrepreneurship into education some new prescriptive answers to the issues of *what* to do, *how* to do it and *why*.

This led to the purpose of this thesis being to qualify a tentatively new educational philosophy grounded in the field of entrepreneurship, building on a view of entrepreneurship as new value creation. Value can take many forms such as economic, social, emotional, cultural or historical value. Such a view of entrepreneurship represents a quite different kind of stepping stone compared to viewing it as a specific kind of learning, often used when trying to infuse entrepreneurship into education. Qualification of the tentatively new educational philosphy is done in two dimensions (two research questions - RQs):

1. Why is educational philosophy important when infusing entrepreneurship into education?
2. What is new with an educational philosophy grounded in the field of entrepreneurship?

This thesis draws on abductive work in that it has involved simultaneous development of theoretical framework, empirical fieldwork and case analysis (cf. Dubois and Gadde, 2002). With its focus on what "might be", Peirce (1998, p.216) has stated that abduction is "the only logical operation which introduces any new idea", in contrast to induction which outlines what "actually is" and deduction which outlines what "must be". Perceived usefulness (RQ1) and novelty (RQ2) of an educational philosophy does however not imply that any effects on learning have been proven or that the philosophy has reached widespread use in practice among teachers.

Providing evidence of its effectiveness in terms of student learning and spreading it into practice rather constitutes work that lies ahead and is not part of the purpose of this thesis, see Figure 1.
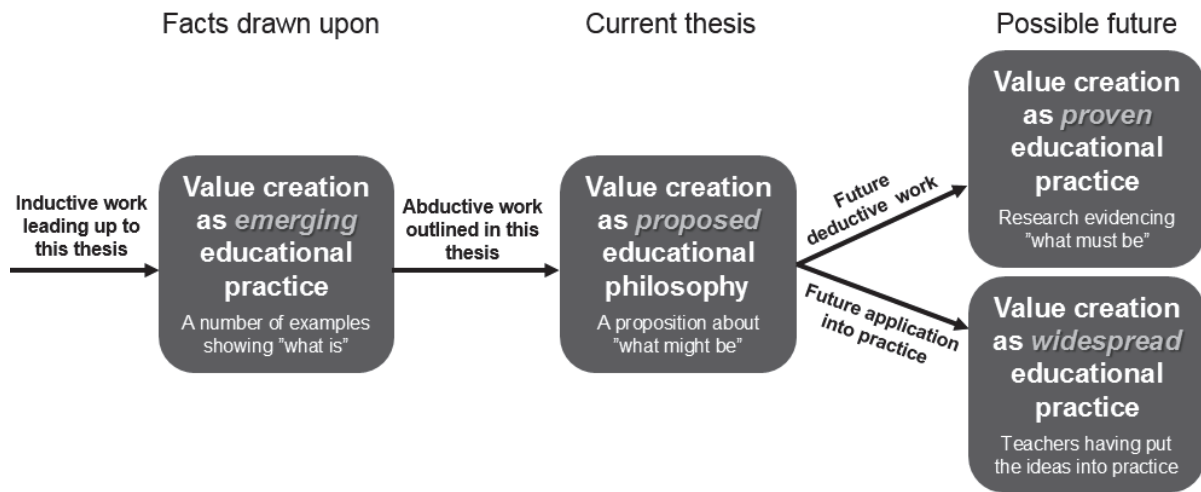
Figure 1. Illustation of the focus of this thesis. *Focus of this thesis is related to past and future work.*

A practically oriented educational philosophy is inescapably prescriptive in that it constitutes written formulations about what teachers should do, how they should do it and related justifications (Burbules, 2000). This means that any *newly* articulated educational philosophy can be little more than a conceptual proposition requiring testing in practice to see if and when its application leads to desirable learning outcomes with acceptable levels of complexity, resource need and adverse effects. While the educational philosophy articulated in this thesis is empirically informed in many respects by drawing from multiple levels of entrepreneurship related educational practice, it is still an early and primarily conceptual attempt to build an entrepreneurship grounded educational philosophy. Future application of it in educational practice are needed in order to assess any assumed merits.

The purpose here is not to replace existing educational philosophies, but rather to complement and empower them. Furthermore, it is not the purpose here to take a stance in whether or not infusing entrepreneurship into education is the right thing to do, neither stand-alone nor in relation to other potentially worthwhile aims and initiatives one might consider. Such issues are primarily for educational policymakers, managers and teachers to contemplate and decide upon. The scholarly issue explored here is rather to qualify an articulated educational philosophy potentially useful *if* one has decided to try infusing entrepreneurship into education.

This thesis proceeds as follows. In chapter 2, a selection of scholarly fields and subfields will be described and related to the purpose explored here. Entrepreneurship and education constitute the two main scholarly fields of this thesis, and value creation represents a tentative stepping stone in between them. Chapter 3 describes the methodology in terms of the process and applied methods leading up to articulating a tentatively new educational philosophy. In chapter 4 the six appended papers are summarized and related to the purpose of this thesis. Chapter 5 contains an attempt to articulate a tentatively new educational philosophy. In chapter 6 this is discussed in relation to the qualification purpose of this thesis, leading up to implications, limitations and future work. Conclusions are outlined in chapter 7.

2 Theory

In this chapter some key theoretical aspects of entrepreneurship as a scholarly field are first described in section 2.1. Focus is on entrepreneurship viewed as new value creation, a deliberate choice based on its perceived relevance as a stepping stone when infusing entrepreneurship into education. This leads up to the section 2.2 where the stepping stone itself is examined in terms of literature on value and its creation. Value creation is reviewed with an explicit aim to form a pluralistic yet integrated foundation for later discussions, arguably necessary in order to do its assumed job as a stepping stone between the two very different fields of entrepreneurship and education. Finally section 2.3 describes some key theoretical aspects of education, constituting the target field of infusion where entrepreneurship is assumed to be capable of impacting student learning and engagement, provided that teachers are supported by the tentatively new educational philosophy articulated in chapter 5. This third section is concluded with an outline of the current state of education and entrepreneurial education, in order to establish a baseline serving as a contrast to the usefulness and novelty claims and implications articulated and discussed in chapter 6.

2.1 Entrepreneurship

The field of entrepreneurship is multifaceted and interdisciplinary. Some adjacent scholarly fields interacting with entrepreneurship include innovation, strategy, psychology, sociology, politics and the complementary focus of this thesis – education (Edward Elgar, 2015). This section will focus on a subset of aspects in entrepreneurship; those deemed able to contribute the most to solidifying value creation as a stepping stone when infusing entrepreneurship into education. First, definitional issues of entrepreneurship lead to the educationally useful view of defining entrepreneurship as individuals creating new value. Then, some methods that are often recommended for nascent entrepreneurs illustrate how entrepreneurship is currently being practiced and prescribed, allowing for transfer of such methods into education. This is followed by outlining entrepreneurial competencies, explored as a way to bridge between the two domains of entrepreneurship and education. The relational and inherently interpersonal nature of entrepreneurship is explored due to its far-reaching implications for human learning. The commonly stated aversion in education to capitalist and individualist values makes it necessary here to explore altruistic and collectivist notions of entrepreneurship, drawing on entrepreneurial motivation theory to infuse engagement into education. Finally, research on how entrepreneurs learn can inform research on how students could learn more entrepreneurially and how they could develop entrepreneurial competencies.

2.1.1 Defining entrepreneurship

Early entrepreneurship research mainly treated the role entrepreneurs play in the economy, signifying a "What is entrepreneurship?" and "Who is an entrepreneur?" focus (Fayolle, 2007). Schumpeter (1934) famously explored how entrepreneurs introduce new innovations leading to the 'creative destruction' of previously dominant practices and associated corporations. Fayolle (2007, p.31) explains how economists have pictured the entrepreneur to assume four different roles in the economic system; " 'risk-taker/risk-manager' (Cantillon, Say, Knight), 'innovator' (Schumpeter), 'alert seeker of opportunities' (Hayek, Mises, Kirzner) or, finally, that of 'coordinator of limited resources' (Casson).". This led into a trait based focus among

entrepreneurship scholars in the 1960s through to the 1980s (see for example McClelland, 1987), trying to uncover genetical and sociological differences between entrepreneurs and non-entrepreneurs. Entrepreneurs were ascribed innate traits possessed from birth or acquired in early childhood such as strong internal locus of control, tolerance for ambiguity, desire for autonomy, self-confidence and tenacity (Morris et al., 2012).

In the 1990s, research focus shifted from a "Who?" focus to instead study entrepreneurial processes and behaviors, i.e. a "How is entrepreneurship done?" focus. The traits approach was deemed unsuccessful by most scholars, causing insurmountable problems in defining, explaining and predicting entrepreneurship, and was thus largely abandoned (Neck and Greene, 2011; Fayolle, 2007; Morris et al., 2012; Gartner, 1989). Currently there are three main research strands in process-based entrepreneurship research, studying entrepreneurship as (1) the creation of new organizations, (2) as the discovery or creation of opportunities or (3) as the creation of new value (Fayolle, 2007).

The organization creation strand has been led by Gartner (1989, p.62), stating that "Entrepreneurship is the creation of new organizations". This led him and his followers to study how new organizations are created and which roles individuals take in the process, rather than trying to explore who is an entrepreneur. In the opportunities strand, a currently dominant view was first articulated by Shane and Venkataraman (2000, p.218), stating that entrepreneurship can be defined as "the nexus of two phenomena: the presence of lucrative opportunities and the presence of enterprising individuals" (see also Shane, 2003). This strand of research has however been hampered by the elusive concept of "opportunity", stated to be lacking theoretical precision (Davidsson, 2015; Dimov, 2011) and constituting a source of problematic trait-based views of entrepreneurship as something mysterious that heroic individuals do (Cardon et al., 2005; Morris et al., 2012; Ramoglou, 2013). Finally, new value creation was proposed as a useful focus for advancing entrepreneurship research in a seminal article by Bruyat and Julien (2001), a research strand we focus more specifically on in the following section.

2.1.2 Entrepreneurship as new value creation

The new value creation strand has a long history in entrepreneurship research, with roots in work by Cantillon (1755) and Say (1803). In more recent times it has been articulated by Ronstadt (1984, p. 28), who defined entrepreneurship as "the dynamic process of creating incremental wealth". Gartner (1990) has also empirically identified new value creation as a main focus of entrepreneurship in the subjective views of entrepreneurship researchers, business leaders and politicians. The value creation perspective to entrepreneurship was further developed by Bruyat (1993), who proposed a definition based on two dimensions; novelty of the value created and resulting impact of the process on the individual. Bruyat presented this as a dialogic core of entrepreneurship, i.e. a dialog between the individual and the new value created. The individual creates new value and is at the same time impacted by the process. The more novel the value created and the more impact the process has on the individual, the more people tend to describe it as entrepreneurship (cf. Bruyat, 1993, p. 69). Such a view implies that entrepreneurship is as much about the change and learning that the individual entrepreneur experiences by interacting with the environment as the change and new value creation the entrepreneur causes through his/her actions.

To relate to the purpose of this thesis, a trait-based view of entrepreneurship could be regarded as a passive strategy in society, stipulating a wait for the "right" person to arrive, equipped with the traits necessary to create new value for society. The opportunity-based view of entrepreneurship is arguably almost as passive, in that any individual can assume the role of entrepreneur if and when the "right" circumstances magically present themselves in the shape of an elusive "opportunity" one should stay alert to. Such passive views on entrepreneurship implying a wait for the right person or the right circumstance to arrive are arguably poor foundations for educational interventions. Organization creation and value creation views of entrepreneurship are more active, in that anyone can be asked to write a business plan, start a company or try to create new value for others. This makes them more useful in educational settings, allowing for a clear call to students to "Write a business plan", "Start a mini company" or "Create something valuable for someone", rather than vague advice to students such as "Be more like this", or "Stay alert to any opportunity". But the educative value of writing a business plan has been questioned by many (Honig, 2004; Jones and Penaluna, 2013; Neck and Greene, 2011). Further, asking students to create a new real-life organization as formal part of their education is both rare and administratively complex (Lackéus, 2013a), and does not integrate well into existing curriculum for most teachers. Therefore, the new value creation focus constitutes the least complex of the two active approaches, and constitutes the main theoretical and definitional basis of this thesis. It is arguably the definition with the highest chance of making a contribution to education with its strong focus on personal development and learning.

According to Bruyat and Julien (2001), value creation requires interaction with the surrounding environment, leading to the individual influencing and being influenced by a networked community in dynamic ways. The dialogic system of the individual and the value created is therefore an open system. This means that a number of interaction centric aspects of entrepreneurship are important here. If value creation is to be a reliable stepping stone when infusing entrepreneurship into education, we therfore need to underpin and solidify the concept of value creation with some interactional aspects grounded in entrepreneurship; methods for entrepreneurial interaction, competencies necessary when interacting entrepreneurially, the entrepreneurial interactions themselves, the partly altruistic nature of entrepreneurial interactions and finally the learning that comes from entrepreneurial interaction. There are arguably more aspects that can contribute with solidifying value creation as a stepping stone, but space is limited also in a doctoral thesis, so emphasis will be placed on these interactional aspects deemed to be the most important ones for the purpose of this thesis.

2.1.2.1 *Entrepreneurial methods*

It has been stated that the currently prevailing research paradigm in entrepreneurship focusing on descriptive processes championed by often heroic entrepreneurs is about to be complemented by a more prescriptive paradigm of developing methods and practices that can be put to work by anyone in unpredictable, non-linear and idiosyncratic entrepreneurial processes of value creation (Sarasvathy and Venkataraman, 2011; Neck and Greene, 2011; Neck et al., 2014). Increasing research effort has been directed towards the design and engineering of "pragmatic tools and mechanisms" that can "serve (creative) action by entrepreneurs and their stakeholders" (van Burg and Romme, 2014, p.371-372). The outcome of this research paradigm so far includes strategies and methods such as bricolage (Baker and

Nelson, 2005), effectuation (Sarasvathy, 2001), systematic experimentation (Ries, 2010; Blank and Dorf, 2012), disciplined entrepreneurship (Sull, 2004) and discovery driven planning (McGrath and MacMillan, 1995). Common characteristics of such methods include an iterative nature of the process, emphasis on stakeholder interaction, collaborative co-creation of artifacts, constant evaluation of process outcomes and an emphasis on learning from failure (Mansoori et al., 2015; Mansoori, 2016).

Venkataraman et al. (2012, p.23) state that this development is "both practically relevant and pedagogically useful". In line with this, I posit that a prescriptive research paradigm in entrepreneurship can be highly relevant in the prescriptive task of developing a tentatively new educational philosophy grounded in entrepreneurship as new value creation. Prescriptive tools and methods from the field of entrepreneurship could be transferred to educational settings, constituting a much needed support when infusing entrepreneurship into education. The roots of such endeavors in design and engineering traditions (van Burg and Romme, 2014; Venkataraman et al., 2012) also help explain how a new educational philosophy could emerge from research conducted at an engineering school.

2.1.2.2 *Entrepreneurial competencies*

The competencies that individuals need in order to successfully develop an idea into a thriving business are often termed *entrepreneurial* competencies (Rasmussen et al., 2011; Markman, 2007; Man, 2007; Mitchelmore and Rowley, 2010; Bird, 1995). Burgoyne (1989, p.57) defines competency as "the willingness and ability to perform a task". Sanchez (2011, p.241) defines competencies as "a cluster of related knowledge, traits, attitudes and skills that affect a major part of one's job; that correlate with performance on the job; that can be measured against well-accepted standards; and that can be improved via training and development" (ibid, p.241). Man et al. (2002, p.124) define entrepreneurial competencies as the "total ability of the entrepreneur to perform a job successfully".

Entrepreneurial competencies has been a key concept in the research leading up to this thesis due to its ability to bridge between the two fields of entrepreneurship and education. A knowledge, skills and attitudes (KSA) framework has been developed in order to be able to capture instances of developed entrepreneurial competencies (see appended papers 2, 3 and 5). The conceptualization of human willingness and ability into a KSA framework is common and often deemed useful in educational settings, but requires caution of its simplifying implications (Fisher et al., 2008; Oganisjana and Koke, 2012). Many aspects of competencies are tacit, context dependent and deeply personal and cannot fully be captured by a simple KSA heuristic (Le Deist and Winterton, 2005). I posit that entrepreneurial competencies operationalized through a KSA framework constitutes a lens through which we can increase our understanding of entrepreneurial thought, action and emotion, both in the field of entrepreneurship and in the very different field of education where development of competencies is a common focus. It thereby facilitates the bridging between two very different fields. It also connects to the purpose of this thesis in terms of connecting to those competencies that policy-makers aim to develop in their citizens through infusing entrepreneurship into education.

2.1.2.3   Entrepreneurial interactions

While still a neglected theme in entrepreneurship research, there is ample indication that interpersonal interaction is at the core of entrepreneurship (Sarasvathy and Venkataraman, 2011; Goss, 2005a; York et al., 2013). The creation of new value that characterizes entrepreneurship according to Bruyat and Julien (2001) is primarily directed towards others in society. Creating a venture can thus be viewed as a process of intense interaction with external stakeholders in society such as customers, suppliers and partners, searching for new value creation opportunities. Further, most if not all entrepreneurship methods outlined in section 2.1.3 prescribe the entrepreneur to interact with external stakeholders, either in an experimental or in a transformational manner (cf. Mansoori et al., 2015). Experimental in terms of conducting experiments where opportunity hypotheses are tested in numerous discussions with external stakeholders (Blank and Dorf, 2012; Ries, 2010; Sull, 2004; McGrath and MacMillan, 1995). Transformational in terms of an iterative process of co-creation with a set of self-selected or randomly available external stakeholders (Read et al., 2009; Baker and Nelson, 2005). The entrepreneurial competencies view also stipulates interpersonal interaction to be at the core of entrepreneurship. Many inherently interpersonal competencies are often deemed entrepreneurial, such as marketing, persuasion, listening, dealing with customers and managing people (cf. Fisher et al., 2008).

2.1.2.4   Entrepreneurial altruism

The assumption that helping others is always motivated by some kind of self-benefit, if ever so subtle, is deeply ingrained in our society (Piliavin and Charng, 1990). The high-profiled prevalence of largely altruistic and potentially self-hurting behavior for the benefit of others by the likes of Mahatma Gandhi, Oskar Schindler and Mother Teresa has not changed this perception (Batson et al., 2008). In entrepreneurship, altruistic value creation has even been given its own subdomain, apparently viewed as a rare oddity. The more altruistic the entrepreneur is, the more it is labeled as an exception in terms of *social* entrepreneurship (Tan et al., 2005). Entrepreneurs creating value for their customers are thus primarily viewed as engaging in this activity as a secondary means in order to achieve the primary end of creating wealth for themselves. This is in line with the common view of capitalism as an instrument exploiting selfish behavior for the purpose of maximizing public good (Vogel, 1991). Had it not been for the indirect value that entrepreneurs create for society in terms of innovation, economic growth and job creation, entrepreneurs might not have been elevated to the status as heroes they currently enjoy in the view of policymakers and much of the general public (Perren and Jennings, 2005; Ogbor, 2000).

Viewing genuine helping behavior as an exception or a mere means to self-benefit can however be seen as a pessimistic view of humanity and perhaps also neglects and underestimates some core human values such as creativity, empathy, humanism, communitarianism and strive for a meaningful life (Batson et al., 2008; Frankl, 1985; Feldman and Snyder, 2005; Deuchar, 2007; Baumeister et al., 2012). In entrepreneurship literature there is also ample evidence of a more collectivist side to entrepreneurship. Schumpeter proposed the joy of creating to be a key motive for entrepreneurs (Goss, 2005b). Morris et al. (2012) have outlined some common entrepreneurial motives such as improving the community, experiencing a sense of meaningfulness with others, finding a higher purpose in life and changing the world for the

better. Spinosa et al. (1999, p.43) leaned on political writer George Gilder to state that there are "three essential entrepreneurial virtues: giving, humility, and commitment.". While such a view of entrepreneurial forms of capitalism is not uncontested (Himmelstein, 1981), it cannot be ruled out that some entrepreneurs are motivated by such factors. There is also a research strand focusing on entrepreneurship as an inherently collective activity, contributing with emphasis on teamwork and community-based activity (Drakopoulou Dodd and Anderson, 2007; Sarasvathy et al., 2009). Given a common critique of attempts to infuse entrepreneurship into education being viewed as covert capitalist initiatives (Komulainen et al., 2011; Johannisson, 2010), a collectivist and altruistic side of entrepreneurship is important to draw on when developing a tentatively new educational philosophy grounded in entrepreneurship. Taking advantage of links between entrepreneurship, economics and sociology through the unifying concept of value creation, we will continue the review of collectivism versus individualism in section 2.2, looking at economic and sociological conceptions of value creation more in-depth.

2.1.2.5 *Entrepreneurial learning*

We will now turn to an aspect of entrepreneurship that is perhaps the most common to focus on when attempting to infuse entrepreneurship into education; that of viewing entrepreneurship as a particular form of learning. According to Smilor (1997), entrepreneurs are exceptional learners. To successfully manage change and challenge status quo, they have to incessantly learn from customers, suppliers, competitors, employees and associates. They also have to learn from experience, from doing, from what works and from what doesn't work. A few scholars have set out to empirically explore how entrepreneurs learn. Cope and Watts (2000) found that entrepreneurs learn from critical episodes consisting of multiple critical and emotional learning events, and that the most powerful learning comes from the entrepreneurs' own painful mistakes. While negative initially, the outcome in terms of learning and personal development was described as very positive. Rae (2005) explored empirically how people develop their own identity as entrepreneurs by taking action in a community they choose, tentatively assuming the role as an entrepreneur in collaboration with partners, customers, investors and others. They make sense of this process by developing a resulting new life-story about themselves. This story is constantly revised and told to themselves and to others, such as family, friends and colleagues, resulting in changed identity, self-image and relationship to others.

In general, entrepreneurial learning scholars are in agreement that entrepreneurship can only be learned through own experience (Minniti and Bygrave, 2001; Politis, 2005; Young and Sexton, 1997; Dalley and Hamilton, 2000). Cope states that knowledge about how to be entrepreneurial "can only be acquired through learning-by-doing or direct observation" (Cope, 2005, p.381). Such insights into how entrepreneurs learn are however not easily transferred to education. They leave teachers wanting to infuse entrepreneurship into education with the difficult task of finding answers to the question: Learning-by-doing-*what*? It is unclear in existing literature what students should do to feel emotionally engaged in a relevant community of practice where they can make mistakes they will regret but can learn from. Some adopt a view that if teachers assume an entrepreneurial attitude it will then allow them to design a multitude of entrepreneurial education practices to apply on their students, and that it is not the role of scholars to prescribe any entrepreneurial methods over the head of teachers (Falk-Lundqvist et al., 2014). I posit that applying an entrepreneurial learning focus without any clear and

actionable recommendations on philosophical or practical level when infusing entrepreneurship into education is problematic, and could perhaps even be viewed as a tautological call for learning-by-*learning*. This thesis takes a different position through its focus on learning-by-*creating-value*.

To summarize, Figure 2 outlines some key aspects of importance for a view of entrepreneurship as new value creation if it is to be solid enough to be used as a stepping stone when infusing entrepreneurship into education.
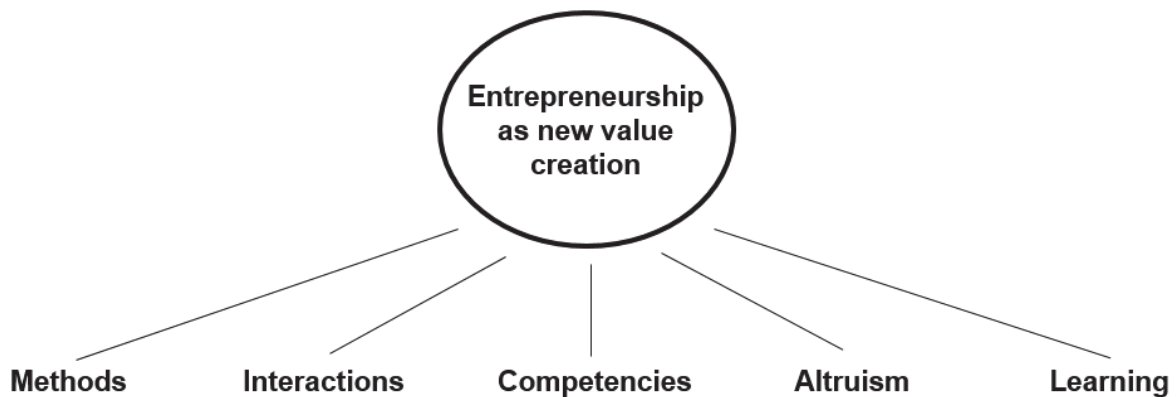
Figure 2. Five key aspects of entrepreneurship solidifying entrepreneurship as new value creation.
Entrepreneurial methods, interactions, competencies, altruism and learning pictured to solidify
entrepreneurship as new value creation, a stepping stone for infusing entrepreneurship into education.

2.2 Value creation

We will now turn to value creation, the intended facilitating step between entrepreneurship and education. In order for such a step to be capable of connecting between two very different fields, there arguably is a need to have a comprehensive understanding of it. The main proponents of the value creation strand in entrepreneurship research have however not provided much guidance on the deeper meaning of value and its creation. In their seminal article on entrepreneurship as new value creation, Bruyat and Julien (2001, p.170) merely stated that they did "not need to take up this old (and somewhat outmoded) debate". Fayolle (2007, p.46) has at least hinted that value "relates to exchanges between market players at prices determined by the market". Hindle (2010, p.610) has outlined a more pluralistic but equally brief view by stating that "new value may take many forms: economic, social, monetary, ecological, mental, physical, etc". While these views on value might be enough when studying entrepreneurship in isolation, they are unlikely to give teachers and other key educational stakeholders enough guidance when the purpose is to infuse entrepreneurship as new value creation into education. This review of value creation therefore needs to venture outside the field of entrepreneurship.

This literature review starts with an overview of singular and plural conceptions of value. The roots of singular conceptions will be traced to 18:th century economic thought, and the roots of plural conceptions will be traced to 20:th century sociological thought. These two differing perspectives on value will be summarized and integrated into a value creation framework useful for the purpose of this thesis, specifying a number of complementary views of what is valuable. This framework then also represents a return to the field of entrepreneurship through its summary of five main kinds of value creation anchored in sociological and economic theory.

2.2.1 Value versus values

The term "value creation" could easily lead associations to the domain of economics. Among classical economists such as Marx (1867), Smith (1776) and Ricardo (1817) there was consensus around a framework of three phases that value progresses; production (or creation), circulation (or trade / exchange) and consumption (or use / destruction) of value (Mirowski, 1991, p.143). But value is more elusive as a concept than such simple frameworks can make us believe. Sociology scholars have assumed a more pluralistic view of value. In fact, discussions around value could be viewed as divided between economists and sociologists, illustrated by the example of Parson's Pact, a deal struck between different departments at Harvard University in the middle of the 20:th century: "You, economists, study value; we, the sociologists, will study values" (Stark, 2011, p.7). Such a division between singular and plural views of value is ultimately a question of degrees of commensurability, calculability and comparability between different more or less incommensurable kinds of value (Kornberger et al., 2015; Kjellberg et al., 2013).

A singular and standardized measure of value is often viewed as a requirement for scientific calculations, for example in economics where such calculations are used to mathematically determine prices and predict markets. But in any attempt to arrive at a singular notion of value there is a logically necessary but at the same time detrimental assumption around assumed stability and conservation of value that leads to major difficulties and inconsistencies (Mirowski, 1991). This makes modern economic theories apt for treating mature markets where focus is on routine value creation, prices, consumption and situations of equilibrium, but at the same time less useful for analyzing entrepreneurial value creation, innovation, co-creation and production (Lopdrup-Hjorth, 2013; Mirowski, 1991; Prahalad and Ramaswamy, 2004; Benkler, 2006). Narrow economic value calculations also marginalize and silence other values such as fairness, ecology, equality and the common good (Lopdrup-Hjorth, 2013; Kjellberg et al., 2013). Economic sociologist Stark (2011, p.6) asks some illustrative questions:

> "What counts? Each of us confronts this question on a daily basis. Faced with decisions involving incommensurable frameworks – work versus family life, career opportunities versus loyalty to friends or attachment to a locality, vacations versus investments for retirement, and so on – we ask ourselves what really counts. What is valuable, and by what measures?"

Stark (2011) draws on Dewey (1939) to point out the dangers of separating the intellectual from the emotive through dichotomies such as value versus values, economy versus society, calculation versus judgment, estimate versus esteem, or costly versus dear. Both Stark and Dewey state that such separations lead to flawed assumptions around human action and valuation. Stark points to the fact that the term "worth" is a bridging term in that it has both an economic and a moral meaning. While semantics is not offering a solution, it helps illustrating and making us aware of the many false dichotomies at play here. Other bridging terms such as, "socioeconomics" and "wikinomics" have been proposed to describe new arenas and forms of value creation in today's society characterized by openness, sharing, co-creation and global networking defying singular categorizations of value (Bollier and Pavlovich, 2008; Tapscott and Williams, 2008). Still, the literature is largely organized around the two main different

conceptions of value versus values, so integration will need to wait until towards the end of this section.

2.2.2 Value according to economists – a singular view

A common basis for economic views of value is the assumption of *homo oeconomicus*, i.e. that humans are strictly rational in their daily utility calculations, always aiming to optimize (or at least satisfice) their own interests (Hirshleifer, 1985; Lemke, 2001; Lindenberg, 1990; Ghoshal, 2005). A well-quoted passage in a seminal book by the founder of modern economics Adam Smith (1776, p.7) illustrates this well: "It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest". Such a utilitarian position was also developed by Bentham (1776, p.ii) who stated that what is deemed valuable should be guided by people's perceived pleasures and pains, and that society therefore should strive for "the greatest happiness for the greatest number". Economists have conceptualized value in at least three main different ways; as subjective utility perceived by a consumer, as an objective substance inherent in valuable artifacts and as a creation process where ability to create value is determined by various circumstances.

2.2.2.1 Neoclassical and neoliberal economics – value as subjective utility

Neoclassical economics studies supply and demand under the assumption that markets consist of rational individuals maximizing their own benefit (or their firm's). Neoliberalism is neoclassical economics turned into politics, asserting that society maximizes well-being of the collective by letting each individual maximize own benefit (Harvey, 2005). Neoclassical and neoliberal economics both take a similar position to value as that expressed by Smith and Bentham above; what is valuable is simply up to the recipient of value to determine – the utility-maximizing consumer exerting her freedom of choice. Here the term used is not "value", but instead "utility", semantically and conceptually in line with Bentham's utilitarianism. This represents a subjective view of value (Meynhardt and Von Müller, 2014), and was introduced in the 1870:s by Walras (1874), Menger (1871) and Jevons (1871). These theories of value were all, independent of each other, inspired by new discoveries in physics around field energy equations (Mirowski, 1991). They allowed for solving the puzzling discrepancy between the "natural" (i.e. objective) value of goods and fluctuating market prices (Meynhardt and Von Müller, 2014). The solution was simply to say that the market value *is* the value of goods, illustrated in mathematical terms as a force field of differing levels of utility, and that there is no such thing as a "natural" value of goods. The use of field equations also allowed for unprecedented mathematical precision and complexity in economic calculations of utility, opening up for new levels of analysis, explanation and prediction.

2.2.2.2 Classical economics – value as objective substance

The term "classical economics" refers to ideas developed by a small but influential group of classical economists in the 18:th and 19:th centuries. A key theme in classical economics was the substance-based value theories developed by Quesnay (1758), Smith (1776), Ricardo (1817) and Marx (1867). These now largely abandoned value theories all stated that the "natural" value of goods was determined by some objectively identifiable substance used for its production, such as corn, stock or labor time (Mirowski, 1991). The shift in the 1870:s away from such objective substance theories of value was so abrupt that the term "value" was deemed too

ambiguous, unscientific and dangerous, and therefore abandoned and delegated to "the dustbin of history by mainstream economics" (Lopdrup-Hjorth, 2013, p.179). The resulting emphasis on demand (i.e. utility) and consequent neglect of suppy (i.e. value creation) however led to significant limitations in ability to explain phenomena pertaining to *creation* of new value (Mirowski, 1991), which is a key topic of this dissertation. Therefore the concept of value has nevertheless been chosen as a key term here. But still, advice from Jevons (1871) to be mindful of the difference between exchange value and use value needs to be taken into account.

2.2.2.3 *Strategic management – value creation as strategic capability*

A practitioner oriented scholarly field that currently uses the term "value" is that of strategic management of firms. Normann and Ramirez (1993, p.65) start a seminal article in the field by stating that "Strategy is the art of creating value". Ever since Porter (1985) introduced the idea of analyzing a firm's "value chain", i.e. the chain of activities that generate value for a firm's customers, the term value has been widely used by strategic management scholars and practitioners alike (Lopdrup-Hjorth, 2013). According to strategic management literature there are a number of more or less tangible factors determining a firm's value creation capacity; activities (Porter, 1985), resources (Wernerfelt, 1984), core competencies (Hamel and Prahalad, 1990), social networks for co-creation (Normann and Ramirez, 1993), dynamic capabilities and intellectual assets (Teece et al., 1997). All these attempts to explore where value comes from could be interpreted as an unexpected revival of certain ideas from classical economics, since they all try to trace the journey of value through the production system in a manner similar to the abandoned substance value theories (Lopdrup-Hjorth, 2013). Noteworthy here is that under the co-creation logic the linear framework of production, exchange and consumption of value falls apart to some extent. In today's global, digital and networked society it has become increasingly difficult to tell producers of value apart from consumers of value. Facebook is a particular example of this in that the website's "customers" are actually producing billions of hours of unpaid labor work in order to allow for value to be created for Facebook's paying (i.e. primary) customers – the advertisers (Fuchs, 2012). Another example is the outsourcing of production of financial services to the customers through use of web platforms (Benkler, 2006).

A recent literature strand in the strategic management field has explored the impact of two different kinds of value creation in firms; (1) routine value creation in terms of efficient production of what customers want today and (2) explorative value creation in terms of innovating future offerings that customers don't even know they want yet. It has been shown that firms that are "ambidextrous", i.e. those firms that manage to focus simultaneously on routine and explorative value creation, are more innovative, perform better financially, grow faster and survive longer (O'Reilly and Tushman, 2013). Taking into account the particularly strong link of explorative value creation to learning (Raisch and Birkinshaw, 2008) and to entrepreneurial competencies (O'Reilly and Tushman, 2004), it could be a useful distinction when considering a tentatively new educational philosophy based on value creation.

2.2.3 Value according to sociologists – a pluralistic view

A common basis for sociological views of value is the assumption of *homo sociologicus*, i.e. that humans are socializing, role-playing, volitional, meaning-seeking and docile individuals acting not only on self-interest but also on advice, social status, norms and values they perceive

in society (Simon, 1993; Lindenberg, 1990; Fehr and Gintis, 2007; Gemici, 2008). Sociological views on value are more pluralistic than economic views and are therefore more difficult to summarize. This section will therefore necessarily be an arbitrary selection of value frameworks, included based on their utility for the purpose of this thesis and their ability to give a few complementary perspectives on pluralistic value theory. Three frameworks have been taken from three different but somewhat overlapping fields; economic sociology, behavioral economics and psychology. Given that the incentive structures of society's current education systems are primarily organized around individual perspectives, the frameworks presented here are all individually focused. But they all take collectivity into account by illuminating how and why different sociological dimensions are valued by the individual.

2.2.3.1 Economic sociology – six orders of worth

Economic sociology is the study of sociological perspectives on economic phenomena (Smelser and Swedberg, 2005). A key argument in the field is that markets need to be viewed as embedded in society (Polanyi, 1944; Granovetter, 1985). Polanyi claimed that any attempt to disembed markets from society will have disastrous consequences, and that such attempts will trigger dangerous countermovements such as authoritarianism and fascism (Gemici, 2008; Smelser and Swedberg, 2005; Harvey, 2005). This has positioned economic sociology as an attack on both neoclassical and neoliberal views, united as they are in their view of the free and rational *homo oeconomicus* outlined above (Swedberg, 1997; Peck, 2008; Smelser and Swedberg, 2005). Stark (2000, p.2) leans on White (1981) to take this argument even further, stating that markets "are not simply *embedded in* social relations, they *are* social relations", implying an impossibility of separating the intellectual from the emotional and moral. Economic sociology has advanced not only through sociologists' work (Swedberg, 1990). Some economists who have made attempts to integrate the two fields of economics and sociology include Sen (1999), Becker (1978), Arrow (1962) and Akerlof (1970). Amartya Sen for example has stated that "we should not fall into the trap of presuming that the assumption of pure self-interest is, in any sense, more elementary than assuming other values" (Ben-Ner and Putterman, 1999, p. xii).

Boltanski and Thévenot (2006) have developed one of the main theoretical frameworks for value analysis in economic sociology. The framework consists of six different "orders of worth", labeled "worlds" of value (Jagd, 2011). In the *world of inspiration* it is qualities such as creativity, imagination and passion that are valued. A prime example of a firm successfully focusing here is Apple Computer (Boivin and Roch, 2006). In the *industrial world* what is valued is productivity, predictability and performance. The *market world* celebrates competition, rationality and desire for scarce goods and self-benefit. In the *domestic world,* worth is determined by hierarchies and relationships between people and associated esteem and reputation. Key determinants here are traditions, social dependencies and loyalties. The *world of fame* positions value in the number of people that grant their recognition through reliance on "appearance, stardom and superficiality" (Boivin and Roch, 2006, p.411). Finally, the *civic world* encapsulates collective common good values such as fairness, democracy and solidarity. According to Boltanski and Thévenot (2006), people's actions and valuations are simultaneously justified and legitimized through all six worlds, but to varying degrees

depending on each situation. Still, each world has its own metrics, measurement instruments and reifications. These six worlds are shown in Figure 3 below.

2.2.3.2 Behavioral economics – five consumer values

Behavioral economics combines economics with other fields that empirically study human behavior, primarily psychology but also other fields (Wilkinson and Klaes, 2012; Kahneman, 2003; Weber and Dawes, 2010). A pioneer in this field was Nobel laureate Herbert Simon, who modified the rationality assumption underlying neoclassical economics by stating that rationality is "bounded" (i.e. limited) by lack of information, limitations in human cognitive power and the presence of multiple and shifting personal wants (Simon, 2000). According to Simon (1993; 2005) humans respond to this by carefully listening to others' advice, constantly learning in social settings and internalizing rules of thumb (i.e. heuristics) that can be used for future decisions on which actions to take. This results in behavior that at times appears altruistic, i.e. helping others with no expected reciprocity, thereby deviating from the mainstream economic assumption of self-optimizing behavior. Whether it is, in fact, altruistic or a future-oriented, dynamic and "intelligent" form of subtle egoism is a question often discussed by scholars (Batson et al., 2008; Simon, 2005; Axelrod and Hamilton, 1981). In general, a key topic in behavioral economics is the issue of non-egoistic preferences, triggering a need to empirically study "how real people actually behave and decide" (Weber and Dawes, 2010, p.91).

A widely applied value framework in behavioral economics has been developed by Sheth, Newman and Gross (1991). They took consumer decisions as a starting point of empirical analysis and ended up with five different values influencing consumer choice; functional, emotional, epistemic, social and conditional value. *Functional value* refers to consumers' perceived utility in terms of product function or performance. *Emotional value* stems from a capacity of products to arouse feelings that consumers value. *Epistemic value* is based on consumers' curiosity, novelty and desire to learn. *Social value* is derived from utility related to consumers' participation in groups. Examples include jewellery, clothing, gifts and cars that convey a desirable image to others (Sheth et al., 1991, p.161). Finally, *conditional value* depends on needs that arise out of situations such as seasons and cultural events, where consumers would otherwise be at odds with the situation they find themselves in. With its focus on how consumers choose between alternative products, this framework arguably aligns more with the singular view of a self-serving *home oeconomicus*. Still, the framework illustrates how multiple values are combined by consumers to form perceptions of utility. These five values are shown in Figure 3 below.

2.2.3.3 Psychology – five perspectives on what humans value

Motivation and well-being theories stemming from psychological research constitute one possible starting point in an investigation of what humans find valuable. It is also particularly relevant for this thesis, given the impact that student motivation can have on learning (Boekaerts, 2010; Snow et al., 1996). Fiske (2008) has synthesized the vast literature on motivational research into a framework consisting of five different perspectives. According to Fiske, human motives differ depending on whether we (1) study patients on the psychoanalytic couch, (2) examine our own consciousness, (3) watch students in the classroom, (4) use the

computer as a metaphor for cognitive understanding or (5) study group members in a collective. On the psychoanalytic couch people appear hedonistically self-focused on maximizing pleasure and avoiding pain, in line with utilitarian economics. When studying people's conscious experiences they appear optimistic, future-oriented, trust-based and focused on functional potential to get things done, i.e. an emphasis on the emotional enjoyment and flow inherent in human valued activity. In the classroom the clear-cut incentives in a constructed learning environment make for behavioristic motives based on students' expectance to achieve a goal and the perceived value of achieving it. When using the computer as a metaphor for researching human cognition, scientists have studied mental and social aspects of how people process information in order to reach a coherent understanding, i.e. aiming to reach a harmonious experience free from individual and collective dissonance and disjuncture. When studying groups the motives for belonging to a social collective seem endless, ranging from surviving, reproducing and conforming to collectively acting, understanding and sympathizing.

Another value framework anchored in psychology has been developed by Seligman (2012), consisting of five measurable elements of subjective well-being; positive emotion, engagement, relationships, meaning and achievement. *Positive emotion* is interpreted as a mood induced by a pleasant life. *Engagement* is interpreted as being in "flow", being completely absorbed by a task and losing track of time. *Relationships* is interpreted as meaningful experiences shared with other people, often in close and long-term relationships. *Meaning* is interpreted as belonging to and serving something that is bigger than the self, often despite its sometimes detrimental impact on other elements in the framework. *Achievement* (or accomplishment) is interpreted as achieving one's goals solely for their own sake, isolated from any eventual resulting impact on the four other elements of the framework, i.e. winning just for the sake of winning.

Yet another theory anchored in psychological well-being research is the logotherapy theory by Frankl (1985), emphasizing humans' strive for meaning, in contrast to Freud who emphasized will to pleasure and Nietzsche who emphasized will to power (Frankl, 1985, p.99). Finally, recent work by Metz (2009) and Baumeister et al. (2012) has emphasized two main and only partly overlapping sources of human well-being; happiness and meaningfulness. Baumeister et al. (2012) showed empirically that happiness is primarily self-oriented and associated to being a taker, whereas meaningfulness is primarily others-oriented and associated to being a giver. The varying perspectives of motivation and well-being outlined here are summarized in Table 1. Based on this summary, and for the purpose of this thesis, five resulting kinds of value creation are articulated. These five kinds of value creation are also shown in Figure 3 below. An extensive discussion on the different psychological value theories outlined in Table 1 and their relationship to entrepreneurial education can be found in appended paper 6 of this thesis.

Table 1. Five different kinds of value creation. These five kinds of value creation constitute a summary of psychological research on human motivation and well-being.

Focus	Motivation theory (Fiske, 2008)	Well-being theory (Seligman, 2012)	Will to… (Frankl, 1985)	Resulting kind of value creation
Primarily "happiness for oneself" oriented factors (Metz, 2009; Baumeister et al., 2012)				
Self-analysis	Psychoanalytic couch based hedonistic self-focus	Positive emotion	…pleasure	Economic / subsistence value creation
Goal / power	Expectancy-value theories of goal prediction and control	Achievement	…power	Historical / pride / power value creation
Primarily "meaningfulness with others" oriented factors (Metz, 2009; Baumeister et al., 2012)				
Action-taking	Conscious focus on future-oriented functional action	Engagement / flow	…meaning	Personal / pshychological value creation
Belongingness	Coordinated and interdependent teamwork and relationships	Relationships	…meaning	Relational / social value creation
Processing	Mental / social processes of reaching coherent understanding	Meaningfulness	…meaning	Equalizing / harmony / cultural value creation

2.2.4 Summarizing into an integrative view of value

The literature review undertaken here has shown how difficult it is to disentangle an egoistic focus on doing well for oneself from an altruistic focus on doing good for others. It is arguably more fruitful to see them as "two primal, separate standing, yet complementary forces found in all things" as the idea of yin and yang in Chinese thinking suggests (Chen et al., 2010, p.175). Further, according to Dewey (1939), Polanyi (1944) and Stark (2011), disembedding and dichotomizing self-oriented value creation from others-oriented value creation is a detrimental and dangerous path to take. Therefore in order to form a more integrative foundation for later discussions on value rather than the dualistic Parson's Pact based view found in the literature reviewed here, Figure 3 graphically summarizes how the three pluralistic perspectives on value discussed in section 2.2.3 integrate with the singular perspective on value discussed in section 2.2.2. Five different kinds of value creation are illustrated in Figure 3, arguably constituting a possible and useful summary for the purpose of this thesis. All five kinds of value creation are pictured as relying on a common integrated core of value for oneself *and* for others.

The five kinds are labeled as follows; economic, enjoyment, social, harmony and influence value creation. *Economic value creation* could be viewed as primarily self-oriented attempts to create value for oneself by delivering what others want. In entrepreneurship literature this is a very common view of value creation (Korsgaard and Anderson, 2011). *Enjoyment value creation* could be viewed as value creation just for the pure joy / fun of it. Schumpeter proposed this to be an important value for people acting entrepreneurially (Goss, 2005b). *Social value creation* could be viewed as an others-oriented kind of value creation focused on making other people more happy or relieving their suffering. This parallells to social entrepreneurship, a major theme in entrepreneurship research (Tan et al., 2005). *Harmony value creation* could be viewed as value creation that makes more sense as a whole, culturally or in relation to collective values such as fairness, ecology, equality and the common good. While a quest for harmony is perhaps not a common theme in entrepreneurship research, it has been proposed as a useful and theoretically well-grounded view of entrepreneurship for educational purposes (Blenker et al., 2012). *Influence value creation* could be viewed as creating value in order to increase one's influence, power or historical legacy. Such a view of entrepreneurship as societal change

through economic or political history-making has been proposed in an influential book by Spinosa et al. (1999).

While value creation arguably could be graphically summarized as consisting of more, less or indeed other kinds of prototypic value, Figure 3 nevertheless illustrates the many kinds of value creation that entrepreneurship can contribute with to educational practice. Figure 3 also illustrates Polanyi's (1944) general point around the shortcomings of an economic and disembedded view of value, impacting the infusion of entrepreneurship in education. Teachers could be encouraged to draw from many different kinds of value creation when making the leap from entrepreneurship to education, stepping on a stone consisting of multiple perspectives. In line with the view put forward by Boltanski and Thévenot (2006), it is recommended to view every entrepreneurial value creation activity in education as simultaneously containing the entire stepping stone, i.e. all five kinds of value articulated here, albeit present to a varying degree for different people and in different situations. In one single day of the life of a business or student entrepreneur all five kinds of value could arguably be present, with the emphasis changing hour by hour or even minute by minute depending on how the day unfolds.
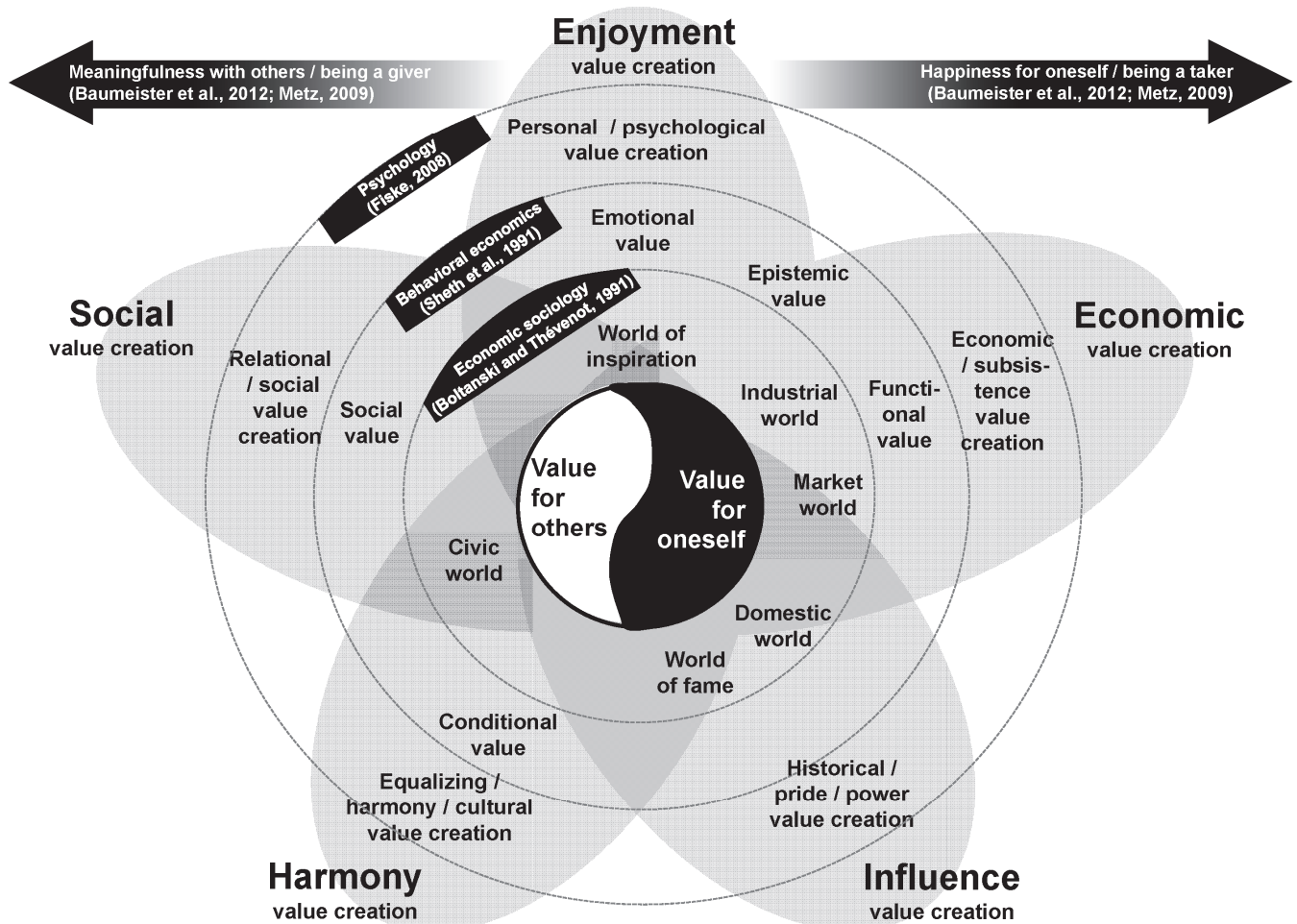
Figure 3. A singular stepping stone of value creation consisting of five different pespectives. *Three pluralistic perspectives of value are integrated with a singular economic perspective of value. The five resulting kinds of value are positioned in a force field ranging from meaningfulness to happiness.*

2.3 Education

We will now turn to education, constituting the target field of the previously discussed infusion attempts. Given the purpose of qualifying a tentatively new educational philosophy giving prescriptive answers to *what*, *how* and *why* questions in education, this review starts by outlining some key philosophy of education literature and concepts. Then some common educational philosophies are outlined, summarized as a philosophical playing field of education to be used in further discussions. The key role of educational evaluation in any attempt to spread educational ideas is briefly discussed as a backdrop to the articulation (chapter 5) and qualification (chapter 6) oriented dicussions that will follow. Finally, the current state of education and entrepreneurial education is delineated in order to form a baseline for the qualification purpose of this thesis.

Jarvis has defined education as "any institutionalized and planned series of incidents, having a humanistic basis, directed towards the participants' learning and understanding" (Jarvis, 2010, p.41). He further outlines three main kinds of learning; formal learning, non-formal learning and informal learning. Formal learning is defined as any education and training occurring in an educational institution, and is the focus of this thesis. Non-formal learning rather occurs at the workplace or in the community. Informal learning refers to the everyday self-directed learning that we undertake individually or in a group. This means that learning is a wider concept than education, in that "education is but one system through which we learn" (Jarvis, 2010, p.41).

Differing views of learning profoundly impact education. Applying the common view among the public of learning as passive reception of knowledge results in a very different educational system from that where learning is viewed as a process of learners constructing their own personal understanding through experience (Ernest, 1995; Jarvis, 2006). Both these endpoints are today very much alive in discussions about learning and education, and both have their merits (Sfard, 1998). Educational implications of such differing beliefs about learning are treated at length in the scholarly field of philosophy of education, to which we now turn. A multitude of philosophical positions will be outlined briefly, and three main positions deemed to be particularly relevant to the purpose of this thesis will be described more in-depth; traditional, progressive and experiential education.

2.3.1 Philosophy of education as a scholarly field

A recurring theme among scholars in philosophy of education is to discuss how the field can be defined and delimited (Noddings, 2007; Burbules, 2000; Chambliss, 2009). No consensus has been reached, and the field is instead characterized by its eclectic and interdisciplinary nature, covering a wide variety of issues such as the nature and aims of education, politics around schooling and educational implications of key themes such as ethics, feminism, multiculturalism, values and power (Chambliss, 2009; Burbules and Raybeck, 2003). Three main reasons for engaging in philosophy of education are outlined by Burbules and Raybeck (2003); prescriptive work, analytical work and critical work.

2.3.1.1 *Prescriptive work in philosophy of education*

Prescriptive work is the oldest tradition in the field, practiced by writers such as Plato, Locke, Rousseau, Dewey and Freire. Here the purpose is to "offer a philosophically defended conception of what the aims and activities of teaching ought to be" (Burbules and Raybeck,

2003, p.1881). What is deemed to be *philosophical* has been defined by Curren (2008, p.2) as when a set of beliefs are applied to educational practice, making it a field for "rigorous normative inquiry". This is fundamentally a question of beliefs around epistemology (i.e. What is knowledge?), ontology (i.e. What is real?) and axiology (i.e. What is valuable? What is education good for?). Normative endeavors to propose answers to such philosophical questions result in particular views on a number of key *what*, *how* and *why* issues in education, such as "what education should be, what dispositions it should cultivate, why it ought to cultivate them, how and in whom it should do so, and what forms it should take" (Frankena, 2003, p.1878-1879). A related stream of work is the "isms" approach to philosophy of education, stating that a philosophical position such as realism, idealism or pragmatism has practical implications for education (Burbules, 2000; Burbules and Raybeck, 2003).

2.3.1.2 *Analytical work in philosophy of education*

Analytical work is a tradition in philosophy of education that gained momentum in the 1950s primarily in native English speaking countries, aiming to reach conceptual clarity around terminology used and conditions to be met in education (Burbules and Raybeck, 2003). It can be seen as a reaction to the "isms" approach, regarding such work as sloppy and too practice oriented (Burbules, 2000). It can also be seen as a reaction more specifically against progressivism and child-centered education, attempting to uncover the vagueness underlying its key slogans and clichés (Burbules, 2000). The analytical tradition is deeply anti-prescriptive and nonpartisan, leaving the task of educational choices to others and instead assuming the role of referee in the constant dialogues between perspective takers. For decades it was viewed as the only "true" activity pertaining to philosophy of education. Examples of key contributions include Peters (1970) work on what we mean with education, Hirst (1974) work on what constitutes knowledge and Scheffler's (1973) work on how to define teaching.

2.3.1.3 *Critical work in philosophy of education*

Critical work gained ground in the 1980s when scholars illustrated the analytical tradition's omission of key themes such as class, race, gender and power. Such critical work was frequently influenced by trends and works outside philosophy of education, particularly postmodernist and critical scholars such as Lyotard, Derrida, Foucault and others. Work by Lyotard on knowledge (1984) triggered educational philosophers to reconsider what counts as knowledge in a pluralistic and multicultural society and try to sketch out implications of this for educational practice (Pring, 2010). Noddings (2007) leaned on Derrida's (1978) call to "let others be" to highlight the analytical objectivists' neglect of traditional female values in education such as care, compassion and connection. Critical work is thus mainly a relatively new tradition in philosophy of education, aiming to expose misconceptions and oppressive dominant forces in society impacting education in general and disadvantaged groups in particular (Burbules and Raybeck, 2003).

As a parallel of such critical work to the topic of this thesis, infusing entrepreneurship into education has been critiqued based on Foucault's (1988) work on "governmentality", i.e. the external governing of people through help from their own mentality. Some scholars are describing the infusion of entrepreneurship into education as a way to covertly govern citizens

from within through inculcation of powerful purposive entrepreneurial ideals (Petersen and O'Flynn, 2007; Berglund, 2013; Down, 2009; Komulainen et al., 2011).

Given the aim here of qualifying a tentatively new educational philosophy grounded in entrepreneurship, the main emphasis of this thesis is on prescriptive work. But there are also links in this thesis to analytical and critical traditions of philosophy of education. In line with an analytical tradition, infusing entrepreneurship into education could benefit from clarity both in definitions and aims, currently short in supply (Sagar, 2013). And in line with a critical tradition, infusing entrepreneurship into education could also contribute with perspectives beneficial to disadvantaged groups such as those students who don't thrive under the currently dominant educational philosophies (Roth and Lee, 2007; Dewey, 1938; Noddings, 2007).

2.3.2 Educational philosophies as prescriptive propositions

While the aim of this thesis is not to propose a new "ism", the tentatively new educational philosophy proposed here will need to be contrasted to some major existing prescriptive philosophies of education. Terminology used in existing literature is far from unified. Some scholars view the issue primarily from a learning perspective, outlining different *learning* philosophies, theories, models or paradigms (Kyrö, 2005; Jarvis, 2006; Kolb, 1984; Engeström, 2009; Vygotsky, 1978). Others view it from a predominantly educational perspective, describing different *educational* philosophies, theories, models or paradigms (Mezirow, 1991; Dewey, 1934; Noddings, 2007; Egan, 2002; Rousseau, 1762/2003). While it is clearly beyond the scope of this thesis to give a comprehensive outline of major educational philosophies throughout the history of learning and education, Table 2 outlines some enumerations of major philosophical positions for the purpose of illustrating the lack of terminological unity in the field as well as illustrating the spurious connections between learning and education. The term that will be used in this thesis to discuss different major philosophical positions is "educational philosophy", by which I mean a belief based and coherent set of articulated prescriptive propositions offering normative advice to primarily teachers on the *what* to do, *how* to do it and *why* questions discussed in section 1.2 and section 2.3.1.1. Such a singular articulation of an educational philosophy can then spur an infinite number of different versions of educational practice, depending on each context, content, student age, culture, tradition and organization. An educational philosophy thus becomes a singular guiding star that can guide teachers in designing and implementing a multitude of educational practices, either by itself or in combination with other educational philosophies.

I posit that there are three educational philosophies that are particularly important to take into account and contrast with when qualifying a tentatively new educational philosophy grounded in entrepreneurship; traditional, progressive and experiential education. Traditional education is an educational philosophy that is frequently put in opposition to the infusion of entrepreneurship into education (Gibb, 1993; Johnson, 1988; Kirby, 2004). Progressive education is an educational philosophy often stated to be similar to how entrepreneurs learn (Löbler, 2006; Pepin, 2012; Fletcher, 2007). Experiential education leans on learning-by-doing, which many entrepreneurship scholars argue is the only way to develop entrepreneurial competencies (Cope, 2005; Politis, 2005; Minniti and Bygrave, 2001; Young and Sexton, 1997). These three educational philosophies are outlined in further detail in sections 2.3.3-2.3.5.

Given that many terms in the eclectic collection in Table 2 are similar or even in some cases regarded as synonyms to traditional, progressive or experiential education, a focus in this thesis on these three main educational philosophies arguably represents a heuristic that captures many of the inherent philosophical contradictions and oppositions of relevance when infusing entrepreneurship into education. But it needs to be remembered that it is a simplification that some philosophers of education would argue opens up for ambiguity, sloppiness and over-promise (Burbules, 2000).

Table 2. Enumeration of "isms" and approaches to learning and education. A number of examples of enumerations of "isms" and approaches in terms of educational philosophies, instructional theories, and learning kinds / paradigms, illustrating a lack of terminological unity in the field.

Author(s)	Unifying term used	Enumeration
Reigeluth and Carr-Chellman (2009)	Instructional theories	- Direct instruction - Discussion teaching - Experiential learning - Problem-based learning - Instructional simulations
Gutek (1997)	Philosophies of education	- Idealism - Realism / Theistic realism - Naturalism - Pragmatism - Existentialism
Apps (1973)	Educational philosophies	- Essentialism - Perennialism - Progressivism - Reconstructionism - Existentialism
Englund (2000)	Educational philosophies	- Traditionalism (essentialism and perennialism) - Progressivism - Reconstructionism - Neopragmatism
Heron (2009)	Kinds of learning	- Experiential - Presentational - Propositional - Practical
Kyrö (2005)	Learning paradigms	- Behaviorism - Cognitivism - Constructivism - Postmodernism / entrepreneurialism

2.3.3 Traditional education

Traditional education has been described as a teacher centered approach. It answers the *what* to do question of education by prescribing to let students learn by reading, memorizing, repeating, reciting and being given whole class instruction (Cuban, 2007; Apps, 1973). Some influential scholars in traditional education are Thorndike (1932), Skinner (1953) and Bagley (1934). Critics have lamented its alleged focus on authoritarian transmission of standardized knowledge to passive and unmotivated students leading to superficial understanding (Dewey, 1938; Labaree, 2012; Tynjälä, 1999). Still, the arguments in favor of traditional education have allowed it to remain dominant in practice in many schools around the world (Labaree, 2005).

According to the many supporters of traditional education, the answer to the *why* question it contributes with includes allowing for setting high academic standards for basic knowledge and skills that all students should acquire, making standardized tests possible that could hold students and schools accountable, facilitating effective organization of educational institutions, providing students with much needed explicit guidance and leaning on robust empirical evidence proving its superiority (Archer and Hughes, 2011; Labaree, 2005; Cuban, 2009; Rosenshine, 2009; Kirschner et al., 2006).

Previous attempts in educational change illustrate that any new educational philosophy needs to prove its ability to measure learning progress, to support the development of core curriculum knowledge, to display a feasibility in terms of organizing the educational institution and to supply explicit guidance to both teachers and students (Elmore, 1996). Therefore, in order to be adopted in practice, an educational philosophy grounded in entrepreneurship arguably also needs to be able to contribute to the strengths of traditional education.

2.3.4 Progressive education

Progressive education has been described as a student centered approach. It answers the *what* to do question of education by prescribing to let students learn by working in projects, solving authentic problems in teamwork characterized by social, active and self-directed learning (Labaree, 2012; Dewey, 1938; Tynjälä, 1999; Jonassen and Land, 2000). Key scholars include Comenius (1657), Rousseau (1762/2003), Dewey (1938), Kilpatrick (1918), Montessori (1912), Jonassen (1999) and Kohn (2000). The most influential of them has been Dewey, who co-founded the underpinning philosophical movement of pragmatism together with James (1907) and Peirce (1878) more than a century ago. Dewey's emphasis on learning through experience leaned philosophically on pragmatism's focus on practical consequences and reject of theoretical "truths" (Roberts, 2012). Progressive education is today often labeled constructivist education, but with similar recommendations (Cuban, 2007). Critics argue that progressive education is unproven, too vague, neglects the legacy of traditions and academic canon, makes measurement of educational progress impossible, devalues moral and character education in favor of nihilism and opens up for careless experimentation by teachers leading to damaged kids (Edmondson, 2014; Labaree, 2005; Egan, 2008; Ernest, 1995). The typical answers to the *why* question of progressive education revolve around more active and engaged learners, better alignment with the process of how people learn, more humanistic and democratic forms of education, opportunities to learn from social interaction and a focus on students' own interests and discoveries (Tynjälä, 1999; Labaree, 2012; Dewey, 1938). What progressive education does particularly well according to Jonassen (1999) is to develop conceptual and strategic thinking in ill-structured knowledge domains. Still, progressive education is today regarded as a challenge for teachers, having indeed shaped how we talk about education but much less what teachers do in practice (Labaree, 2005).

Progressive education is the most common underpinning educational philosophy when trying to infuse entrepreneurship into education. While not widely acknowledged, some entrepreneurship scholars have discussed this (Fletcher, 2007; Pepin, 2012; Mueller, 2012; Löbler, 2006; Kyrö, 2005). Entrepreneurship viewed as learning certainly shows many similarities with progressive education principles, such as active and engaged people (students

or entrepreneurs) pursuing their own interests, making discoveries in self-directed learning processes rife with social interaction. This however means that critics will be prone to categorize the infusion of entrepreneurship into education as a progressive education project, exposing such an endeavor to the risk of facing similar challenges (Labaree, 2005; Elmore, 1996; Egan, 2002).

2.3.5 Experiential education

Experiential education has been described as a field-based approach. It answers the *what* to do question of education by prescribing to let students learn by becoming immersed in settings outside the classroom, lecture hall or school building. Some labels often used include outdoor or adventure education, service learning and environmental education (Roberts, 2012). In outdoor education students learn from adventurous outdoor activities such as hiking, climbing, ropes courses and wilderness expeditions (McKenzie, 2003; Roberts, 2012). In service learning students learn through providing service to people outside the educational institution, either as volunteers, through internships or in community service placements (Furco, 1996). While environmental education frequently takes place in the field, it is rather defined by the intended learning outcomes of environmentally aware students (Adkins and Simmons, 2002).

While sharing some philosophical roots with progressive education in drawing from Dewey (1938), experiential education could still be argued to constitute a distinct educational philosophy with its emphasis on field-based learning. Learning from direct experience in the field arguably goes beyond active and problem-based teamwork and inquiry conducted in the classroom. A key difference between progressive education and experiential education has been elaborated by Yorks and Kasl (2002). They state that Dewey's progressivism represents an intellectual account of learning as cognitive meaning-making of collaborative action. This is positioned against a phenomenological account of learning as felt encounter, drawing on Heron (1992) who emphasized the importance of affective dimensions to learning. A main theme on the *why* question of experiential education thus connects to the key role that emotion and motivation plays in human learning (Postle, 1993; Roberts, 2012; Boekaerts, 2010). Jarvis (2010) states that human learning in general leans on experiences of disjuncture, defined as the resulting gap between our expectations of the world and what we are actually confronted with. Such a disjuncture leads to an emotional disharmony that motivates us to learn. Being in harmony is then described by Jarvis as a non-learning situation. The study of emotions in learning is a small but growing field of educational research (Pekrun, 2005; Jarvis, 2006; Dirkx, 2001; Hargreaves, 1998; Zembylas, 2005), arguably with potential to further support teachers wanting to infuse entrepreneurship into education.

Experiential education is often related to experiential or action learning for adults and its main scholars Kolb (1984), Knowles (1978), Revans (1983), Schön (1983) and Jarvis (2006). A widespread learning model is Kolb's experiential learning cycle, see figure 4. It has however been difficult to transfer this adult learning focused model to education, due to difficulties with assessing and certifying content knowledge, lack of empirical evidence for its effectiveness in education and challenges in organizing such a learning process in an institutional context (Seaman, 2008; Jarvis, 2006; Holman et al., 1997). Seaman (2008, p.15) concludes that "the pattern of 'experience-reflect-learn' might be considered an ideology of experiential learning

rather than a philosophy or a theory of experiential learning". He instead asks for theories of learning that take social and cultural contexts more into account. In line with this, Holman et al. (1997) call for theories that view learning as a culturally mediated experience taking into account the constant interplay between reflection and action rather than separating them into discrete steps in a flawed cycle of learning. I will later argue that entrepreneurship could potentially contribute with such cultural and mediational perspectives (see section 6.1.2.4 and appended paper 4).

Concrete
experience

Active
experimentation

Reflective
observation

Abstract
conceptualization
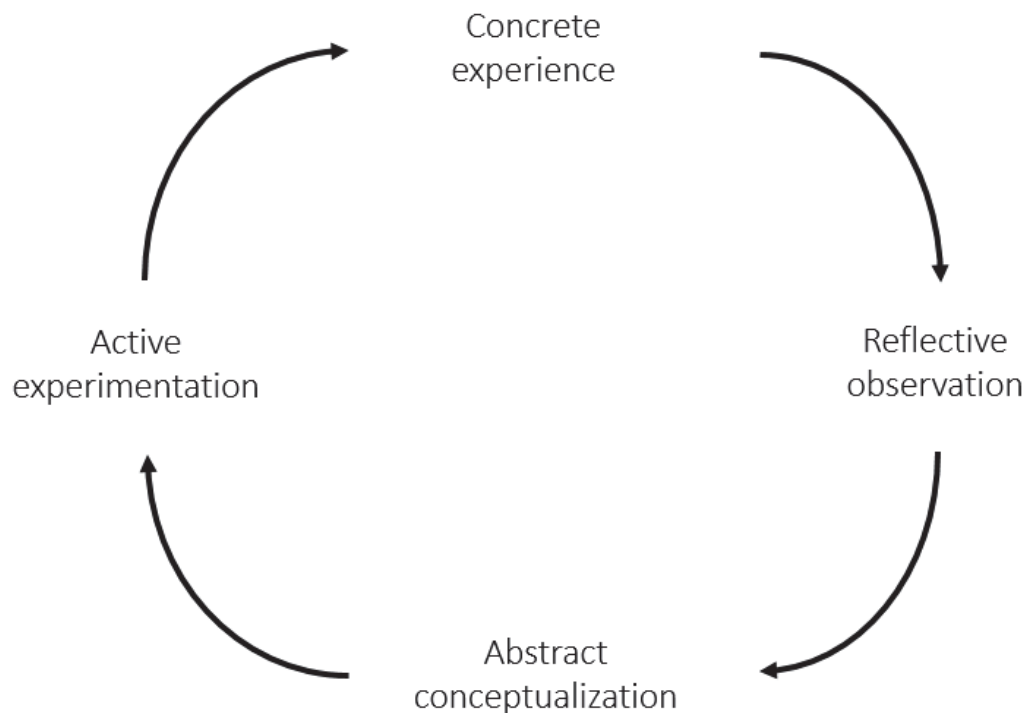
Figure 4. Kolb's experiential learning cycle. The model pictures experiential learning as the tension between four different modes of learning, and was inspired largely by Lewin and Dewey. (Kolb, 1984).

Many of the insights from the field of experiential education can be connected to the infusion of entrepreneurship into education. Some commonalities between experiential education and entrepreneurship include the criticality of emotional events, the emphasis on opening the door to learn from the world outside and the practice of learning through creating some valuable service or product in a community.

2.3.6 Classroom education

The opposite position to experiential education conducted in the field could be stated to be classroom-based education. This is however not an educational philosophy explicitly articulated by scholars despite its benefits to care, to assessment and to organization. Perhaps this is due to the ubiquity of classrooms in education, being largely taken for granted and at times termed as "traditional" education. But classroom activity is a singular answer to the *what* to do question of education that can take many forms, from traditional education based lecturing to progressive education based self-directed teamwork. Answers to the *why* question of education arguably include ease of assessment and organization, as well as a certain protection from the complexity and perils of the outside world. I posit that it is different from the other

three educational philosophies outlined in sections 2.3.3-2.3.5. Books can be read outside of the classroom, lectures can take place in the field and project work can take place outside the classroom. The traditional versus progressive education dualism could thus be viewed as largely orthogonal to the classroom versus experiential education dualism. This is illustrated in Figure 5, and constitutes what I here label the philosophical playing field of education. The tentatively new educational philosophy grounded in entrepreneurship articulated in chapter 5 and qualified in chapter 6 will later be contrasted to this playing field. As stated earlier, such a reliance on "isms" represents a simplification that some philosophers of education perhaps would frown upon. Still, there is a need to contrast a tentatively new educational philosophy to existing major educational philosophies and practices that teachers are familiar with. It can also illustrate possibilities to leverage the strengths of existing educational philosophies.

Experiential education
What: Assignments in the field. Immersion in communities. Learning from practice.
Why: Emotional exposure triggering learning. Engaged and motivated learners.

Traditional education
What: Lectures, books, repetition, basic knowledge.
Why: High academic standards, emprically proven

Progressive education
What: Teamwork, problem solving, social active learning.
Why: How people learn, humanistic, interest based

Classroom education
What: Compulsory attendance in classroom or lecture hall.
Why: Protected and isolated from outside world. Easy for teachers to assess and organize.

Figure 5. The philosophical playing field of education. Three common educational philosophies contrasted to classroom based education. These four different philosophical positions constitute two sets of orthogonal dualisms, together forming a playing field of educational philosophies.

2.3.7 Evaluation of education

It has been argued that tangible evidence of positive learning outcomes is a requirement for an educational idea to reach wider adoption (Löbler, 2006; Elmore, 1996). The difficulty to provide such evidence could explain many of the challenges in progressive education so far (Labaree, 2005), leaving unanswered the question of whether it just doesn't work so well or if the stated effects have not yet been possible to prove quantitatively, i.e. according to the paradigm that the general public arguably applies when evaluating what "works" in education (Porter, 1996). Furthermore, there is significant disagreement among scholars as to how educational evidence should be produced (Noddings, 2007). Some argue for large-scale

rigorous randomized controlled trials involving comparison between a treatment group and a control group. This is often termed the "evidence based" or "gold standard" approach to educational assessment (Slavin, 2002). Others claim that such a quantitative search for cause-effect relations so common in natural sciences is largely inappropriate in education where beliefs, hopes and reasons of intentional individuals lead to contextual and largely non-causal practices (Biesta, 2007; Olson, 2004). Pring (2010, p.121) has stated that "there can be no straightforward causal connection between the teacher's intervention and the learning outcomes" due to the complexity of education, the many interacting elements and the infinite amount of possible interpretations by students. The debate continues, but the winning side has so far belonged to those who can present simple quantitative numbers showing what is often perceived by the public as "facts" about what "works" (Labaree, 2005). This could be explained by the two common human fallacies of resorting to reification and ranking when faced with the task of managing complexity and diversity (Gould, 1996).

Despite the numerous challenges in assessment, there is thus a need for any new educational philosophy to be coupled with a way to evaluate its effectiveness in terms of learning outcomes in order to be useful and adopted in education. Teachers need to be able to evaluate impact on student learning in quantitative terms. Principals and other managers need to be able to determine whether a new initiative has been put to use in class and how it has impacted student learning. This need also applies to an entrepreneurship grounded educational philosophy.

An increasingly popular approach to teacher assessment has been termed *formative assessment*, i.e. a teacher- or student-directed feedback process that establishes where students are in their learning, where they are going and what needs to be done to get them there (Black and Wiliam, 2009; Sadler, 1989; Bloom et al., 1971). Feedback plays a key role in formative assessment, both teacher feedback to students and student feedback to teachers, allowing teachers to revise their teaching in accordance to levels of understanding reached by students (Hattie and Timperley, 2007; Gamlem and Smith, 2013). Formative assessment is arguably easier to apply in classroom based education than in field-based experiential education due to differences in distance between teacher and student. Activities taking place in the classroom are easier for teachers to give and take formative feedback on than activities taking place in the field. Opening the door to the world outside the educational institution therefore impacts the possibility for teachers to rely on formative assessment. Thus, if a tentatively new educational philosophy grounded in entrepreneurship requires students to leave the building, it also requires functional ways to assess the learning process formatively, especially since many of the desired learning outcomes cannot be assessed through a standardized test at the end of the course module. Appended papers 2 and 3 contribute with some new perspectives here, as they outline and apply a novel emotion based approach and an app based instrument used to formatively assess entrepreneurial education. This represents a step towards an increased ability to evaluate and assess the tentatively new educational philosophy articulated and qualified here.

2.3.8 The current state in education

Whenever proposing new ideas on how education could be changed to a different state, it is useful to consider the baseline from which any change would take place. The current state of educational practice has been described as stability surrounded by change (Elmore, 1996).

Recurring waves of change effort have for centuries hit educational institutions worldwide, most of whom have failed to get past the door to the classroom (Fullan, 2007; Cuban, 1990; Kliebard, 1988; Harris, 2003). Initiatives have emanated from a wide variety of different stakeholders, such as policymakers, public entities, researchers, philosophers, lobby organizations, teacher / student associations, private corporations, wealthy individuals and many others. While the aims, doctrines and methods have varied widely, the initiatives have shared a common ambition to change what teachers do in their daily practice. But instead of leading to change, they primarily seem to have produced a protective layer against change, leading to a situation where "[t]he core of schooling remains relatively stable in the face of often massive changes in the structure around it" (Elmore, 1996, p.15). Key protective layers include teacher resistance to change, lack of incentives for change, ontological difficulties in evaluation of what "works" and educational institutions protecting the classroom from the ebb and flow of recurring educational reform (Elmore, 1996; Cuban, 2007; Cuban, 1990; Olson, 2004; Biesta, 2007).

2.3.8.1   Teachers hugging the middle

Across centuries however, the changes are clearly discernible. Cuban (2007) has traced a slow but clear trend since late 19:th century towards more and more informal and progressive education, visible in teacher clothing, furniture placement, teacher attitudes towards students, student grouping and classroom activities. From the 1980s and onwards, classroom practice could be characterized as a hybrid between traditional and progressive education, albeit with increasing emphasis on traditional education as the students grow older. Today the two-pronged discourse of traditional versus progressive education is seldom found in either of its different pure forms in classrooms. Rather, many teachers have opted for a strategy Cuban (2007) labels "hugging the middle", where teachers every day struggle to combine a widespread belief in progressive education values with the requirements put upon them by traditional education in terms of performative policies emphasizing standards, accountability and testing. Today's educational pratice thus requires teachers to be able to manage the educational dilemma of combining the rigidity and rationality of traditional education with the vagueness and individuation of progressive education. Such hybridization is however "far from formulaic" (Darling-Hammond, 2012, p.40), and Kliebard (1988, p.146) has estimated that "[e]ven in its heyday, then, something like two-thirds of all classrooms in the United States were left untouched by the tenets of the child-centered movement". So while many teachers indeed are able to combine largely incommensurable philosophical positions in education (cf. Sfard, 1998), even more teachers are arguably still struggling with this dilemma, or have simply given in to the simplicity, face validity, forcefulness and pervasiveness of traditional education.

2.3.8.2   From educational philosophy to instructional design to educational practice

As a transitional step from singular educational philosophies to plural educational practices, the educational philosophies outlined in section 2.3 could be viewed as basic ingredients for a number of prototypic instructional designs (Smith and Ragan, 1999), or teaching "recipes" (Stenhouse, 1975), see Figure 6. Teachers draw from these recipes in their daily combinatory work of teaching. For example, content based teaching such as a lecture series is primarily combined from traditional education and classroom education. Thematic project work such as a cross-curricular theme week is primarily combined from classroom education and progressive

education. Spectator based field education such as a visit to a museum is primarily combined from traditional education and experiential education. Active participant based field education such as a ropes course in the forest is primarily combined from experiential education and progressive education.

Each teaching recipe constitutes a specific set of answers to the question of *how* to do education in practice, representing differing design recommendations on what to do before, during and after an educational intervention in terms of preparations, delivery and evaluation (Smith and Ragan, 1999). While many teaching recipes are well described in curriculum theory, the actual act (or art) of combining and hybridizing these recipes is currently largely up to each individual teacher, an expertise that I posit is seldom acknowledged by proponents of any one educational philosophy or recipe. What often happens is that a teaching recipe is used and argued for in isolation, leading to dichotomization and conflict.

Experiential education
What: Assignments in the field. Immersion in communities. Learning from practice.
Why: Emotional exposure triggering learning. Engaged and motivated learners.

Out-of-school activity | Passive encounter
How: Spectator based field education
Lecturing | Repetition

Out-of-school adventure | Emotional encounter
How: Active participant based field education
Briefing | Debriefing

Traditional education
What: Lectures, books, repetition, basic knowledge.
Why: High academic standards, emprically proven

Progressive education
What: Teamwork, problem solving, social active learning.
Why: How people learn, humanistic, interest based

Home study | Classroom discussions
How: Everyday content based teaching
Lecturing | Test

Team based project work | Information gathered from outside world
How: Thematic project work
Introduction | Presentations

Classroom education
What: Compulsory attendance in classroom or lecture hall.
Why: Protected and isolated from outside world. Easy for teachers to assess and organize.

Figure 6. Four different examples of common teaching "recipes". Different emphasis in how educational philosophies are combined leads to different kinds of teaching recipes. They are sometimes combined into hybrid teaching practices, and other times used in isolation.

Connecting to the purpose of this thesis, I will later illustrate how a tentatively new educational philosophy grounded in entrepreneurship could perhaps remedy the current situation by giving teachers support in their combining of different philosophies and recipes such as those outlined in Figure 6. As it is now, teachers lack not only an educational philosophy grounded in entrepreneurship in general but also more specifically some teaching recipes stipulating *how* to do in practice when trying to infuse entrepreneurship into education. We will now look at how this paucity has shaped the infusion of entrepreneurship into education.

2.3.9 The current state in entrepreneurial education

In an attempt to unify the educational field of entrepreneurship, the term entrepreneurial education has been proposed (Erkkilä, 2000). This term includes the more narrow term *entrepreneurship education*, defined as developing competencies specific to setting up a new venture or business, as well as the wider term *enterprise education* defined more broadly as developing competencies necessary to generate and realize ideas (QAA, 2012; Pittaway et al., 2011; Pittaway and Cope, 2007a). Entrepreneurial education is often categorized into the three approaches of teaching *about*, *for*, and *through* entrepreneurship (Johnson, 1988; O'Connor, 2012; Heinonen and Hytti, 2010). Teaching *about* entrepreneurship means a content-laden and theoretical approach aiming to give a general understanding of the phenomenon. It is the most common approach in higher education institutions (Mwasalwiba, 2010). Teaching *for* entrepreneurship means an occupationally oriented approach aimed at giving budding entrepreneurs the requisite knowledge and skills. These two approaches are relevant primarily to a subset of students on secondary and higher levels of education and represent a narrow definition of entrepreneurship as starting a company and becoming an entrepreneur (Mahieu, 2006). The third approach, teaching *through* entrepreneurship, means a process based and often experiential approach where students go through an actual entrepreneurial learning process (Kyrö, 2005). This approach often leans on a wider definition of entrepreneurship including not only individuals starting companies but also anyone creating financial, cultural or social value (Moberg et al., 2012). This allows for entrepreneurship to be integrated into other subjects in general education, connecting entrepreneurial characteristics, processes and experiences to the core curriculum. Here focus is on personal development, creativity, self-reliance, initiative taking, action orientation, i.e. becoming entrepreneurial (Mahieu, 2006). This approach can thus be relevant to all students and on all levels of education (see for example Smith et al., 2006; Handscombe et al., 2008). It is however rare in practice due to its perceived higher cost than traditional approaches and misalignment with dominant educational philosophies in many educational institutions (Smith et al., 2006; Mwasalwiba, 2010; Ardalan, 2008). The current state in entrepreneurial education with its two conflicting definitions and three different approaches is far from the coherent set of articulated prescriptive propositions discussed in section 2.3.2, thus offering little normative advice to teachers on *what* to do.

2.3.9.1 *Some stated reasons for entrepreneurial education*

The most common reason that researchers and experts promote entrepreneurial education is that entrepreneurship is seen as a major engine for economic growth and job creation (Wong et al., 2005). Entrepreneurial education is also frequently seen as a response to the increasingly globalized, uncertain and complex world we live in, requiring all people and organizations in society to be increasingly equipped with entrepreneurial competencies (Gibb, 2002). Besides the common economic development and job creation related reasons to promote entrepreneurial education, there is also a less common but increasing emphasis on the effects entrepreneurial activities can have on students' as well as employees' perceived relevancy, engagement and motivation in both education (Surlemont, 2007) and in work life (Amabile and Kramer, 2011). Finally, the role entrepreneurship can play in taking on important societal challenges (Rae, 2010) has positioned entrepreneurial education as a means to empower people and organizations to create social value for the public good (Volkmann et al., 2009; Austin et al.,

2006). The strong emphasis on economic success and job creation has indeed propelled entrepreneurial education to a prominent position on higher education level, but not as an integrated teaching practice for all students on all levels. So far the main focus has been on elective courses and programs for a few upper secondary education and university students already possessing some degree of entrepreneurial passion and thus self-selecting into entrepreneurial education (Mwasalwiba, 2010). Thus, also the *why* question of the current entrepreneurial education discourse lacks coherence.

2.3.9.2 Evidence of impact

In line with the emphasis on economic impact, research on the effects of entrepreneurial education has primarily leaned on a narrow definition of entrepreneurship. The commonly desired outcome of an educational intervention is that the students sooner or later end up creating new companies that are growing and creating jobs. Almost no research has been conducted on educational interventions using a wider definition of entrepreneurship, assessing the resulting student engagement and learning (for some exceptions, see Moberg, 2014a; Nakkula et al., 2004). Furthermore, there are also some major methodological challenges in the assessment of entrepreneurial education, such as self-selection bias, difficulties in establishing causation between an intervention and resulting entrepreneurial behavior, and the long time gap between intervention and impact. These challenges have led to a situation where meta studies show that the quantitative evidence base for the impact of entrepreneurial education is largely inconclusive (Bae et al., 2014; Lautenschläger and Haase, 2011; Martin et al., 2013).

Qualitative case studies discussing the impact of entrepreneurial education are common, often taking the form of a self-assessment based single case study where the teachers responsible for the course or program outline what they did and how it worked for those involved (Warhuus and Basaiawmoit, 2014; Pittaway and Cope, 2007a). Such studies frequently lack a deeper decontextualization, categorization or contrasting of learners' own experiences to other relevant educational environments within or outside the entrepreneurial domain. Another common kind of study is the political or marketing oriented multiple case study, describing a number of different purposively sampled entrepreneurship programs or courses that in one way or another support the cause of the organization that conducted the study (OECD, 2009; Chatzichristou et al., 2015; Greene et al., 2015). Comparative case studies performed by less biased people who are not themselves financing or managing the courses or programs studied are however very rare (for some exceptions see Rasmussen and Sørheim, 2006; Warhuus and Basaiawmoit, 2014). This results in a situation where also the qualitative evidence base for the impact of entrepreneurial education is largely inconclusive through its lack of generalizability, robustness and trustworthiness.

2.3.9.3 Challenges to adoption

There are currently a number of challenges to infusing entrepreneurship into education. We will now focus more specifically on five main challenges; lack of definitional clarity, impeding organizational structures, lack of resources, assessment difficulties and fear of capitalism.

The field of entrepreneurial education lacks a philosophically grounded definition and classification of educational practices deemed "entrepreneurial" (Fayolle, 2013). Attempts to define the field are often done through enumeration of example teaching practices such as case

studies, simulations, business plan creation, film and drama production, project work, presentations / pitching, games, competitions, setting up real-life ventures, study visits, role plays, interviews with entrepreneurs, internships, mentoring, etcetera (Mwasalwiba, 2010; Kuratko, 2005; Jones and Iredale, 2010). This corresponds to a lack of coherent answers to the *what* and *how* questions of education, and has resulted in many practitioners having difficulties distinguishing the field from others (Sagar, 2013). A common question is whether entrepreneurial education is just a new label on previously advocated teaching practices, or if there is indeed a novel and relevant contribution that entrepreneurship can make to the educational domain. The important task of managing such confusion requires connecting tightly between entrepreneurship and education, a topic that is poorly understood today (Fayolle, 2013).

Even if teachers are often alone in the classroom with their students, their teaching practices are impacted by a number of organization related factors such as colleagues, school management, incentive structures, assessment practices and organizational culture. Sagar (2012) has uncovered a number of challenges impacting teachers' ability to adopt entrepreneurial education, such as lack of clear and supportive goals from management, unflexible time schedules for class, demotivating scepticism from colleagues and lack of much needed professional development. Robinson and Shumar (2014) have also pointed out the incompatibility between entrepreneurial education and the currently strong "performativity" culture in educational institutions of measuring "externally defined performance indicators" of alleged educational success (Priestley et al., 2012, p.87). This means that even if teachers want to infuse entrepreneurship into education, there are thus a number of organizational factors that will limit the issue of *how* to make it happen in practice.

Empirical research has shown that a lack of different kinds of resources is a common hurdle to diffusing entrepreneurial education (Surlemont, 2007; Mwasalwiba, 2010; Smith et al., 2006; Sagar et al., 2012; Berglund and Holmgren, 2013; Lackéus et al., 2011). Reseources that are lacking include time for teacher training, teacher planning and student coaching, as well as resources for stakeholder management resulting from a teaching practice that involves external stakeholders. Also student time is a scarce resource illustrated in the challenge of what to remove when adding something new (Elmore, 1996). This adds to the challenge of *how* to succeed in infusing entrepreneurship into education.

A lack of convincing evidence of desirable impact in terms of student learning signifies a key challenge to any educational change initiative in general (Elmore, 1996), and consequently also to the adoption of entrepreneurial education. Section 2.3.9.2 above illustrates that this assessment challenge consists of two key issues; (1) the methodological issue of designing studies that are robust and unbiased, and (2) the strategic issue of studying legitimate reasons to infuse entrepreneurship into education. Many of the existing impact studies neither focus on factors that teachers find important nor employ a method that yields trustworthy and robust findings (Moberg, 2014a; Rosendahl Huber et al., 2012; Martin et al., 2013). Consequently, many teachers reason that what might perhaps be good for the economy long-term is not necessarily good for student learning short-term, thereby dismissing entrepreneurial education as an experiment they prefer not to be part of. The assessment difficulties of entrepreneurial education also impact teachers in their daily work of attempting to infuse entrepreneurship into

education. Assessing students is mandatory in today's performativity based educational institutions (Robinson and Shumar, 2014), and tolerance for teaching practices that are difficult to assess is therefore low. In sum the assessment challenge leads to problems both in the question of *how* to infuse entrepreneurial education and in the more general question of *why* infusing something that lacks convincing evidence.

Entrepreneurial education has been stated to promote capitalism through its alleged connections to neoliberalism (Erkkilä, 2000, p.124-126). Neoliberalism celebrates market mechanisms through privatization, competition through the exercise of 'freedom of choice' and self-sufficient individuals taking own responsibility for their life's necessities (Castree, 2010). When entrepreneurship is infused into education with its discourse of empowering students to take initiatives and see opportunities, teachers often react strongly and negatively on what they perceive as an attempt to turn their students into capitalists (Berglund and Holmgren, 2013). This leans on a popular and simplified view among teachers of entrepreneurs as egoistic, heroic and individualistic individuals (Korhonen et al., 2012; Ogbor, 2000). This is in line with a view of humans as *homo oeconomicus*, which was discussed at length in section 2.2. This means that infusing entrepreneurship into education often results in a value clash between economic and humanistic values, leading to significant challenges and resistance among teachers, questioning *why* they should adopt something that clashes with their values (Johannisson, 2010).

It is evident that teachers aiming to infuse entrepreneurship into education frequently run into a plethora of challenges. These challenges are all related to confusion around the key questions of *what* to do, *how* to do it and *why*. While existing educational philosophies outlined here have indeed provided coherent sets of prescriptive answers to these questions, these answers are arguably not connected to entrepreneurship in general or to new value creation in particular, nor to any of the key entrepreneurial aspects described here such as entrepreneurial methods, entrepreneurial interactions with external stakeholders, entrepreneurial altruism in terms of doing something good for someone else or entrepreneurial learning through emotional events. The existing educational philosophies, particularly experiential and progressive education, rather seem to cause more confusion than remedy for teachers wanting to infuse entrepreneurship into education. Teachers are made to believe that any activity which is active, team-based or self-directed is thereby entrepreneurial, or that any kind of study visit outside the own school building is entrepreneurial. This is further aggravated by enumeration based definitions of entrepreneurial education consisting of a large number of progressive and experiential education practices with few obvious generic features related to or grounded in entrepreneurship apart from business plan writing and venture creation. All this calls for a new educational philosophy grounded in entrepreneurship that can provide teachers who want to infuse entrepreneurship into education with clarity, guidance and entrepreneurship grounded support in terms of answers to the questions of *what* to do, *how* to do it and *why*. We will now look at the methods and resulting papers that preceded the articulation of such an educational philosophy.

3 Methodology

3.1 Research philosophy and approach

Social science in general and educational research in particular suffer from a divide between objective and subjective research philosophies (Pring, 2010; Sayer, 2010). A rigorous and allegedly objective search for "truth" and general laws through quantitative surveys and systematic observation is often put against a qualitative examination of the subjective viewpoints that individuals express when trying to make sense of their own unique and context dependent experience. Examples of the objectivist tradition include the evidence based movement in educational research, trying to uncover what "works" through randomized controlled trials inspired by methods used in medical research. It has received strong support and funding worldwide in the last couple of decades, but also heavy critique from leading education scholars (Slavin, 2002; Olson, 2004; Reeves, 2011; Biesta, 2007; Noddings, 2007; Cuban, 2009). Examples of the subjectivist tradition include small-scale phenomenological work applying single case study and interview techniques to explore beliefs and interpretations of individuals acting in unique situations. While indeed capable of providing interesting results, such research is seldom generalizable beyond the studied environment and often fails to guide practitioners and policymakers due to its small scale and fragmented nature (Pring, 2010). This leads to a situation where attempts to quantify the subjective and meaning-laden experience of education are deemed absolutely necessary by some and absolutely unacceptable by others.

In this thesis the position I have adopted in order to try to remedy this challenge is best illustrated by the term "critical realism" as outlined by Bhaskar (1979), Little (1991) and Sayer (2010). While Bhaskar is the initiator of the critical realism movement, Sayer's account of critical realism has been deemed the most detailed and comprehensive (Easton, 2010), and Little's account of the key term "causal mechanisms" has been deemed particularly accessible (Hedström and Ylikoski, 2010). Critical realism could be viewed as an intermediate position between objectivist and subjectivist positions, thereby constituting a potential bridging research philosophy. The ontological position of critical realism is that there is indeed a reality independent of the observer, but that reality is nevertheless partly socially constructed and thereby not easily measurable (Easton, 2010). Emphasis is on lawlike regularities on a micro level, labeled "causal mechanisms", impacting individual actions and interpretations in complex ways on micro level and thereby at times leading to more or less weak regularities observable on macro level. Instead of claiming that cause C led to effect E governed by a general macro level law, a causal mechanisms model stipulates that there is a series of causal mechanisms or events E_i leading from cause C to effect E (Little, 1991). Elster (1989) has described it as a method for opening up a black box to show "the cogs and wheels of an internal machinery" (Hedström and Ylikoski, 2010, p.51). The focus on studying such events stipulated by critical realism suits the research aims of this thesis well, given that entrepreneurship scholars have pointed at the critical role momentary emotional events play in entrepreneurial learning (Cope and Watts, 2000; Rae, 2013). It is also in line with recommendations by Edmondson and McManus (2007, p.1163) to focus on "coherent stories of experience" when a research area is in a nascent phase, which is arguably the case with entrepreneurial education.

Easton (2010) states that a suitable research approach for critical realists is to employ a pragmatism based process of abduction (Peirce, 1903). Peirce (1998, p.216) has claimed that abduction "is the only logical operation which introduces any new idea; for induction does nothing but determine a value and deduction merely evolves the necessary consequences of a pure hypothesis". Dubois and Gadde (2002, p.554) have described abductive research as a process where "theoretical framework, empirical fieldwork, and case analysis evolve simultaneously". Figure 7 is taken from the research plan compiled at the outset of this research in 2011. It illustrates the journey well, showing an arrow describing the process leading up to the articulation of a tentatively new educational philosophy grounded in entrepreneurship. The evolving analytical framework was reshaped many times throughout the process, representing "articulated preconceptions" (Dubois and Gadde, 2002, p.555) that were successively revised based on discoveries made through empirical fieldwork, analysis and theory-informed interpretation. The latest version of the analytical framework is outlined in chapter 5, presented as a tentatively new educational philosophy grounded in entrepreneurship as new value creation. It was thus abductively generated over a period of five years, based on many iterations between theory and practice. None of the appended papers articulate this process of abduction in a visible way. Such hiding of the actual abduction process has been explained by Dubois and Gadde (2014) to be necessary due to a reluctance among scholarly journals to accept manuscripts reporting a messy and non-linear research process.
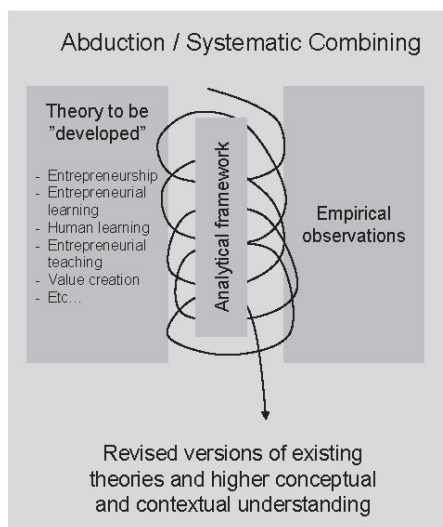
Figure 7. Abductive research based on developing an analytical framework. Iterations oscillate between theory and practice and result in multiple revisions of an analytical framework. Abduction and systematic combining are outlined further by Dubois and Gadde (2002; 2014).

3.2 Research strategy

The research strategy applied here can be described as mostly insider action research and to some extent case study research. Action research is when a researcher combines active participation in changing an organization to the better with using insights generated to add to scientific knowledge (Coghlan and Shani, 2014). The researcher can take part in the process as a full member of the organization or as a close collaboration partner to key change agents inside the organization. The insider status of the researcher in such endeavors can give a more natural access to data and allows for articulation of generalizable knowledge emerging from

experience. Such knowledge generation is often unavailable to outsiders due to its tacit, segmented and complex nature (Brannick and Coghlan, 2007; Pring, 2010).

According to Pring (2010), action research is particularly suitable in educational research since it takes into account the beliefs and values held by the practicing teachers testing out a hypothesized set of new design principles. Pring argues for setting up "laboratories" where teachers are part of the research process, in terms of searching for what "works" by formulating hypotheses, putting them to the test in their daily practice and successively reformulating them. Those hypotheses that survive a constant attempt to refute them by practicing teachers end up constituting the basis of a new theoretical foundation for teaching. Such an iterative search for what "works" is thus not viewed in terms of measurable outcomes on macro level as in the evidence based educational research tradition, but rather focuses on what "works" for teachers in practice on a micro level.

Action research is often undertaken in action-and-reflection cycles, allowing for theory and action to inform each other recurrently. According to Coghlan and Shani (2014), such research should be evaluated on its own terms rather than on terms stipulated by for example a positivist research paradigm. An action researcher needs to show how cycles were conducted in collaboration with others, how multiple sources of data were used for data collection, how theory and action informed each other, and how assumptions and interpretations continuously were tested for wider relevance throughout the project (Coghlan and Shani, 2014, p.526). Figure 8 outlines how the two main action research cycles leading up to this thesis were conducted. In Table 3 these action research cycles are related to some requirements of high quality action research outlined by Coghlan and Shani (2014).
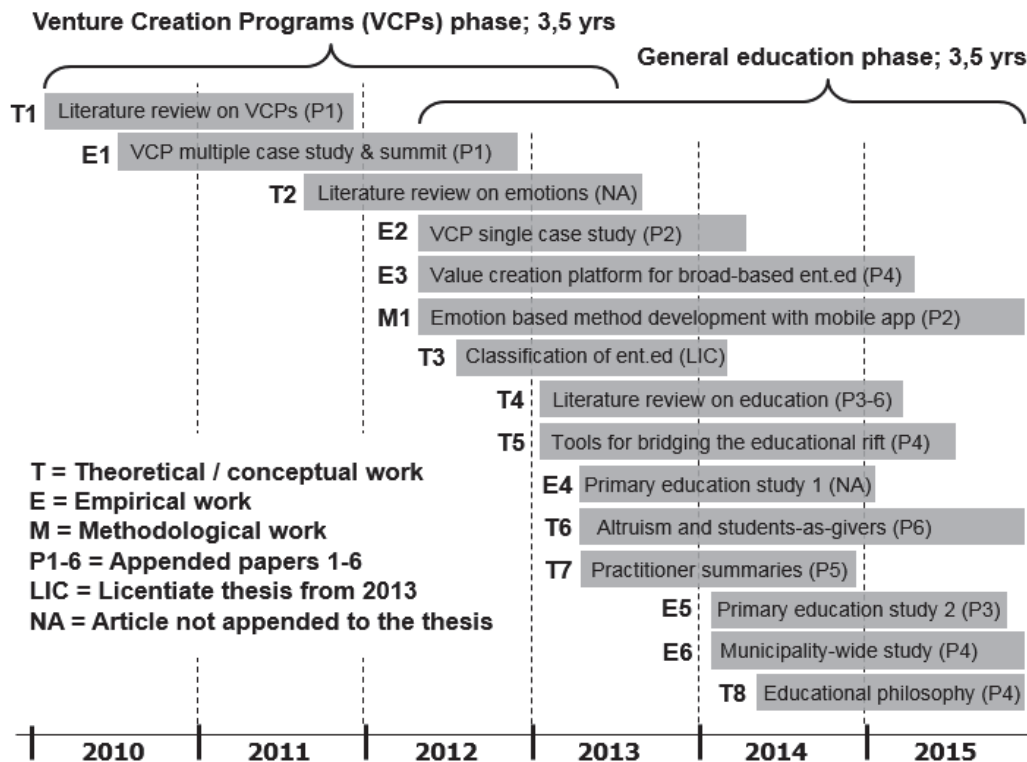
Figure 8. Gantt chart outlining steps taken in time. *The chart outlines the scholarly journey leading up to the proposal of a tentatively new educational philosophy grounded in entrepreneurship.*

Table 3. Some important quality aspects of the action research conducted. *Different quality aspects of action research outlined by Coghland and Shani (2014) are shown in column 1 and related to the two main action research cycles leading up to this thesis.*

Key aspects	Research cycle 1 – VCPs	Research cycle 2 – general education
How were the action research cycles conducted?	Two empirical interventions were conducted, see E1-E2 in Figure 8. Students were followed during the full duration of two years at one of the VCPs. Teachers at 14 VCPs around the world were involved in various activities developing their programs while collecting data.	Four empirical interventions were conducted, see E3-E6 in Figure 8. In E3, E4 and E6 students were followed for the duration of 2-4 months of an educational intervention designed by a team involving one researcher. A control group of students was also followed in the E5 study for 3 months.
Which role did the researchers take in the collaboration?	The researchers were part of the faculty team at one of the VCPs studied in E1 and at the VCP studied in E2. One of the researchers was a former student at a VCP thus possessing deep insider knowledge, but also potential bias.	The researchers were part of the change team designing the educational interventions in E3, E4 and E6. They were assigned as external evaluators in the E5 study, thus not taking part of designing the educational intervention.
How was insider status achieved?	In E1, a two-day focus group meeting was held in Gothenburg in 2012 with key managers from 14 VCPs around the world, trying to develop the group's thinking around VCPs. In E2 the researcher was teacher and former student with deep program insights.	In E3, E4 and E6 a change team was set up involving a researcher and key change agents working at the organizations involved. E5 was not an action research study, but a case study.
How were multiple streams of data collected?	Interviews and focus group session with teachers at 14 VCPs. Longitudinal interviews with students at one VCP. Experience sampling from students at one VCP using a mobile app. Case descriptions written by 14 program managers, triggered by the researcher.	Interviews with change agents, students and teachers at E3-E6. Focus group sessions with students at E3. Interviews with parents at E4. Experience sampling from students at E3-E6 using a mobile app. Essay survey with four change agents at E6.
How did theory inform action and vice versa?	In E1, the selection of VCPs was based on a definition developed by the researchers of what a VCP is. This allowed for contrasting and co-development of programs previously unaware of each other. In E2, the longitudinal interviews helped students sense-make their experience of the VCP and change their actions accordingly.	In E3 and E6 the researcher's emerging understanding of the importance of value creation for learning informed the educational designs. In E4 the case was selected based on its strong emphasis on value creation based learning. E5 was not an action research study, and theory did not inform the sampling or the design of the interventions studied.
How were interpretations continuously tested and challenged in regards to an assumed broader relevance?	Interpretations were tested on participating students during 2012-14, and on key managers of 14 VCPs in 2012. A website was put online in 2012 and onwards listing all VCPs identified in the study and associated blog posts and articles (see www.vcplist.com), generating feedback from people in many countries around the world. In 2015 a survey was sent out to students at the VCP in E2 to test the idea of value creation based learning.	Three different practitioner papers (T7 in Figure 8) were written in 2013-14 to elicit reactions to the idea of value creation based learning. Two Youtube videos outlining key concepts were made in 2013-2015 that reached around 2500 viewers. Some 30 keynote speeches were held from 2013-15 where key concepts and ideas outlined in T3, T5, T6, T7 and T8 were tested. A blog was used to elicit feedback on interpretations (see www.vcplist.com/blog).

3.3 Action research cycle 1: Venture Creation Programs (VCPs)

The first action research cycle leading up to this thesis was focused on a particular kind of entrepreneurship education program labeled Venture Creation Program (VCP), and consisted of two empirical studies, E1 and E2 outlined in Figure 8. The purpose was to increase the understanding of how, when and why people develop their entrepreneurial competencies. A VCP was defined as a formal credit-giving educational program where a team of students is required by curriculum to try starting a real-life venture with the explicit intention to continue running the venture post graduation as lead entrepreneurs and co-owners (see appended paper 1, and also Williams Middleton, 2013). By definition it is thus the last formal step in the education system for students opting to continue running the newly founded business. Such a program balances on the border between formal entrepreneurial education and informal entrepreneurial learning, and can therefore contribute with new insights in both these spheres, given its rare dual characteristic of educational environment and real-life entrepreneurship experience. As it is the educational setting that artificially triggers real-life entrepreneurial activity and learning, with realistic emotional and financial ownership of the lead entrepreneurs, the causal mechanisms of how people develop entrepreneurial competencies can be studied in unique ways, perhaps even more so than when studying entrepreneurship as practice. VCPs thereby constitute a rare "clinical" laboratory environment (Schein, 1993; Pring, 2010), potentially giving insider access to a variety of key insights around entrepreneurial learning processes. These methodological aspects are further outlined in appended papers 1, 2 and 3.

3.3.1 A study of 14 entrepreneurship programs (study E1 in Figure 8)

In this study, the first step taken was to establish a working definition of a VCP. This definition was then used to identify 18 different VCPs in Europe, North America and Asia-Pacific through snowball sampling, previous research and internet resources. 14 VCPs agreed to attend a two-day focus group meeting in Sweden, with the dual purpose of establishing a network of VCP educators that could learn from each other and at the same time studying the programs searching for generalizable insights. All participants were asked to write a case description based on a provided template, resulting in a folder briefly presenting 14 different VCPs (Lackéus, 2012). A website was also put online outlining all programs identified in the study (see www.vcplist.com). In the next step, managers at 10 VCPs were interviewed in semi-structured interviews to uncover aspects of how VCPs contribute to bridging the gap between entrepreneurship education and technology transfer, see appended paper 1. Such a gap could be viewed as a particular instance of the theory versus practice gap explored in appended paper 4. Obstacles to establishing a VCP were also explored in this study, see conference paper by Lackéus et al. (2011).

3.3.2 An in-depth study of an entrepreneurship program (study E2 in Figure 8)

This study was initiated after the E1 study, aiming to further test previously developed assumptions and interpretations. A master program at Chalmers University of Technology in Sweden was selected for in-depth study due to its well-documented strong capacity to develop entrepreneurial competencies (Hofer et al., 2010; Rasmussen and Sørheim, 2006; Lindholm Dahlstrand and Berggren, 2010; Lundqvist, 2014; Lundqvist and Williams Middleton, 2008). This allowed for observing entrepreneurial competence development in its making, instead of

through hindsight. 14 students at the program were followed longitudinally for two years, equipped with a mobile app used to sample emotional events that students experienced due to the educational intervention. Multiple interviews were conducted with each student, focusing on recently experienced emotional events sampled with the app. The interviews were recorded, transcribed and analyzed using text coding software in order to link the reported critical and emotional learning events to students' developed entrepreneurial competencies. A total of 55 one-hour interviews were conducted, recorded and transcribed verbatim. An analysis of nine of these interviews resulted in appended paper 2, summarized in chapter 4.

3.4 A new method for linking teaching to learning outcomes

Study E2 resulted in the development of a new method for establishing causal relations between a teacher's intervention and students' resulting entrepreneurial learning. Key aspects of this method are briefly outlined below. Appended papers 2 and 3 contain more in-depth descriptions. The method was used in studies E3-E6 outlined in Figure 8. Given the long-standing debate on how to evaluate education and its implications on which educational approaches reach wider adoption, such a method could be useful also in other kinds of educational research.

3.4.1 The proxy theory

The proxy theory of assessing entrepreneurial education, developed through study E2, could be viewed as an application of a causal mechanisms perspective. It stipulates that emotional and critical learning events (i.e. causal mechanisms M_i) can constitute a proxy between an educational intervention (i.e. cause C) and the developed entrepreneurial competencies among students (i.e. effect E). First, strong links are empirically validated between typical emotional learning events and the resulting development of entrepreneurial competencies (see how in appended papers 2 and 3). Then, once such links are established, a general assessment strategy can take advantage of these established links. Instead of trying to assess the evasive entrepreneurial competencies, assessment efforts rather focus on measuring the prevalence of key emotional events among students. The resulting development of entrepreneurial competencies is assumed to happen, based on previously established empirical links. Measuring the prevalence of such emotional events is less complicated to manage for teachers and also more reliable than trying to use any of the available psychology based survey instruments for evaluation of entrepreneurial competencies. Challenges associated with such instruments are further outlined in appended paper 2.

As an example, a web of causal mechanisms was evidenced empirically and with high ecological validity in appended paper 2. It was shown how educationally induced interaction with the outside world, uncertainty in learning environment and a team approach triggered increased self-efficacy, uncertainty tolerance and self-insight respectively. While still exploratory research, the proxy theory of assessing entrepreneurial education has also been corroborated in an empirical study by Kjernald (2014).

3.4.2 An app informed interview technique linking teaching to learning

Building on the proxy theory, a mixed methods approach was first developed in study E2 and later applied in studies E3-E6 (see Figure 8). First, students' emotional events were captured in

the very moment they were experienced through a mini-survey in a mobile app tailored for the purpose. In study E2, each student reported on average 50 such emotional events over a period of 1-2 years. These survey responses were then used in two ways; as a sampling strategy to determine which students to interview and as a way to construct tailored interview templates for each interview. The first step allowed for selection of interviewees who had experiences relevant to the research conducted. The second step allowed interview discussions to be focused on emotional events that were known to have occurred, and that were of particular interest given the purpose of the research. Both of these methodological steps significantly increased the signal to noise ratio of interviews conducted. In each interview, students were first asked to give a detailed account of an emotional event they had reported in the app, and were then asked to outline in detail what they learned from it. Such entities of emotional events and their resulting learning outcomes were later harvested and quantitatively counted in the interview analysis phase. All interviews were recorded, transcribed and coded using two coding frameworks; one for emotional events and one for entrepreneurial competencies (frameworks are outlined in appended papers 2 and 3, and in Arpiainen et al., 2013). The most frequent links between emotional events and learning outcomes were deemed to constitute a generalizable pattern between emotional events and learning outcomes. The linkage backwards from emotional events to educational design was done logically in a quite straightforward process. Once the most powerful emotional events in terms of resulting learning had been identified it was evident which teacher interventions had triggered them (see for example Kjernald, 2014). See appended papers 2, 3 and 4 for details on the empirical studies. See also Lackéus and Sävetun (2014).

3.4.3   Spin-out of app instrument into a venture

Developing an app instrument tailored to the requirements of this research required financial and human resources not available at Chalmers University of Technology for such a purpose. After study E2 and E3, it was therefore decided to put further development of the app instrument in a spin-out venture started for this purpose, located at the Chalmers Innovation university incubator. The resulting app, branded under the name LoopMe, was then used in studies E4, E5 and E6 to generate data and guide interviews. A number of additional projects are planned and underway using the app instrument, both within and outside the field of entrepreneurial education.

The app instrument turned out to act as a system (cf. Von Bertalanffy, 1950), with input in terms of goals and themes, a dual process of teacher-student interaction and experiential evaluation instrument, and output in terms of personal and organizational development, see Figure 9. It turned out to have three different uses; as a research instrument, as a tool for educators and as a tool at work. In terms of research the system allowed users to share their daily experiences with people they trust (such as teachers, managers, etc) while at the same time opening up for researchers to get unique access to experiential and categorized data on critical emotional events, thought patterns and actual behaviors. In classrooms where the system was deployed, the many students involved acted as participant observers who notified the researcher of any significant events occurring in the classroom. In any given classroom where more than 10% of the students were active users of the app instrument, most events relevant for

the research purpose were reported through the app instrument by at least one student, allowing researchers to pinpoint people to interview coupled with relevant events to discuss with them.

For educators the system was used for formative assessment, teacher peer learning between colleagues, systematic quality work and impact evaluation. Teachers, teacher teams, school managers and educational change agents on multiple levels found new and innovative kinds of use for the system in their daily work. For students the system became an appreciated digital channel for sensitive discussions with their teachers as well as feedback to and from their teachers. A possibility to send information anonymously from students was included and appreciated by students. For people working at corporations the system turned out to be useful to facilitate a variety of different kinds of communication between the managers and the employees.
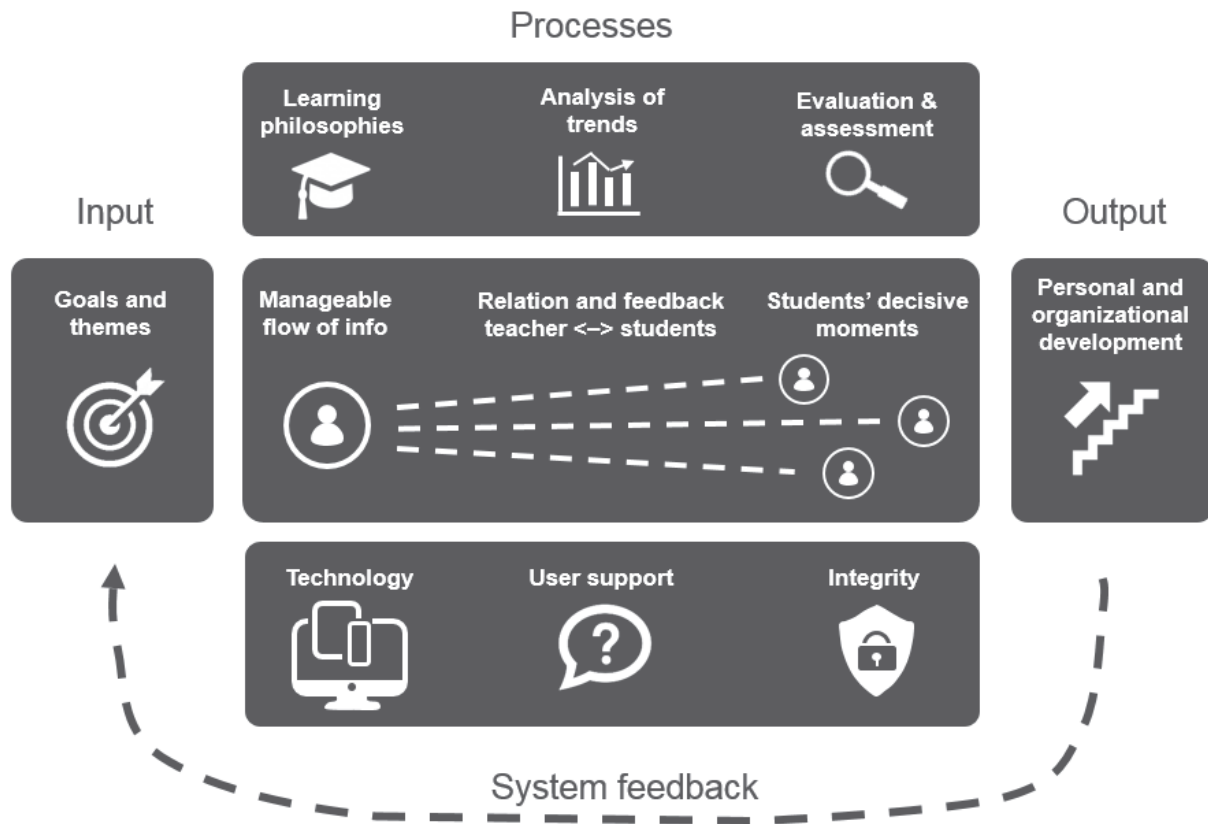
Figure 9. The app instrument "LoopMe" viewed as a system. Input consisted of goals and themes. Two processes consisted of relation between teachers and students as well as evaluation processes. Output consisted of personal and organizational development. The system turned out to be useful for research, for education and at workplaces.

3.5 Action research cycle 2: General education

The insights generated in action research cycle 1 on how entrepreneurial competencies can be developed through action-based entrepreneurial education informed the second action research cycle. Here focus was put on education more in general. Study E3 focused on university-wide entrepreneurial education (cf. West et al., 2009), both in terms of in-curricular and extra-curricular activities. Study E4 followed an existing value creation focused intervention in two lower secondary schools. Study E5 was a control group study to explore how entrepreneurship

had been infused into primary and lower secondary education in Sweden so far, not taking into account any findings generated in the research reported in this thesis. Study E6 was initiated in early 2014, is still on-going, and involves a municipality who is attempting a wide implementation at 130 primary and secondary schools of the tentatively new educational philosophy proposed here. The methods applied in each of these studies are briefly outlined below.

3.5.1 A new entrepreneurial education platform (study E3 in Figure 8)

In 2011 the Swedish non-profit foundation Drivhuset initiated the development of an entrepreneurial education platform to better inform their support activities towards student entrepreneurs. The author of this thesis was member of the project team developing the platform. It was designed as five one-day workshop sessions spread out across 2-3 months, complemented by value creation assignments towards key external stakeholders to be completed between each workshop. The platform was based on a careful selection of a dozen different entrepreneurship methods. Since the launch of the new educational platform in 2013, it has been used for supporting and educating around 2000 people in Sweden. Common participants have been student entrepreneurs, but the platform has also been used for supporting unemployed people, youth summer entrepreneurs and employees at private as well as public organizations. Data has been collected about participants on three different occasions, involving students at a performing arts school, students at an engineering school and unemployed people. The data collection method outlined in section 3.4 was applied, complemented with focus group interviews. While no paper focusing specifically on this study has yet been written, insights generated have informed the articulation of conceptual propositions outlined in appended paper 4. This study constitutes an early attempt to apply the tentatively new educational philosophy proposed in this thesis, in that participants were asked to iteratively test an increasingly elaborated value proposition to external stakeholders in between each of the five workshops.

3.5.2 A study of value creation in compulsory education (study E4 in Figure 8)

Study E4 was the first compulsory education application of the method outlined in section 3.4. Two different lower secondary schools participated in the study, one of which had an articulated strategy to be an entrepreneurial school. Students in both schools were given a group assignment to produce a radio program of one hour to be broadcast locally in their municipality, constituting an assignment to create something of value (a radio program) to people outside their school (listeners). Twelve students volunteered to participate in the study, and were all 13-14 years old. They were equipped with an app and asked to report any emotional events triggered by the assignment, resulting in a total of 33 app reports during the two months period of the intervention. Three one-hour app-informed interviews were made with seven of the students during and after the intervention, selected based on app reports deemed relevant for the purpose of the study. The 21 resulting interviews were recorded, transcribed and analyzed using the method outlined in section 3.4. Additional semi-structured interviews were made with the teachers and parents to three of the participating students, in order to corroborate findings. Findings were summarized in a Swedish report not appended to this paper (Lackéus and Sävetun, 2014). Just like in study E2, multiple links were found in study E4 between emotional events and developed entrepreneurial competencies. The short duration of the intervention in

study E4 compared to E2 resulted in a different set of links. Interaction with outside world and teamwork were found to be key emotional events triggering the development of a variety of entrepreneurial competencies.

3.5.3 A control group study in compulsory education (study E5 in Figure 8)

The dissemination of study E4 attracted interest from Swedish National Agency of Education, who then asked the research team to replicate the E4 study in a larger study comprising three different schools deemed to be particularly entrepreneurial, two on primary education level and one on lower secondary education level. 83 students aged 10-16 years old were equipped with a developed version of the emotional event app, generating a total of 1058 app reports. 25 of these students were selected for interviews based on where interesting app reports could be found illustrating strong emotional events related to educational interventions. These interviews were focused on issues raised in students' app reports and lasted for 45 minutes each. Given the finding of an almost complete lack of student interaction with the world outside school or any kind of value creation to external stakeholders in the studied learning environments, study E5 could be regarded as a control group study. It illustrated an absence of "entrepreneurial" education in Swedish compulsory education, if defined in accordance with entrepreneurship viewed as new value creation for others. However, some rare examples of value creation assignments still contributed with illustrative evidence of effects in terms of student learning and motivation. Results are outlined in appended paper 3.

3.5.4 Implementation of a new educational philosophy (study E6 in Figure 8)

In 2014 the local government of Sundsvall decided to initiate a project aiming to integrate entrepreneurship into the entire educational sector of Sundsvall, in line with requirements outlined in Sweden's national curriculum documents. The people responsible for the implementation project then initiated a collaboration with the author of this thesis, in order to apply the educational philosophy articulated in chapter 5 in all schools in Sundsvall. The tentatively new educational philosophy was chosen as the main strategy for infusing entrepreneurship into public education. The project managers also initiated a collaboration with Drivhuset (Study E3), using their entrepreneurial education platform to train key municipality stakeholders in value creation. As of 2015 the project is still in an early phase. Around 300 people have been educated through the Drivhuset educational platform, primarily employees such as school managers, principals and teachers. Eight specialists employed at the municipality are championing the process, and have received special training in theoretical as well as practical perspectives, and have also contributed significantly to the development of the tentatively new educational philosophy. Some 50 teachers have so far started practicing value creation assignments with their students, putting the number of students being explicitly involved to around a thousand so far.

Study E6 is a deeply action oriented research project, where the author of this thesis has been appointed "scientific leader" of the project. Insights generated have been documented in written form by the project managers over the course of the almost two years the project has been up and running. Two surveys have also been administered to four key change agents, asking them to reflect on the conceptual propositions outlined in appended paper 4. While no explicit write-up of this study has been made yet apart from appendix in appended paper 4, it constitutes an

early empirical validation of the tentatively new educational philosophy in terms of stakeholder engagement and buy-in among the many teachers, principals, school managers and students having been involved so far. The study has also significantly informed the articulation of the tentatively new educational philosophy described in chapter 5.

3.6 On-going studies

The empirical studies mentioned above are all reported in more or less detail in research papers appended to this thesis. In addition there are also three on-going studies that have not yet been documented in a research paper.

3.6.1 A European study of student value creation (study O1 in Table 4)

Study O1 is an action research study financed by European Union where three different schools in Sweden, Norway and Turkey are compared and contrasted. A total of around 20 teachers and 250 students 10-16 years old are involved. The teachers have been trained in value creation as educational philosophy and practice in early 2015. They have then designed a wide variety of value creation assignments for students, which are being put to practice in 2015-2016. The impact on students will be followed longitudinally for 1,5 years in 2015 and 2016 employing the app-based sampling and interviewing method outlined in section 3.4. Three waves of student interviews are planned.

3.6.2 A Swedish study of student value creation (study O2 in Table 4)

Study O2 is a multiple case study where some 50 teachers from eight different municipalities around Sweden were selected based on how well their current teaching activities are in line with value creation as educational philosophy as articulated in chapter 5. It is a continuation of study E5, and was commissioned in 2015 by Swedish National Agency for Education. Data from around 1000 students will be collected in late 2015 and early 2016 applying the app-based sampling and interviewing method outlined in section 3.4. The data will be analyzed in 2016.

3.6.3 A regional study of entrepreneurial education (study O3 in Table 4)

Study O3 is a multiple case study where data was collected in 2014-2015 employing the app-based sampling and interviewing method outlined in section 3.4. Participants were 100 students on lower secondary education level aged 12-15 years old, 44 students on upper secondary education level aged 15-17 years old and 17 students on tertiary education level aged 18 years or more. These students did a total of 1337 app reports in a period of three months. 53 of the students were interviewed, and 44 of these interviews were coded using the coding frameworks outlined in appended paper 3. This data is currently being analyzed.

To summarize empirical studies conducted or on-going and corresponding research strategy applied, Table 4 outlines four different kinds of empirical work related to four different levels of education, and shows how the three on-going studies (O1-O3) complement previous work (E1-E6). In Table 4 some related empirical work is also shown that has surfaced during the research endeavor. Some of it was inspired by this research and some work was conducted independently of this work.

Table 4. Four different kinds of empirical data on four different educational levels. *The table summarizes the six reported studies E1-E6 and the three on-going studies O1-O3, relating them to which levels of education they span. The table also shows some work that was inspired to or identified as value creation in education during the research.*

Kind of empirics	Compulsory education level (age 7-15)	Upper secondary education level (age 15-18)	Tertiary education level (age 18-)	Continuing education level
Action research empirics	• Study E5 and E6 • On-going study O1	• Study E3 and E6	• Study E1 and E2	• Study E3
Case study empirics	• Study E4 • On-going study O2 • On-going study O3	• On-going study O2 • On-going study O3	• On-going study O3	• On-going study O3
Empirics independently inspired by this research	• Municipalities of Varberg and Växjö • Ready Unlimited in UK	-	• VCPs in Tromsö, Colorado and Lund	-
Empirics independently showing similarities	• Some 15 examples around Sweden collected through a survey	• Junior Achievement / Young Enterprise • Mini-Enterprise in Schools Project (MESP)	• Team Academy, Finland • Network of VCPs around the world	-

4 Summary of appended papers

In this chapter the six papers appended to this thesis are summarized. Papers 1 through 3 are empirical. Paper 4 is conceptual but leans heavily on abductive work involving three different empirical settings outlined in appendix. Paper 5 is a practitioner oriented paper. Paper 6 is conceptual.

Table 5. Appended papers. *A summary of the six papers appended to this thesis.*

No	Paper	Author(s)	Status	Subject / relevance	Type/role
1	Venture creation programs – bridging entrepreneurship education and technology transfer	Lackéus, M., Williams Middleton, K.,	Published 2015 in Education + Training, 57(1), p.48-73	Outlines ten cases of venture creation programs where the tentatively new educational philosophy was derived from.	Empirical paper / Equal author
2	An emotion based approach to assessing entrepreneurial education	Lackéus, M.	Published 2014 in International Journal of Management Education, 12(3), p.374-396	Outlines the methodology used for substantiating the tentatively new educational philosophy. Contributes with empirical evidence for the tentatively new educational philosophy.	Empirical paper / Sole author
3	How entrepreneurial is Swedish compulsory education?	Lackéus, M., Sävetun, C.	Submitted to Journal of the Learning Sciences	Contributes with empirical evidence for the tentatively new educational philosophy outside the higher education domain.	Empirical paper / First author
4	Bridging the traditional - progressive education rift through entrepreneurship	Lackéus, M., Lundqvist, M., Williams Middleton, K.,	Submitted to International Journal of Entrepreneurial Behavior & Research	Conceptual paper defining and theoretically substantiating the philosophy. Appendix 1 also contains three empirical cases the philosophy was developed from.	Conceptual paper / First author
5	Entrepreneurship in Education – What, Why, When, How	Lackéus, M.	Published 2015 by OECD as a background paper	Summarizes key ideas developed in the research process, allowing for external stakeholders to provide developmental feedback.	Summary paper / Sole author
6	Two flavors of entrepreneurial education	Lackéus, M.	Presented at RENT 2015 in Zagreb, Nov 19-20	Outlines the student-as-giver perspective which is central to the tentatively new educational philosophy.	Conceptual paper / Sole author

4.1 "Venture creation programs – bridging Entrepreneurship Education and Technology Transfer"

Appended paper 1 explores how university-based entrepreneurship programs, incorporating real-life venture creation into educational design and delivery, can bridge the gap between entrepreneurship education and technology transfer within the university environment. Based on a literature review and snowball sampling over a two-year period, 18 entrepreneurship education programs were identified as Venture Creation Programs (VCPs). Ten of these programs were selected for case study through interviews and participatory observation during a two-day workshop. Empirical findings were iteratively related to theory within entrepreneurship education and technology transfer. This paper is the first published multiple case study of VCPs.

4.1.1 Results

Findings illustrate bridging capabilities of VCPs across five common themes in the studied programs; a focus on experiential learning, interdisciplinarity, process-based curriculum, external network of resources and contribution to regional economic development. This illustrates the potential benefits of closer collaboration between entrepreneurship education and technology transfer in a university environment. The VCPs were found to create value for society through generation of new and growing start-ups, through an entrepreneurially equipped graduate population, and through 'spin-through' of innovative ideas taken from industry and infused into the university environment.

4.1.2 Relevance for thesis

The paper illustrates how VCPs can bridge a rift of multiple dualisms such as theory versus practice, reflection versus action, learning versus value creation and education versus real-world learning. It thus connects to appended paper 4 and its proposal to bridge an educational rift of problematic dualisms through the articulation of a tentatively new educational philosophy grounded in entrepreneurship. Appended paper 1 also contributes with empirical evidence from five different countries on two continents concerning the profound impact a value creation based educational practice can have on student engagement and learning. It thereby provides some answers to RQ1 in terms of usefulness of an educational philosophy grounded in entrepreneurship. The fact that VCPs were found to be very rare provide some guidance to RQ2 in terms of novelty of a deeply experiential value creation approach.

4.2 "An emotion based approach to assessing Entrepreneurial Education"

Appended paper 2 investigates links between emotional events and developed entrepreneurial competencies in a VCP. It represents a novel approach to assessing entrepreneurial education. A longitudinal design was applied following three engineering students during nine intensive months. Students were equipped with a mobile smartphone app used to report emotional events and critical learning events. Reports were followed up quarterly with semi-structured interviews. Links were identified through data analysis software NVIVO.

4.2.1 Results

Findings indicate a large number of links between emotional events and developed entrepreneurial competencies. Three kinds of emotional events strongly linked to developed entrepreneurial competencies were interaction with outside world, uncertainty and team-work. These emotional events were linked to formation of entrepreneurial identity, increased self-efficacy, increased uncertainty tolerance and increased self-insight. These links represent early empirical evidence for three effective design principles of entrepreneurial education, and can also be used as indirect measures in assessment. This study also confirms venture creation programs as a suitable laboratory environment for studying entrepreneurship as experience.

4.2.2 Relevance for thesis

The paper contains the first published description of the app-based mixed methods research approach developed by the author and later applied in other studies leading up to the articulation of a tentatively new educational philosophy. The paper also contributes with more in-depth

empirical evidence on how a value creation focused educational practice impacts students on a deeply personal level. This contributes to answering RQ1 in terms of the usefulness of value creation as educational philosophy. The importance of some key factors in value creation as educational philosophy are also derived empirically in this paper; interaction with outside world, teamwork, and uncertainty in learning environment triggered by risk of failure. This relates to RQ2 in terms of what is new with value creation as educational philosophy, since it allows for the mechanisms of value creation based learning to be contrasted to existing educational philosophies.

4.3 "How 'entrepreneurial' is Swedish compulsory education?"

Appended paper 3 investigates the impact of an entrepreneurial education initiative on compulsory education level led by Swedish National Agency for Education. A wide definition of entrepreneurship as new value creation was applied, aiming to make people more entrepreneurial rather than making them start a business. 83 students were followed for one semester in three Swedish compulsory schools with a long history of entrepreneurial education. The methodology outlined in section 3.4 was applied in this study, building on mobile app based experience sampling and interviews.

4.3.1 Results

The findings show that the three schools investigated here were not as "entrepreneurial" as anticipated and advertised, if "entrepreneurial" is defined as creating value for others. Nevertheless, a set of entrepreneurial education practices and principles were identified and developed. The study contributes with empirical evidence on causal mechanisms for how letting students interact with outside stakeholders and create value for others can increase engagement, perceived relevance and deep learning. When students get to present their work to others who value it and benefit from it, the resulting feelings involve pride, increased self-efficacy and passion leading to increased motivation and improved learning. If given time and opportunity to repeat this, the students increase their effort, learn more in-depth and enter a positive self-reinforcing cycle of learning. Findings also show that not even teachers that were well-informed in entrepreneurial education principles were fully aware of the power of such an interaction and value creation based educational practice.

4.3.2 Relevance for thesis

The paper contributes with relevant empirical evidence from a different level of education and employing a wider definition of entrepreneurship than in appended papers 1 and 2. It contributes with evidence on how rare entrepreneurial education is in compulsory schools in Sweden, if defined as letting students create value to people outside their group or teacher, thereby qualifying the need for a tentatively new educational philosophy grounded in entrepreneurship (RQ 1). It also contributes with empirical evidence on the impact that value creation as educational practice can have on student engagement and learning in those few instances of entrepreneurial education encountered in the study. Further, a novel abductively developed method of assessing entrepreneurial education was tested empirically in this study, applying the spider diagram outlined in section 5.3.4. This diagram has proven to be able to facilitate both teacher and scholarly assessment of practical applications of the educational philosophy proposed in this thesis. This diagram thus contributes to answering RQ 2 in terms of what is

new with value creation as educational practice. The paper also represents the most elaborate use so far of the emotional events based method outlined in section 3.4 for linking teaching interventions to learning outcomes.

4.4 "Bridging the traditional – progressive education rift through entrepreneurship"

Appended paper 4 conceptually draws from insights within the field of entrepreneurship to suggest a tentatively new educational philosophy – *learning through creating value for others* – and demonstrates how it can bridge the rift between traditional and progressive education. Such an educational philosophy can also be used to facilitate embedding entrepreneurship into general education. As manifestations of the educational philosophy, three entrepreneurial tools - Effectuation, Customer Development and Appreciative Inquiry - are shown to be capable of mitigating many of the challenges inherent in bridging traditional and progressive education, such as teacher complexity, lack of resources, assessment difficulties, and student disengagement. While presented as a conceptual paper, many of the ideas outlined have emerged through the authors' active participation in empirical settings. Three of these settings are outlined in an appendix to the paper.

4.4.1 Results

The suggested educational philosophy was conceptually derived from commonalities among the three analyzed bridging tools. It was defined as teachers facilitating students' use of curriculum knowledge and skills to learn by creating something of value to at least one person outside the 'classroom'. It was illustrated how the tentatively new educational philosophy contributes to bridging the rift of traditional versus progressive education. It was also illustrated how this educational philosophy compares to some existing educational philosophies focused primarily on *learning-through* aspects but missing the *creating-value-for-others* aspects. Finally, it was proposed that the tentatively new educational philosophy allows for progressing beyond the common focus on teachers' attitudes to entrepreneurship by outlining purposeful and manageable entrepreneurial activities that teachers can let students do, leading to increased student motivation, developed responsibility-taking and deeper learning.

4.4.2 Relevance for thesis

The paper constitutes the main conceptual outline of the tentatively new educational philosophy proposed in this thesis. While a conceptual paper, the paper's appendix contains a detailed description of the three main action research settings where the abductive process of articulating the tentatively new educational philosophy took place. The paper also outlines three deliberately chosen entrepreneurial tools taken from the field of entrepreneurship, illustrating in considerable detail how the rift between traditional and progressive education can be bridged when teachers let students apply them in class. It further gives a detailed account of the educational rift as such, presented as consisting of five particularly challenging dualisms that teachers need to try bridging in their daily work. Finally, the paper outlines a Vygotskian psychological tools approach that has been instrumental in the abductive research process reported in this thesis. Being the paper where the tentatively new educational philosophy is qualified conceptually, this paper arguably contributes to answering both RQs of this thesis.

4.5 "Entrepreneurship in Education – What, Why, When, How"

Appended paper 5 clarifies some basic tenets of entrepreneurship in education, focusing on *what* it is, *why* it is relevant to society, *when* it is applied and *how* to do it in practice. It was written following a request from the entrepreneurship team at OECD's Local Economic and Employment Development (LEED) program. The intended audience of the paper is practitioners in educational institutions, and the basis of this clarification attempt consists primarily of existing research in the domains of entrepreneurship, education, psychology and philosophy. Where research is scarce the author attempts to give some guidance based on own conducted research. The paper also outlines some future challenges and opportunities in entrepreneurial education.

4.5.1 Results

As a remedy to differing views of *what* entrepreneurial education is, the paper takes the stance that a common denominator is that all students can and should train their ability and willingness to create value for other people. In an attempt to address *why* infusing entrepreneurship into education is useful, a less discussed but highly interesting impact that entrepreneurship can have on education is the high levels of student motivation and engagement it can trigger, and also the resulting deep learning. To address the issue of *when* to do what, in terms of primary, secondary and tertiary education interventions, a unified progression model for entrepreneurial education is proposed. Finally, the *how* issue is addressed by proposing a focus on emotional activities that trigger the development of entrepreneurial competencies, and by outlining six different entrepreneurial methods that teachers can use.

4.5.2 Relevance for thesis

The paper was a key step in the action research methodology employed here in that it contains a practitioner oriented and succinct summary of many of the ideas leading up to the articulation of a tentatively new educational philosophy grounded in entrepreneurship. This allowed for testing and challenging some key developed preconceptions and interpretations (cf. Coghlan and Shani, 2014). The paper and its precursors (Lackéus, 2013b; Lackéus and Moberg, 2013) triggered a significant amount of feedback from both practitioners and other scholars in Sweden, Europe and USA, contributing in many ways to the development of the tentatively new educational philosophy put forward in this thesis. Such a circulation and public scrutiny of key ideas also adds to the substantiation of claims made in this thesis. This paper therefore addresses both RQs of this thesis by triggering a reaction from a wide range of stakeholders around perceived utility and novelty of value creation as educational philosophy and practice.

4.6 "Two flavors of entrepreneurial education"

Appended paper 6 explores two quite different goals of human activity outlined in well-being theory and motivation theory; happiness for oneself versus meaningfulness with others. It then relates them to different forms of entrepreneurial education. Two distinct prototypic flavors of entrepreneurial education are developed based on this, where one aims to produce empowered individuals maximizing their own happiness and wealth, and the other aims to produce creative citizens striving to instigate meaningful change for society even if it reduces their own happiness. Articulating such a difference is posited to be crucial for advancing the field of entrepreneurial education, often viewed by teachers as a way to covertly introduce capitalist

and neoliberal values into education. Neoliberalism celebrates free competition and enterprising individuals taking autonomous responsibility for their life, exercising their freedom to choose whichever path in life that optimizes their own happiness, wealth and self-esteem.

4.6.1 Results

The analysis shows that entrepreneurial education can indeed be perceived as a close companion to neoliberalism if it is designed in line with the stereotypic image of entrepreneurs as self-made lone male heroes building wealth for themselves. The analysis also shows that a do-good flavor of entrepreneurial education can be perceived as an antidote to the currently prevailing neoliberal values imposed upon teachers by today's education policy climate. By giving students assignments to learn by using their knowledge to create value to people outside the classroom, teachers can enjoy highly engaged and creative "students-as-givers" that acquire both entrepreneurial competencies and declarative knowledge more in-depth than they perhaps would in a one-sided "students-as-takers" culture.

4.6.2 Relevance for thesis

Due to the values clash often encountered when trying to infuse entrepreneurship into education, there is a need to ground the tentatively new educational philosophy proposed in this thesis firmly in a more altruistic and collectivist view of entrepreneurship. This paper served to develop such a grounding, and constituted a key step in developing the "student-as-giver" perspective from well-being and motivation literature. This paper also was a key step in adding the formulation "*to-others*" in the definition of the tentatively new educational philosophy articulated in chapter 5. The need for such an addition became obvious in the public testing of key ideas. People often tacitly assumed value creation to be primarily for oneself. Such a fallacy to always assume that people aim to create value primarily for themselves is perhaps an effect of today's neoliberal western society, and could be countered with a "student-as-giver" perspective. The paper thereby contributes to answering primarily RQ 2, but also illustrates the need for a new educational philosophy and practice emphasizing altruistic aspects of entrepreneurship, thereby answering to some extent also RQ 1.

5 Towards a new educational philosophy?

This chapter contains an attempt to articulate a tentatively new educational philosophy grounded in entrepreneurship as new value creation. The application of it in practice by teachers is so far limited, making this a primarily conceptual and prescriptive articulation attempt. This means that future will have to tell if more teachers will see reasons to apply it in their daily work, and what impact it can have in terms of student learning, motivation and other effects. This articulation can thus be seen as an early point in an unknown journey towards the future for this tentatively new educational philosophy. The division between chapters 5 and 6 is intended to be the difference between *articulation* (chapter 5) and *qualification* (chapter 6) of an educational philosophy. Chapter 5 therefore contains a prescriptive and stand-alone articulation in terms of *what* to do (section 5.1), *how* to do it (section 5.2), *why* (section 5.3), some challenges (section 5.4) and some empirical examples (section 5.5) of the tentatively new educational philosophy. This will then be followed by chapter 6 where the research questions are addressed, relating the articulated educational philosophy to the current state of education and entrepreneurial education.

5.1 Articulating a tentatively new educational philosophy – "what"

The definition presented here is the result of a five years long research process outlined in chapter 3. The working definition has been adjusted many times during the journey, and it will most likely need further revisioning. The current shape of the definition is found in Table 6, and consists of ten different elements outlining *what* to do. A shorter 6-word definition can be articulated as *learning-through-creating-value-for-others,* see further in appended paper 4. The *learning-through* part is covered by elements 1-3 in Table 6. The *creating-value* part is covered by elements 4-7 in Table 6. The *for-others* part is covered by elements 8-10 in Table 6. Any shortening however opens up for ambiguity, so simplification should be made with care. One key aspect missing in the shorter 6-word version is the novelty of the value created. According to Bruyat's definition of entrepreneurship as *new* value creation, the level of novelty correlates with how likely it is that people will interpret any kind of value creation as entrepreneurship. Below each of the ten elements will be discussed briefly.

Table 6. Definition of value creation as educational philosophy. Ten elements constituting a defining of value creation as educational philosophy.

No	Definition	Explanation / clarification
Learning-through...		
1	Let students learn...	The purpose is learning. Value creation is the means.
2	...by applying their existing and future...	Existing before the course, or future as a result of course.
3	...competencies...	In- or extra-curricular knowledge, skills and attitudes.
...creating value...		
4	...to create...	This is a creative assignment.
5	...something...	A physical, intellectual or cultural artifact (ie human creation)
6	...preferably novel...	The more novel, the more it is deemed "entrepreneurship".
7	...of value...	Value is subjective and intersubjective; decided by recipient.
...for others.		
8	...to at least one...	Someone(s) or something(s) capable of giving feedback.
9	...external stakeholder...	The more external, the more powerful but also the more scary.
10	...outside their group, class or school.	Three progression levels; in class, in school or outside school.

5.1.1 Let students learn...

It is an educational philosophy that is outlined, so the intended users are educational institutions where the main aim is to support teachers in improving student learning in meaningful ways. Some students will inevitably interpret the main goal to be new value creation, and that could certainly be acceptable as long as teachers always remember that the main aim is learning.

5.1.2 ...by applying their existing and future...

A key aim here is to bridge a rift of educational dualisms, such as theory versus practice or knowing versus doing (see section 2.3.8 and appended paper 4). It is therefore recommended to let the new value creation process be informed by existing and future competencies. Existing competencies can be the starting point for a student when a course or module starts. Future competencies can be those acquired as a direct result of the course or module, stipulated by course or program curriculum documents.

5.1.3 ...competencies...

As discussed in section 2.1.4, competencies can be operationalized through a Knowledge, Skills and Attitudes (KSA) framework. It is thus not only knowledge that can be put to use in a new value creation process, but also a student's skills and attitudes. The most developed version of a KSA framework in this research project can be found in appended paper 3. It contains both specifically entrepreneurial competencies and more generic competencies on the border between entrepreneurship and other domains.

5.1.4 ...to create...

Creation is central to this educational philosophy and to entrepreneurship in general. If something physical or intellectual is not created by the students, it is not categorized as applying the educational philosophy articulated here. This illustrates the inherent creativity dimension of entrepreneurial education focused on value creation.

5.1.5 ...something...

An outcome of human creation can be termed *artifact*. Hilpinen (2011) has defined artifact as anything physical or intellectual shaped by human art and workmanship, thus having one or many authors. This is differentiated from naturefacts (objects in nature) and biofacts or ecofacts (organic material not manipulated by humans). If there is no artifact involved having students as authors in an educational intervention, it is by definition not in accordance with the educational philosophy articulated here.

5.1.6 ...preferably novel...

In Bruyat's (1993) definition of entrepreneurship as new value creation, it was argued that the more novelty that is created and the more the process changes the individual, the more people will view it as being about entrepreneurship. Assessing novelty is then a resulting challenge. Creativity literature has stated that uniqueness needs to be assessed by others than the authors of an artifact, and that these others need to be part of a relevant community (Reid and Petocz, 2004). While novelty indeed is desirable, it should not be raised as too high of a hurdle to putting this educational philosophy to use. Novelty could also be interpreted as value creation activities that are new only to the student. Still, if students can be encouraged to create

something valuable that is also novel in the eyes of others, it will indeed spur increased emotional ownership and engagement.

5.1.7 ...of value...

Some kinds of value that can be considered here are derived from literature in section 2.2; enjoyment value, economic value, influence value, harmony value and social value. Many views of value and valuation stipulate that it is the recipient of value that subjectively evaluates whether value has been created or not. It is therefore up to the intended recipient of value to evaluate whether or not an artifact created by a student is valuable or not. It is important here to state that learning will occur regardless of the recipient's perception of value. It is thus not a requirement that value is successfully created, merely that a student *tries* to create a valuable artifact to an external stakeholder in a way that allows for an intersubjective evaluation to occur, and that the student has plausible reason to *believe* that the attempt to create value might succeed. This is the role of value creation as a stepping stone between entrepreneurship and education, connecting the education related aims of fostering student learning with an entrepreneurship related capacity to satisfy the student's search for meaning and relevancy.

5.1.8 ...to at least one...

For an intersubjective evaluation of an artifact to occur, a minimum of one external recipient of value is arguably required. It does not need to be a human, it can be an animal or even a plant. The recipient however needs to be capable of producing some kind of relatively swift feedback signifying whether value was perceived or not, and if so to what extent. Working towards more than one recipient of value can give a stronger emotional reaction for the student, but should perhaps not be put as a requirement given that it could discourage some students from trying.

5.1.9 ...external stakeholder...

While it is indeed difficult to separate value for oneself from value for others, as discussed in section 2.2, recommendations from entrepreneurial methods, findings from Vygotsky's tradition of social learning theory and the importance of emotional events for learning all stipulate that students should indeed try to create value for *others* than those who are considered to be authors of any artifact created (see further in sections 6.1.2.5-6.1.2.6). This means that in order for it to be a question of *entrepreneurial* education, the student or student team should not be considered as the primary recipient of value to their own value creation attempt. Further, in an educational setting the teacher should not be considered a recipient of value, since teachers could be considered to be indirect authors. After all, it is the teacher who has instigated the creation process by giving the students an assignment to create something of value.

5.1.10 ...outside their own group, class or school.

The recipient could be outside the group of authors but still within the same class or cohort. It would then involve external recipients that students feel comfortable with. It however at the same time limits the level of emotional engagement and deep learning that will occur. I therefore posit that it could be viewed as a good starting point, but that teachers should encourage their students to go outside this first step in subsequent value creation attempts. This step thus represents the first step of three in a progression towards more engaging but also more challenging recipients of value. One way to take a next step could be to let students create value

to people outside their own class but within the borders of their own educational institution. It could be older or younger students, it could be employees other than the teacher who is responsible for the value creation assignment. This is the second step of three in a progression towards increasingly engaging recipients of value. The most powerful but also most frightening stakeholder can be found outside the own educational institution. It could be anyone on the planet. The interaction could be analog in terms of a meeting in the street or at a workplace. It could be digital in terms of a phone call, an e-mail or any other communication channel. The infusion of information technology in schools and universities has made interaction with stakeholders outside the educational institution much easier now than in earlier years. This is the third and final step in a progression towards increasingly engaging recipients of value.

5.2 Putting value creation to use in educational practice – "how"

Having defined the proposed educational philosophy in terms of *what* to do, this section describes *how* to do it. It follows recommendations in instructional design theory to distinguish between preparations, process and outcome (Smith and Ragan, 1999), and to articulate a provisional specification of an educational idea allowing for it to be tested by teachers in practice (Stenhouse, 1975). Preparations consist of articulating an entrepreneurial task and providing students with entrepreneurial inputs. The process is an entrepreneurial process with its characteristic stakeholder interactions, uncertainty, risk for failure and emotional ownership for students. The output is divided into a dual short-term entrepreneurial output and a more long-term entrepreneurial impact. These aspects are shown in Figure 10 as well as in text below.
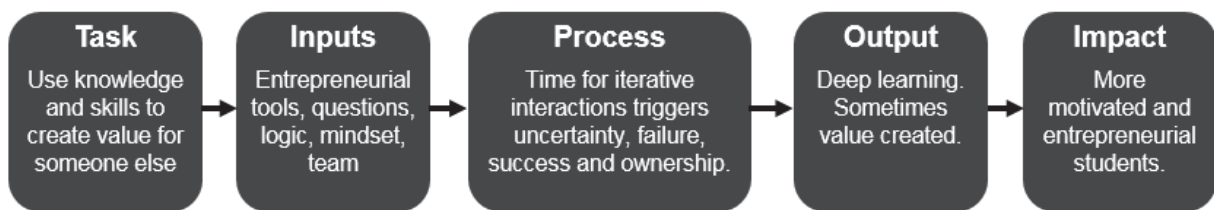
Figure 10. How to do learning-through-creating-value-for-others. The figure leans on instructional design theory to show how entrepreneurial task, entrepreneurial inputs, entrepreneurial process, entrepreneurial output and entrepreneurial impact are related.

5.2.1 Entrepreneurial task

A value creation assignment starts with outlining the task for the students. The students are given the task to use their competencies (current or future) to create something of value to someone else. Who is responsible for defining which competencies to use could vary; it could be the teacher completely dictating which competencies to use, it could be up to the student, or a combination thereof. Relating to the issue of what is "entrepreneurial" in entrepreneurial education, I draw on Bruyat (1993) to posit that the task outlined here is by definition entrepreneurial.

5.2.2 Entrepreneurial inputs

The next step is that the teacher puts students into teams using any pairing mechanism deemed suitable for the task. The teacher also supplies the students with some entrepreneurial tools, heuristics and questions that they can, or perhaps should, use. Inspiration for which ones to use can be taken from the field of entrepreneurship (see appended papers 4 and 5 for examples). At

this stage, students could benefit from teachers discussing what is considered to be an entrepreneurial mindset. Here, it is primarily the tools and methods that are inherently "entrepreneurial", given that they were developed from what could plausibly be stated to be part of entrepreneurship theory and practice.

5.2.3 Entrepreneurial process

The value creation process is the core of an assignment in line with the educational philosophy proposed in this thesis. The purpose here is to let the students learn experientially by going through an actual entrepreneurial process of creating value to others. It is important to give students enough time to allow for multiple iterations in their value creation attempts. There should be enough time to imagine a desirable future as well as to learn from past attempts to create value. Here, uncertainty can be managed through iteratively trying over and over again. Time is also required to establish intersubjective relations with external stakeholders.

Teachers can assess the process based on emotional events such as sufficient number of external interactions per student, sufficient amount of teamwork interaction in terms of for example time or meeting frequency, sufficient opportunity for each student to present the resulting artifact that they create for outside stakeholders, or based on other events that empirically have shown to result in developed entrepreneurial competencies. Students need continuous formative assessment and feedback from teacher, peers and / or external stakeholders. A useful assessment format is to let students reflect around the emotional events they have experienced. These reflections can be read by the teacher and / or by peer students, who can then provide feedback. Here, students should always be required to connect their personal experiences to the theoretical knowledge and skills that constituted the starting point of the value creation process, as well as to key questions posed by the entrepreneurship methods applied. If this is not done, the teacher risks committing some of the usual faults that traditionally have been attributed to progressive education, see section 2.3.4.

5.2.4 Entrepreneurial output

The task, input and process outlined above lead up to an immediate dual output. The output of interest to the teacher is naturally the student learning, and is an output that can be expected to be produced more or less every time the process has been executed in reasonable accordance with the above given recommendations. But there is also an output in terms of value created for external stakeholders, which is much less certain to be produced but constitutes the inherently "entrepreneurial" dimension here. For the student this could be perceived as the main output, and an absence of it could trigger significant frustration and disappointment. This should however not be interpreted as a negative output for the teacher, since learning from failure has proven to be very powerful (see section 2.1.7). The teacher could need to explain this to the students, over and over again. It could also lead to low ratings given by the student in written evaluations of the educational intervention in question. This could pose a problem in the increasingly performativity oriented educational institutions of today (cf. Ball, 2003).

5.2.5 Entrepreneurial impact

The more long-term impact of applying the educational philosophy articulated here is more motivated and engaged students that also develop their entrepreneurial competencies. The

VCPs outlined in appended papers 1 and 2 illustrate these effects to a large extent, and give accounts of the causal mechanisms responsible for producing such impact. Appended paper 3 shows that similar effects can be expected also on other levels of education, and gives accounts of similar mechanisms at play. Based on these empirical studies, the generic logic seems to be that interactions with external stakeholders involving student value creation trigger a wide variety of emotional events, highly positive as well as highly negative, which in turn leads to a number of effects such as increased energy input, deeper learning, repeated efforts from the students and developed entrepreneurial competencies as well as more cognitive and curricular competencies. At its best, the proposed educational philosophy can trigger a positive and self-reinforcing cycle of deep learning, see appended papers 2,3 and 5. The inherently "entrepreneurial" aspect here is primarily the development of entrepreneurial competencies, given that many other methods could probably also produce powerful learning and reinforcing cycles of deep learning.

5.3 Some possibilities – "why"

Analysis conducted in appended paper 4 suggests a number of benefits of the proposed educational philosophy. The paper argues that it can contribute to bridging five different aspects of a rift between traditional and progressive education. These are outlined in Table 7.

Table 7. Bridging benefits of entrepreneurial education based on value creation. The table shows five different bridging capabilities of entrepreneurial education based on value creation as educational philosophy, allowing to bridge a rift between traditional and progressive education.

Traditional education	Entrepreneurial education as a bridger, based on value creation	Progressive education
Simplicity Easy for teacher[1]. Routinized[1]. Scientific reductionist method[9].	**Simplification** Tool based. Succinct purpose of creating value which is easy to communicate.	**Complexity** Difficult for teacher[1]. Unpredictable[5]. Entrepreneurial method[6].
Individual Learning through acquisition[2]. Standardized content[1].	**Responsibility-taking** Tool derived questions that push students to dare to make a difference in society.	**Social** Learning through participation[2]. Unique experience[13]. Intersubjective[4].
Content Cognitive skills[10]. Linear[11]. Subject matter[12].	**Effectuation** Theory and content used as the start and end points of a value creation process.	**Process** Non-cognitive skills[10]. Iterative[11]. Entrepreneurial competencies[12].
Detached Passive learners[4]. Value free[3]. Disengaged[1]. Easy to assess[8].	**Assessability** Assessment of emotional events and reflective questions as stipulated by tools	**Engaged** Action-based[7]. Emotional learning[5]. Engagement[4]. Difficult to assess[8].
Theory Inert knowledge[13]. Objective reality[14]. Material[15]. Timeless[15].	**Applicability** Let students test theories and concepts in practical value creation processes now.	**Practice** Lived experience[14]. Co-creation[16]. Meaningful[15]. Cultural[15]. Realtime[15].

1: Dewey (1938), 2: Sfard (1998), 3: Guba and Lincoln (1994), 4: Tynjälä (1999), 5: Woods (1993), 6: Sarasvathy and Venkataraman (2011), 7: Cotton (1991), 8: Labaree (2005), 9: Deshpande (1983), 10: Moberg (2014a), 11: Cunliffe (2011), 12: Fisher et al. (2008), 13: Egan (2002) 14: Weber (2004) 15: Latour (2014), 16: Ollila and Williams Middleton (2011)

5.3.1 Simplification – helping teachers let their students make a difference

Appended paper 4 shows how the educational philosophy proposed here could offer a simplification in terms of a starting point which is easy to understand and communicate for both teachers and students, and an end result which is easy to comprehend and assess for all parties involved, including those external to the formal educational system. It could also simplify and facilitate teachers' practice of progressive and experiential education, often perceived as attractive due to their student centric approaches but too complex to manage and too difficult and risky in terms of student assessment. Teachers can apply entrepreneurship methods to simplify the inherently complex and fuzzy learning processes of progressive and experiential education, and also counter some of their drawbacks such as vagueness, content deficit and lack of explicit student guidance. Entrepreneurship is an active scholarly and practical domain replete with tools, methods, models, checklists, quotes, recommendations, frameworks, logics and heuristics. Teachers can adapt this vast material to educational settings and give students proven, tangible and down-to-earth content and advice on how to plan, conduct and evaluate their value creation projects. Thereby a combination of a manageable *and* developmental learning process can perhaps be achieved in ways not possible with existing educational philosophies. It could allow for combining standardized task, tools and assessment with individualized learning processes and outcomes.

5.3.2 Responsibility-taking – making students make a difference in the world

Appended paper 6 outlines a student-as-giver culture that is in line with the educational philosophy proposed in this thesis. Students could be challenged to apply curriculum content and knowledge in socially responsible projects addressing key issues and problems. This requires a firm belief that students are capable of taking responsibility for the value creation process, the interaction with external stakeholders, and with identifying real-life issues as well as develop solutions to them. It also requires a conviction that students are indeed interested in prosocial and altruistic behavior when pushed beyond their comfort zone established by educational institutions treating them as students-as-takers in a prevailing consumer-oriented neoliberal culture. This requires a combination of caring with challenging, helping with pushing and an acceptance by teachers and students that negative emotions such as fear of failure, fear of rejection and fear of external interaction are a natural part of the learning process. A common assumption by teachers is that they have to come up with the ideas of what value to create and for whom. I posit that teachers can invite students to the creative processes of coming up with new purposes, new ideas for value creation and new ends, adding to the responsibility-taking of the students. These processes can also be supported by a multitude of entrepreneurship methods proven and widespread among practitioners. Adults often underestimate young people's capabilities once given the chance to accomplish a task if given appropriate tools and sufficient level of meaningfulness and ownership over the process, see further appended papers 1 and 2.

5.3.3 Effectuation – using means when making a difference

In appended papers 4 and 5, a key entrepreneurship method called effectuation is outlined in detail. Effectuation logic starts with the premise "What could be the effect of my available resources?", rather than focusing on "For what cause am I doing this?" applying causal logic

(Sarasvathy, 2001). This logic could be applied by teachers in order to combine content with process. Content outlined in standardized curriculum documents can be the starting point of a student centered individualized learning process, letting the students ask themselves "For whom could this knowledge be valuable?". This logic is embedded in Figure 12. It could be viewed as a way for teachers and students to focus on what is available instead of lamenting the lack of resources required for a more progressive and experiential teaching approach. It could also be a way to let the teacher stay in control of which content is being worked with, without limiting the possible outcomes for the student in terms of how the content is applied in practice.

5.3.4 Assessability – measuring activities that make a difference

In appended paper 2 as well as in the licentiate thesis preceding this doctoral thesis (Lackéus, 2013a), an emotional activity based assessment strategy has been outlined. It could be used by teachers who need to assess what students learn from entrepreneurial education or by researchers wanting to assess the impact of any given entrepreneurial education intervention. For the purpose of qualifying a tentatively new educational philosophy, the teacher application is the primary area of interest. Probing for which emotional activities the students undertake could be a way to formatively assess and support the entrepreneurial learning process shown in Figure 10. Such assessment could also be applied in the planning phase for teachers. Any given plan for an educational intervention could be assessed based on which emotional events that it will likely trigger.

A heuristic for this purpose has been abductively developed in the second action research cycle of the research reported here, and is shown in Figure 11. Appended paper 3 utilizes this heuristic to assess the various teaching approaches encountered in that study. Table 9 shows how the heuristic corresponds to the theoretical perspectives outlined in chapter 2. The heuristic has been tested on around 400 teachers so far in 15 different settings across six different countries in Europe. It has been deemed useful to help them sense-make the tentatively new educational philosophy and try to design value creation based assignments for their students. A paper form has been developed and iteratively tested on many groups of teachers from different countries, containing seven simple questions around what value students are to create, to whom they are to create this value, what learning outcomes are likely to occur and how they plan to support and assess the students formatively.
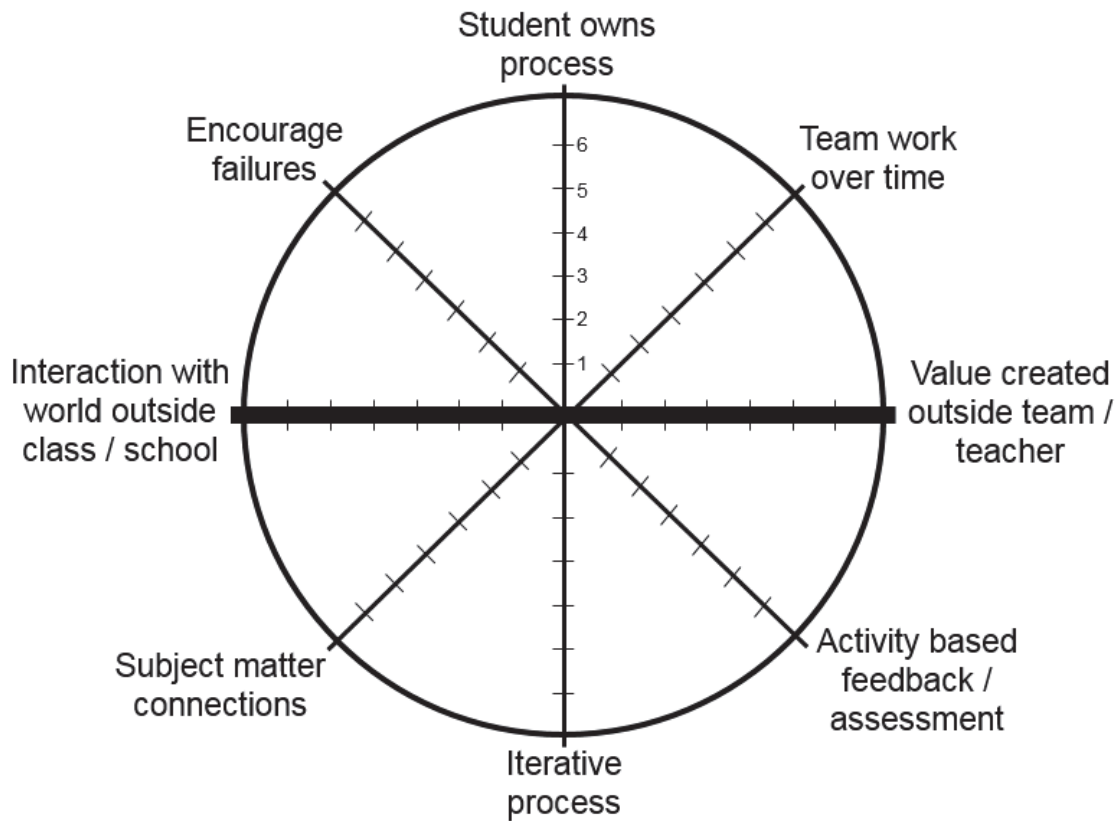
Figure 11. Spider diagram heuristic for assessment of entrepreneurial education. *Spider diagram based on theory described in chapter 2. It has been applied by teachers in study E6, see appended paper 4, and in assessment research in study E5, see appended paper 3.*

Table 8. Connection between theory dimensions and assessment heuristic. *An outline of how the eight diagram dimensions in Figure 11 correspond to the different theoretical aspects outlined in chapter 2.*

Theory dimension	Resulting assessment dimension for teachers
Entrepreneurship theory	
Entrepreneurial interactions	Interaction with world outside class / school
Entrepreneurial altruism	Value created outside team / teacher
Entrepreneurial learning	Student owns the process
Entrepreneurial methods	Iterative process
Education theory	
Traditional education / Learning-about	Subject matter connections
Progressive education / Learning-for	Team work over time
Experiential education / Learning-through	Encourage failure
Classroom education / Formative assessment	Activity based feedback / assessment

5.3.5 Applicability – putting theory to use now to see the difference it makes

In appended paper 4 the theory versus practice dualism is discussed and connected to epistemology. Differing views on what can be considered as knowledge are connected to the dualism between the objectivist view that there is an objective reality and the subjectivist view

that knowledge is constructed through lived experience. Sayer (2010) has proposed to manage this dualism by examining the "practical adequacy" of any theory in different contexts. Sayer argues that because of the increasingly uncertain, complex and social world we live in, more and more knowledge is contextual, lacking the universal lawlike regularities that natural sciences have made us accustomed to. I posit that this puts requirement on teachers to more frequently let students learn by testing the practical adequacy of theories in practice, and that such testing of theories and concepts in practical value creation processes can be supported by the field of entrepreneurship. It can provide a manageable task, a proven set of methods and an iterative process suitable for such learning activities. As an example, drawing on the call by Blank (2012) for entrepreneurs to leave the building and learn from their potential customers, students could be encouraged to leave the school building by viewing books and theories as mere hypotheses requiring testing in practice.

5.4 Some challenges

Having articulated *what* to do, *how* to do it and *why*, we will now outline some challenges that will likely hamper the process of putting the articulated educational philosophy into practice. Some basic practical issues concern whether teachers possess the competencies required to design and support value creation processes, whether students are capable of creating interesting enough value for external stakeholders for them to be willing to engage, and whether the external stakeholders are going to exploit the students if they indeed succeed to create value. This will be further discussed in section 6.4 on future work. But I posit that there are also three more fundamental cultural challenges impacting diffusion, that we now will turn to.

5.4.1 The teacher efficiency challenge

As outlined in section 2.3.8, one of the biggest and most important challenges in teaching is to balance between traditional and progressive education (Darling-Hammond, 2012). Many teachers find progressive and experiential education principles very attractive in theory, but have difficulties implementing them in practice due to the "impossible demands that its successful implementation placed on teachers" in terms of time, energy and talent (Smith and Ragan, 1999, p.295). Institutional pressure to be efficient also keeps them focused on traditional education ideals through their superior economies of scale when compared to individualized teaching adjusted to each student. This leads to a situation where they constantly are required to manage and bridge multiple "chronic educational dilemmas" (Labaree, 2012, p.157), such as bridging between traditional and progressive education, attempting to reach a hybrid equilibrium somewhere in the middle (Cuban, 2007). The expectations from the educational system, ingrained in its culture, will however constantly drag them away from such an equilibrium. Both towards time-efficient traditional education and towards separated progressive education grounded interventions such as thematic project work more or less disconnected from curricular subject matter. An educational philosophy facilitating bridging, as outlined in appended paper 4, could therefore arguably help many teachers achieve a higher level of teaching efficiency. I posit that entrepreneurial tools and an inherently entrepreneurial task can facilitate reaching the elusive progressive education dream of student centered learning while at the same time connecting to traditional education values, thereby contributing to increased teacher efficiency and allowing for a better work-life balance for teachers.

5.4.2 The summative assessment challenge

The cultural norm in education is currently emphasizing summative assessment in the form of exams and standardized national tests. Any teacher wanting to apply an emotional events based assessment method in the daily work will likely have to face the challenge of established cultural norms around assessment in its educational institution. Further, the empirical establishment of links between emotional events and learning outcomes is in an early stage, making it difficult for teachers to rely on such research when assuming that an emotional event will lead to the desired learning outcomes. If the empirical evidence base for this novel kind of assessment increases in the future, policy makers and school managers will likely have a key role of legitimizing and promoting such assessment practices on a wider scale. Emotional entrepreneurial events could then be used for activity-, question- and reflection-based formative assesssment. ICT tools (the app instrument outlined in section 3.4.3 developed from this research and others) could be used to facilitate such assessment practices. While this short-term conflicts with summative and standardized assessment, future research and policy document changes could legitimate such approaches and alleviate this cultural challenge.

5.4.3 The students-as-takers challenge

As argued in appended paper 6, it is perhaps not so much entrepreneurial education that is bringing a neoliberal perspective built on *homo oeconomicus* into education, but rather that educational institutions are already largely embedded in a neoliberal society where the ideal is self-sufficient students exercising their right as consumers to choose whatever suits their own needs best (cf. Biesta, 2004). Any teacher asking students to take responsibility for societal problems and to learn from associated emotionally challenging assignments will likely run into some students strongly opposing such assignments. Students are so used to be self-serving takers that a call to become altruistic givers will likely not pass easily with all. Here, students could be allowed to learn to take collective responsibility by learning from meaningful acts of creation for the benefit of others. This would contribute to a cultural change from students-as-takers more towards students-as-givers, representing a move towards the left in the value creation framework in Figure 3, adding also more collectivist values in student mindsets.

5.5 Relation between practice, possibilities and challenges

Figure 12 shows the relationship between the process of learning-through-creating-value-for-others and its bridging possibilities as well as its cultural challenges. In the left section it is shown how a consisely articulated entrepreneurial task and entrepreneurial inputs help simplifying the teacher's job of balancing between conflicting educational philosophies. This then leads to alleviating the cultural challenge of teacher efficiency. The mid section in Figure 12 shows how effectuation can constitute a starting point of the entrepreneurial process. A process rife with emotional events and an associated opportunity to reflect on these events and relate them to theory leads to increased assessability, which then alleviates the cultural challenge inherent in a focus on summative assessment. This process can also be viewed as an opportunity to apply knowledge content in order to see for oneself the practical value of it. The right section in Figure 12 shows how entrepreneurial outputs and entrepreneurial impact lead to more responsible students taking action to help people in society. This then alleviates the cultural challenges of consumerism and students-as-takers.

To summarize the process, students start with a dual purpose of content based value creation to outside stakeholders, searching for responses to the entrepreneurial question: "For whom is this knowledge (and these skills) valuable today?". Teachers then equip their students with entrepreneurial tools, a set of entrepreneurial questions, an entrepreneurial way of thinking, an idea of what the entrepreneurial mindset means and let them work in trustful teams, trying to find answers to the effectual question: "What effects can we create?". If given enough time to interact iteratively with external stakeholders, students will then experience uncertainty and failure, but also success and pride, leading to emotional ownership. Such emotional events provide them with powerful feedback, increasing perceived meaningfulness and relevancy of education. Teachers follow up based on key activities completed and question based reflections, preferably through the help of ICT tools. In the end, students will have learned content in-depth and maybe some value will also have been created for external stakeholders, but maybe not. Looking back at their own role and at how theory and practice were connected, students get a lasting feeling of engagement, meaning and relevancy. They will also have become more entrepreneurial.
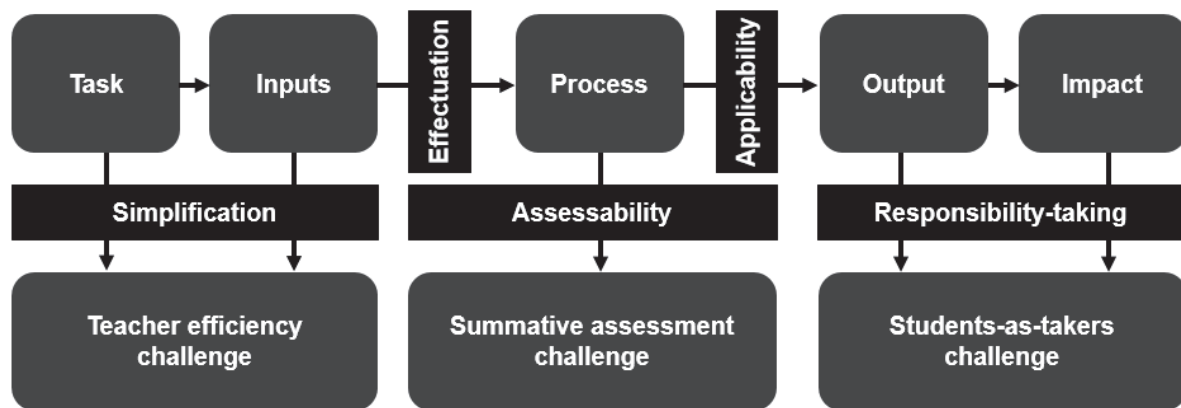
Figure 12. Value creation as educational practice related to its possibilities and challenges. An entrepreneurial task and entrepreneurial inputs alleviate teacher efficiency challenges. An emotional events laden entrepreneurial process opens up for alternatives to summative assessment. Entrepreneurial output and impact leads to more responsible students.

5.6 Some empirical examples

Many of the appended papers outline empirical examples of value creation as educational philosophy. Table 9 summarizes these and other examples, and relates them to a classification of action-based entrepreneurial education outlined on p.24 in appended paper 5, which first appeared in the licentiate thesis preceding this doctoral thesis (Lackéus, 2013a). This classification specifies four different approaches to action-based education; the creation approach, the value creation approach, the venture creation approach and the sustainable venture creation approach. In the creation approach students get to create artifacts. In the value creation approach these artifacts are considered valuable by an external stakeholder. In the venture creation approach students are expected to organize the value creation process in a venture. In the sustainable venture creation approach the aim is to keep the venture going after the end of the education if possible. No examples are given in Table 9 from the creation approach, since they by definition would not qualify as applying the educational philosophy articulated here.

Table 9. Different examples of value creation as formal part of education. Examples from three different classes of action-based education according to a classification of action-based entrepreneurial education (see appended paper 5).

Entity	Task	Impact
Sustainable Venture Creation examples		
Master program at **Chalmers University** with a total alumni base of 400 former students.	Create a real-life company based on some kind of technological invention, and with intention to incorporate.	Globally acclaimed. 8:th best incubator worldwide. Powerful learning. Significant value created. 75 companies started over 18 years.
Network of Venture Creation Programs. 20 university level programs idenitified worldwide. For a list see www.vcplist.com	Create a real-life company as part of curriculum, with intention to incorporate.	A high-profile but marginal program type. Many examples of powerful learning, some cases of significant value creation.
Venture creation examples		
Team Academy started in Finland. 600 university graduates across Finland. Emulated in 7 countries.	Run a class-wide company for the duration of a 1-3 year program, then liquidate it.	Recognized for educational excellence in Finland. Powerful learning, but also some level of value created.
Junior Achievement / Young Enterprise. Reaches 10 million students yearly in 120 countries.	Create a mini company, run it for 6-12 months, liquidate it.	The most well-studied example. Powerful learning primarily, but also value created later in life by alumni.
Value creation examples		
Drivhuset educational platform, Sweden. 2000 people trained so far; students, unemployed, youths, firms.	Attend five workshops. Iterate a value proposition with external stakeholders. Final pitch with audience.	Powerful learning primarily.Value created is marginal during workshops, but later value creation is triggered, especially among participants who already run or start a company.
City of **Sundsvall**, Sweden. 250 people trained so far. Pilot projects. Will roll-out on 130 schools.	Integration of value creation as educational philosophy in all schools across the city.	Early stage project. Significant buy-in into the educational philosophy. Main site of action research for the author.
City of **Varberg**, Sweden. 20 teachers trained. Pilot projects on-going.	Integration of value creation as educational philosophy in all schools across the city.	Early stage project. Significant buy-in into the educational philosophy. National TV highlighted a project.
Ready Unlimited, United Kingdom. Average 300 teachers and trainee teachers a year involved from schools across UK.	Integration of value creation as educational philosophy in professional learning and coaching for school teachers.	Teachers reporting more student engagement, higher quality learning and improved achievement. Improved connections between schools and their community/the outside world.
Teachers in **Karlskoga**, Sweden. Value creation example received through a survey circulated on social media.	Students of age 12 produced text and video for a local museum about Nobel.	Students learned Swedish, English in a more engaging way, and simultaneously developed their entrepreneurial competencies.
Teacher in **Strängnäs**, Sweden. Value creation example received through a survey circulated on social media.	Students of age 14 contacted local hospitals to produce pearls and textile bags to children with cancer.	Students learned needle work in a more engaging way, and simultaneously developed their entrepreneurial competencies.
Teacher in **Gothenburg**, Sweden. Value creation example received through a survey circulated on social media.	Students of age 15 produced and marketed a cookery book with 48 recipes in 11 languages from 22 countries.	Students learned home economics, Swedish, English and other languages, and simultaneously developed their entrepreneurial competencies.
Teacher in **Söderhamn**, Sweden. Value creation example emerging from study E5, see appended paper 3.	Students of age 15 working in teams to give a theater play in English every week for a year, to classmates and to others.	Students learned English in an engaging way, and simultaneously developed their entrepreneurial competencies.
Teachers in **Istanbul**, Turkey. Value creation example emerging from study O1.	Students of age 12-14 teach newly arrived Syrian refugees Turkish.	Students learn Turkish in an engaging way, and simultaneously develop their entrepreneurial competencies.

6 Discussion

In this chapter we will first in section 6.1 revisit the purpose of this thesis and try to develop answers to the two research questions designed to qualify the tentatively new educational philosophy articulated in the previous chapter. Then in section 6.2 we will draw implications of these answers. Section 6.3 discusses some associated limitations and challenges. In section 6.4 we will finally discuss short-term and long-term future work.

6.1 Qualifying a tentatively new educational philosophy

6.1.1 RQ1 - Why is educational philosophy important when infusing entrepreneurship into education?

The short answer to why an educational philosophy grounded in entrepreneurship could help the infusion of entrepreneurship into education is that it could alleviate the challenges associated to such endeavors. For those who want to infuse entrepreneurship into education but struggle with the challenges, the educational philosophy articulated in chapter 5 could arguably provide some useful answers to *what* to do, *how* to do it and *why*. Applying these answers in practice could however trigger new kinds of challenges that might then continue to hamper adoption of entrepreneurial education. We will now briefly discuss how the educational philosophy articulated in chapter 5 could alleviate the challenges of infusing entrepreneurship into education, and also speculate around some challenges that might nevertheless remain.

In terms of *what* to do, chapter 5 provides some answers to the issue of what to *infuse*, potentially alleviating the lack of definitional clarity in entrepreneurial education through an emphasis on entrepreneurship viewed as new value creation. Chapter 5 also provides some answers to what to *plan for* and what to *let others do*. This potentially alleviates challenges with organizational structures and lack of resources for school managers and policymakers. They get new and simplifying grounds and a potential guiding star for their work in managing and training for the infusion of entrepreneurship into education. Chapter 5 also helps the issue of what *not* to do when infusing entrepreneurship into education by articulating clear inclusion and exclusion criteria for entrepreneurial education. The following clarifying questions could for example be asked by people attempting to infuse entrepreneurship into education: "Are the students required to attempt to create value for external stakeholders?", "Have the students been instructed to ask themselves the question: For whom is this knowledge valuable today?", "Is the starting point competencies?" and "Is some kind of artifact created?". If a principal repeatedly started to ask such questions to all teachers in a school it might even be enough to get a whole-school implementation started.

In terms of *how* to do it, chapter 5 provides some answers to how to *implement* the articulated educational philosophy, potentially alleviating organizational challenges around how members of an educational organization are supposed to be able to infuse entrepreneurship into education. It also provides some answers to how to *assess* the implementation process, in terms of impact assessment, educational change effectiveness and student learning, thereby alleviating multiple assessment difficulties through a focus on assessing the prevalence of key emotional events.

In terms of *why*, chapter 5 provides some answers to the challenge around reluctance from teachers to infuse capitalist values into education. A stepping stone consisting of many different

kinds of value creation rather than solely economic value creation (see Figure 3 in section 2.2) has been proposed. Chapter 5 also articulates goals of entrepreneurial education focused on deep learning and student motivation, arguably being more in line with teacher priorities. These aspects could add to the legitimacy of infusion attempts, thereby alleviating organizational challenges and fear of capitalism.

But as helpful as all of this might seem, chapter 5 does not tell us much about *what* practitioners will actually do when putting the educational philosophy articulated in into practice, *how* they will do it, and how this might overlap and interact with existing educational philosophies and practices. As a parallell, the idea of progressive education has triggered significant confusion and misuse throughout its long history, even causing Dewey to repeatedly complain about misuse of his ideas (Labaree, 2005). Also, the mere usefulness of a tentatively new educational philosophy will likely not lead to its spontaneous adoption into practice. Educational leadership and preparation is still needed, requiring access to scarce resources. It is also an infusion of something new into education, arguably requiring a fight against status quo, a challenging integration into existing practices and a considerable shift in people's mindsets around teaching, assessment and leadership. What chapter 5 also does not give us much of is guidance on why value creation for others is *not* already used in practice on a wider scale. If it is as good as tentatively claimed here, how come it is not widely used already? This is a vexing question that requires further investigation. Some early attempts to investigate this empirically has resulted in practitioners attempting to explain it with fear of uncertainty among teachers and students, path dependent thinking and a box-ticking educational culture triggered by formal assessment requirements. If this is the case, the educational philosophy articulated in chapter 5 could indeed be useful. Others, particularly within design education, claim that student value creation for others is not at all that unusual.

6.1.2 RQ2 - What is new with an educational philosophy grounded in the field of entrepreneurship?

Some aspects covered in the theory section on entrepreneurship have indeed been discussed previously by scholars of existing educational philosophies. I will however argue here that this is the case primarily in incidental and superficial ways, leaving teachers looking for a needle in a haystack rather than providing them with a map to guide them and give directions (Dewey, 1923). This section attempts to dissect what is new, what is less new and what is not new in the educational philosophy articulated in chapter 5.

6.1.2.1 Comparison to previous entrepreneurship grounded efforts

As a general observation, I posit that existing educational philosophies lack a firm answer to the question of learning-by-doing-*what*? According to existing educational philosophies, students are to be active, engaged and self-directed in authentic experiences that they can learn from, but advice given around how this is to be accomplished is often vague, difficult to put to educational practice or leads to activities detached from curriculum knowledge. The most common answers coming from entrepreneurship scholars so far could be labeled as learning-through-*starting-a-venture* and learning-through-*writing-a-business-plan*, both leaning on Gartner's (1989) definition of entrepreneurship as organization creation. But the role of business plan writing in entrepreneurial education is contested (Honig, 2004; Jones and
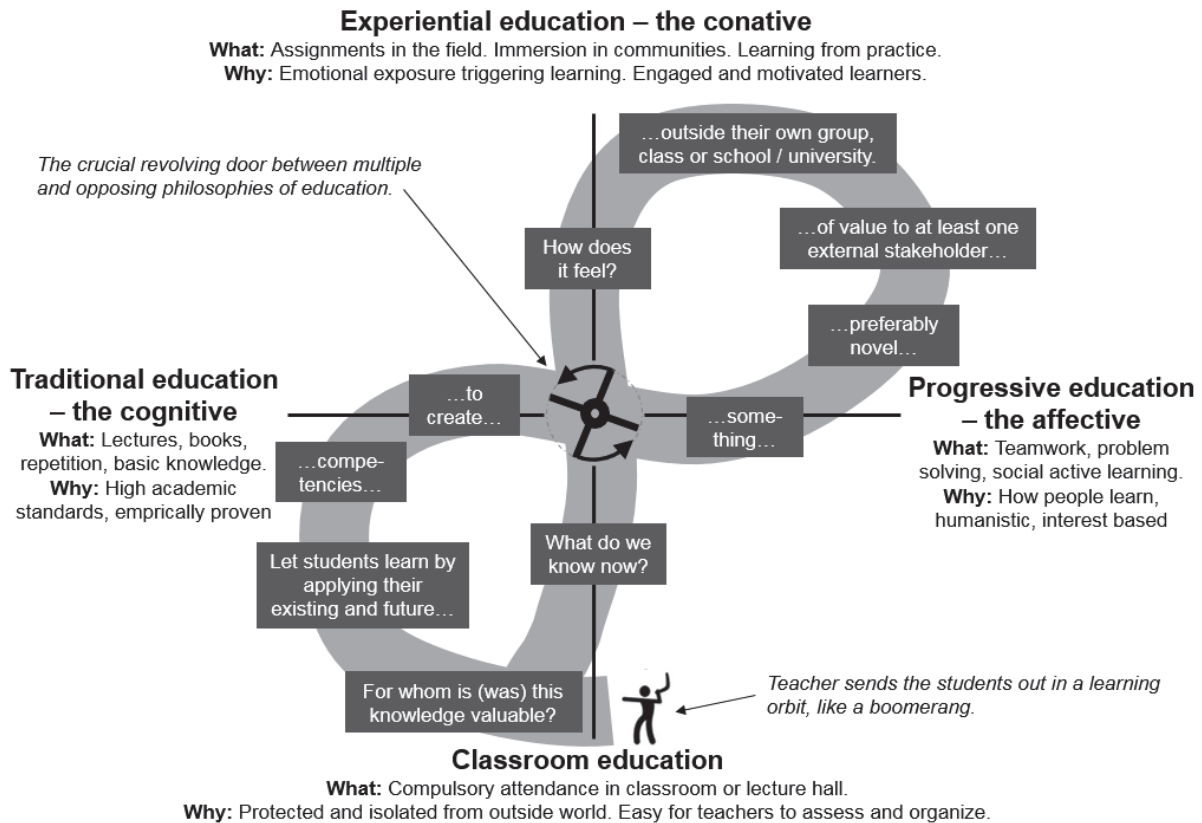
Penaluna, 2013; Neck and Greene, 2011), and letting students start a real-life venture as formal part of education is immensely complex and perhaps even unethical in formal education due to the risk of triggering personal crisis and emotional fallout (Pittaway and Cope, 2007b; see also appended papers 1 and 2). In reality a simplified format is often applied by teachers, letting students start a mini company stripped of many of the deeply emotional aspects of entrepreneurship. The venture is already at the outset destined to liquidation after the course, any profits are often donated to charity and emotional ownership through equity is often prohibited due to legal or practical restrictions in educational settings (Dwerryhouse, 2001; Shilling, 1989; Tosey et al., 2013). While still transformative and suitable for some students, such approaches are not uncontested. They have been argued to nurture a myth that entrepreneurship is about book-keeping, planning, administration and making money. They also lean on a narrow definition of entrepreneurship viewed as starting a business, only relevant for a small minority of students (Otterborg, 2011; Smålandsposten, 2013). Therefore I posit that an entrepreneurship grounded educational philosophy widely applicable in education cannot be solely grounded on the idea of letting students write a business plan or start a company. The educational philosophy articulated here represents a different answer: learning-through-*creating-value-to-others*.

6.1.2.2   A novel combinatory movement between different philosophies

Figure 13 shows how the tentatively new educational philosophy proposed here moves across the entire philosophical playing field of education outlined previously in Figure 5. The process starts in the classroom, somewhere in the middle between traditional and progressive education. It moves towards traditional education to firmly ground the value creation process in curriculum subject matter and propositional knowledge, then moves towards progressive education in its emphasis on team-based co-creation of artifacts, to finally turn towards experiential education in its emphasis on creating something of value to someone outside the own group, class or school / university. It then returns to the classroom to reflect, draw conclusions and connect back to subject matter and developed competencies.

Another way to describe the movements in Figure 13 is to see them as allowing for whole person learning, described by Jarvis (2006) as learning that encompasses all three faculties of mind; cognition (thoughts), affection (emotions) and conation (actions). The first turn in Figure 13 emphasizes cognition with its emphasis on traditional education, the second turn emphasizes affection with its emphasis on progressive education, and the third turn emphasizes conation with its emphasis on opening up the classroom door to interact with external stakeholders in the field. This means that the tentatively new educational philosophy articulated here allows for a more balanced distribution between the three faculties of mind. In many cases it will mean that more affection and conation are infused into the learning process, but without losing the cognitive grounding. For an overview of the three faculties of mind and their implications on how to develop entrepreneurial competencies, see the licentiate thesis preceding this doctoral thesis (Lackéus, 2013a).

Experiential education – the conative
What: Assignments in the field. Immersion in communities. Learning from practice.
Why: Emotional exposure triggering learning. Engaged and motivated learners.

The crucial revolving door between multiple and opposing philosophies of education.

...outside their own group, class or school / university.

...of value to at least one external stakeholder...

How does it feel?

...preferably novel...

Traditional education – the cognitive
What: Lectures, books, repetition, basic knowledge.
Why: High academic standards, emprically proven

...to create...

...compe-tencies...

...some-thing...

Progressive education – the affective
What: Teamwork, problem solving, social active learning.
Why: How people learn, humanistic, interest based

What do we know now?

Let students learn by applying their existing and future...

For whom is (was) this knowledge valuable?

Teacher sends the students out in a learning orbit, like a boomerang.

Classroom education
What: Compulsory attendance in classroom or lecture hall.
Why: Protected and isolated from outside world. Easy for teachers to assess and organize.

Figure 13. How entrepreneurship guides movement between opposing philosophical positions. The cyclical eight-shape shows how entrepreneurship provides teachers with the culture / "music" to a philosophically boundary-spanning movement / "dance" that their students can learn from. Like a boomerang, students are sent out to learn from interplay between theory and practice within and outside the classroom, passing through a "revolving door" connecting opposing perspectives.

Yet another way to view the movements in Figure 13 is to see them as advice on how to balance between multiple opposing positions stipulated by conflicting and incommensurable educational philosophies (see further appended paper 4). A toolbox of entrepreneurial methods helps teachers manage the process in each step, determining when it is time to lecture, to read books, to work in groups or to talk to external stakeholders, thereby providing a distinct rhythm to the necessary oscillations between opposing educational philosophies. Entrepreneurial methods help determining when the classroom door should be firmly closed to allow for focus, and when it should be wide open to let students work with real-life recipients of value creation attempts. The benefits of whole person learning in terms of engaged learners, increased perceived relevancy and deeper learning of content have been documented before (Jarvis, 2006; 2010), but Figure 13 outlines a novel map potentially guiding teachers and students.
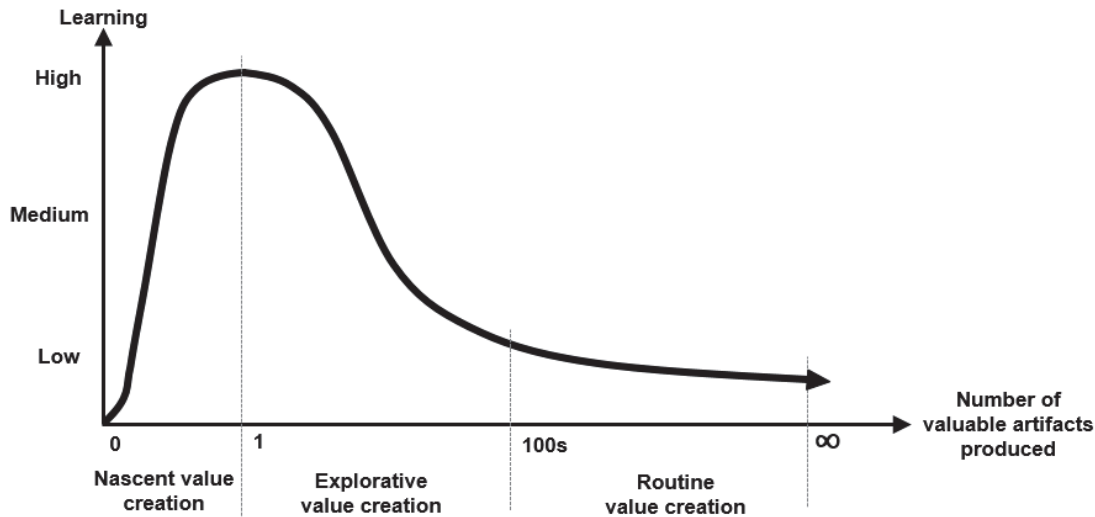
Having shown how the tentatively new educational philosophy constitutes a concerted movement across different educational philosophies, I will now relate its groundedness in entrepreneurship to the three key philosophies more in detail; traditional, progressive and experiential education. This will be done by drawing on interaction aspects of entrepreneurship outlined in the theory section.

6.1.2.3 Novelty of entrepreneurial altruism

Traditional and progressive education have to my knowledge not emphasized the creation of value to others as a key part of education. Experiential education however, in particular service-learning, has been known to include value creation for others but perhaps not with an emphasis on artifact creation, novelty or entrepreneurship and its methods. Experience, reflection and teamwork are widely advocated, but less is said in generic terms of how to accomplish it in practice. I posit that the missing key here is a worthwhile purpose and empirically validated methods that can drive the experiential learning process while still connecting it to core curriculum.

The collectivist flavor of entrepreneurial education leaning on a pluralistic view of value creation is closely related to existing educational initiatives such as community education (Jarvis, 2010) and citizenship education (Deuchar, 2007). These traditions both emphasize the individual's responsibilities in a wider democratic community but are arguably not fully aware of how entrepreneurship can contribute with new aims and methods. I posit that the tentatively new educational philosophy proposed here can contribute to facilitating and empowering such initiatives in new ways. Future work by practitioners and scholars could develop this emerging opportunity to synergize further. Asking students to act in more altruistic ways as part of their education can trigger powerful learning in ways that previous educational philosophies have somewhat neglected in their focus on students as consumers of education, i.e. as students-as-takers (cf. Biesta, 2004). In appended paper 5, I have labeled this an altruistic paradox of learning, stipulating that students in certain situations perhaps learn more when asked to develop their competencies by doing good for others in 15 minutes than when asked to learn what is good for themselves in 15 years. This paradox has triggered much interest among practitioners, and merits further scholarly investigation.

Another tentative novelty of introducing altruistic value creation in education could be to view it as a new kind of relationship based *educational* economics, where focus is on nascent and explorative value creation for the purpose of maximizing learning, see Figure 14. This contrasts to demand based neoclassical economics with its customer choice based logic, where focus is to maximize utility and predict markets and prices. Perhaps value creation as educational practice is more legitimate when it focuses primarily on the early phase of artifact production, outside of established markets and price levels, thereby reducing the risk for unfair exploitation of students. A particularly interesting application of educational economics is to let students learn by serving needs of disadvantaged groups in society that regular markets forces systematically neglect.

Figure 14. Relationship between learning and number of valuable artifacts produced. Illustrates how the tentatively new educational philosophy articluated here works at its best in low numbers of artifacts produced, where learning is maximized and value creation is nascent or explorative.

6.1.2.4 Novelty of entrepreneurial methods

Collaboration, interaction with others and artifact creation have frequently been emphasized in writings on existing educational philosophies. See for example well-cited articles defining problem-based learning (Savery, 2006) and project-based learning (Blumenfeld et al., 1991). It could be argued that this represents the *learning-through* aspect of the six-word definition of the tentatively new educational philosophy proposed in chapter 5. Learning from failure is less explored in existing educational philosophies, and primarily discussed in negative terms such as the perils of failing to solve a demanding problem (Blumenfeld et al., 1991), rather than the positive and emancipatory role failures and mistakes are attributed in entrepreneurial learning theory (Cope and Watts, 2000; Cope, 2011; Rae, 2005).

Iterative ways of working have also been covered in the field of experiential learning through cyclical learning models such as Kolb's experiential learning cycle. Such cyclical models have however had difficulties impacting education for reasons outlined further in section 2.3.5. Figure 15 outlines how the tentatively new educational philosophy proposed in chapter 5 can be positioned relative to Kolb's experiential learning cycle. Some of the challenges with this widespread theory of experiential learning could perhaps be addressed through the introduction of entrepreneurship and its methods. This could be seen as a response to the call by Holman et al. (1997) to ground experiential learning in social and cultural contexts, since entrepreneurship can be viewed as a set of cultural-cognitive tools that students can use to think *with*, as outlined in detail in appended paper 4. It could maybe also be seen as a way to treat action and reflection more integrated.

When it comes to the *creating-value-for-others* part there is much less written, if at all anything, in connection to existing educational philosophies. What is novel here could perhaps be stated in terms of a set of methods explicitly outlined for the purpose of creating new kinds of value to others. The utility of such a set of methods taken from the field of entrepreneurship has not previously been discussed in relation to existing educational philosophies. Some entrepreneurial methods that might be applicable are outlined in appended papers 4 and 5.
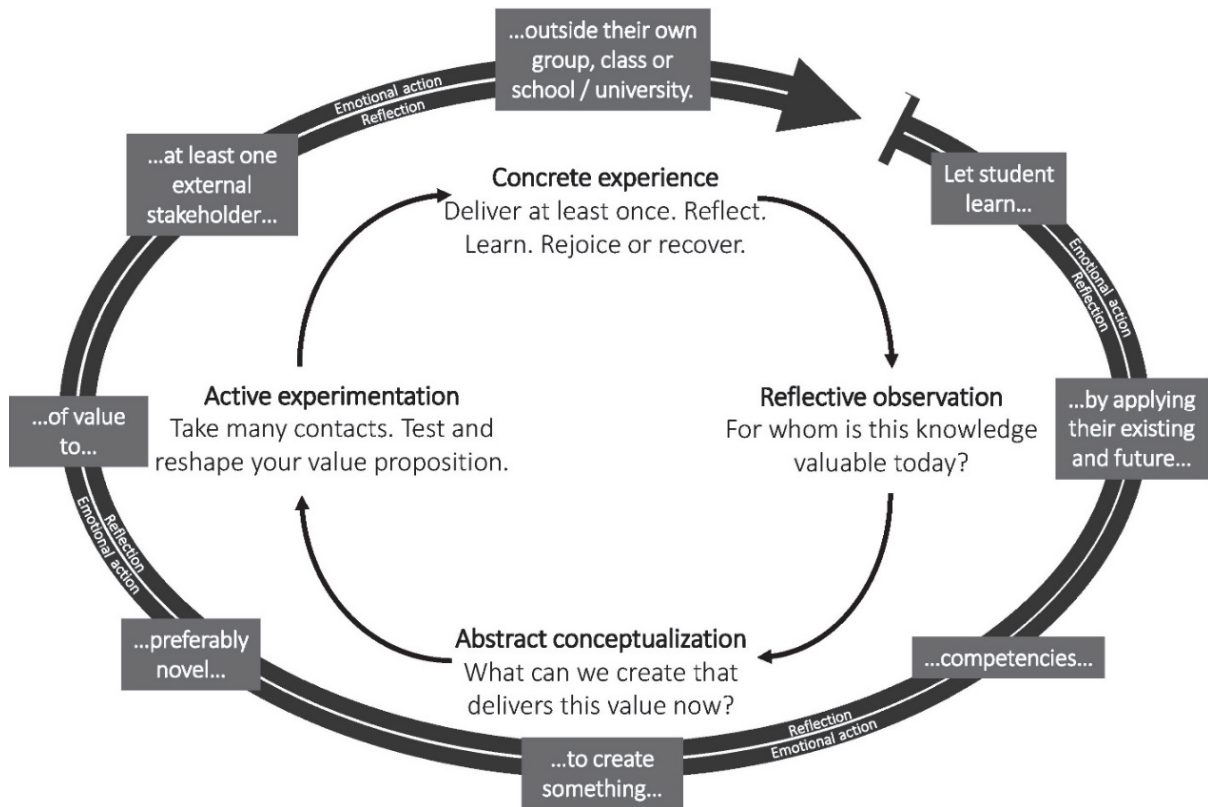
Figure 15. How entrepreneurship could add a cultural context to Kolb's learning cycle. *The figure illustrates how entrepreneurship contributes with specification of what to do when learning from experience, and how to constantly blend emotional action with reflection.*

6.1.2.5 Novelty of entrepreneurial interactions

There are numerous implicit links between entrepreneurial interactions and educational philosophy that have not yet been explored by scholars in either of the two fields. A term frequently used when discussing interpersonal interaction is *intersubjectivity,* defined by Rogoff (1990, p.67) as the understanding that occurs *between* people. Biesta and Burbules (2003) have described Dewey's work on educational philosophy as founded largely on intersubjectivity, thereby avoiding the educationally problematic divide between the individual and the social. This is achieved by emphasizing communication, cooperation and co-creation around both intellectual and social perspectives (Biesta and Burbules, 2003, p.102). In line with this, Matusov (2001) has described how an explicit focus on intersubjectivity in terms of shared and authentic activities for all students in a class can mitigate some of the challenges inherent in progressive education. I however posit that the challenge for teachers is *how* to organize such intersubjectivity, and that an educational philosophy grounded in entrepreneurship could contribute with tangible aims and methods that infuse intersubjectivity into education.

While interaction with the world outside educational institutions has been discussed (if not required) to a large extent in both progressive and experiential education, a clear purpose of such interactions to use knowledge to create value for others has not been stated before. Dewey (1938) claimed that letting students apply the scientific method to solve problems by conducting experiments is the only authentic method available to us in order for students to experience the significance of our life-world. Such a practice does however not require students to interact

with stakeholders outside their own group, class or school. Had Dewey known what is today known about entrepreneurship as a method for unleashing human potential, contrasted as an alternative to the scientific method by Sarasvathy and Venkataraman (2011), he might have wanted to revise his singular reliance on the scientific method in his educational endeavors. Experiments are indeed common also in entrepreneurship, but then the focus is often to explore an *opportunity* related hypothesis in social science settings rather than a *problem* related hypothesis in natural science settings. Using entrepreneurship methods to intersubjectively test the practical value of any theoretical knowledge in social settings has arguably not been proposed before by philosophers of education, and constitutes a different kind of intersubjectivity than the common problem-based learning approach of progressive education.

A model illustrating such extended intersubjectivity, drawing on activity theory pioneered by educational psychologist Vygotsky (1978), was outlined in the licentiate thesis leading up to this thesis (Lackéus, 2013a), as well as in appended paper 5 on page 28. According to Vygotsky and colleagues, human activity leads to two main outcomes; "externalization of activity into artifacts" (Miettinen, 2001, p.299) and "internalization of activity and gradual formation of mental actions", i.e. construction of new mental abilities (Arievitch and Haenen, 2005, p.159). In this case, externalization is the resulting value creation for others and internalization is the resulting deep learning. And if value to at least some extent is a subjective concept as outlined in section 2.2, a subjective evaluation of the artifacts produced by the students must be performed by an external part in order for it to be deemed a value creation activity. External stakeholder interaction is thus arguably a requirement in the tentatively new educational philosophy articulated here. Given that such a requirement has not been emphasized in previous educational philosophies, it also constitutes a novel addition to education.

6.1.2.6 Novelty of entrepreneurial learning

Experiential education scholars have discussed the important role of emotions in general terms, but have arguably not classified specific emotional events deemed particularly useful for teaching or assessment purposes in education. I posit that an emotional learning based educational philosophy based on specific, measurable and generic entrepreneurial events has not previously been proposed. In terms of teaching, taking advantage of the quite characteristic emotional and critical learning events so prevalent in entrepreneurial settings could be a novel approach to educational design. The emotional events typology developed in papers appended to this thesis could be used to articulate robust design principles for teachers.

6.1.2.7 Novelty claims summarized

To summarize the issue of novelty, the tentatively new educational philosophy proposed in this thesis has been argued to contribute with a number of novel aspects. It has been shown to be very different from the well-known but still marginal approaches of learning-through-*starting-a-venture* and learning-through-*writing-a-business-plan*. Compared to existing educational philosophies it has been shown to contribute with a purposeful movement between multiple opposing philosophical positions rather than being yet another flag on the philosophical playing field of education. The value creation based purpose that drives such movements has been shown to be inherently novel in its capacity to drive an experiential learning process of students, facilitate the teachers' job of organizing for intersubjectivity and provide a "rhythm" that can

guide teachers and students as they move around on the playing field of educational philosophy. In terms of methods, there is certainly a wide plethora of existing methods, models and tools anchored in traditional, progressive and experiential education. Still, the entrepreneurial methods represent something new that has not previously been considered by philosophers of education. They are in many respects qualitatively different from the scientific methods so dear to Dewey. Other possibly novel aspects include the new term educational economics with its related recommendations, the development of Kolb's learning cycle, the stipulated mandatory interactions with external stakeholders and an emphasis on emotional entrepreneurial events for teaching and assessment purposes.

Despite these numerous novelty claims, the idea of learning-through-creating-value-to-others could still be viewed as a mere combination of old educational philosophies. Whether it then represents a new or merely a revised educational philosophy is difficult to determine. Here it is useful to return to Schumpeter's (1934, p.134) view on innovation, which centered around "the carrying out of new combinations". Schumpeter differentiated between "continuous adjustment in small steps" and "new combinations [that] appear discontinuously" (ibid, p.65-66). Therefore it arguably remains to be determined whether the tentatively new educational philosophy is an incremental adjustment to existing practices not really meriting the term "new", or instead is a new and disruptive novelty causing discontinuous change. We might need to await its consequences when put into practice in order to determine whether it is new or not.

6.2 Implications for practice and research

If the educational philosophy articulated here is deemed to be both useful and novel it could be used by practitioners as a ground for new recommendations for how to infuse entrepreneurship into education. Policymakers could draw from it when advising or requiring teachers on multiple levels of education to infuse entrepreneurship into education. It could inspire teaching guidelines on entrepreneurial education in terms of how entrepreneurial education can or should be done in practice, and on which reasons to ground such practices. Teachers could apply it in order to bridge the problematic rift between traditional and progressive education and thereby achieve a better combinatory effort of different teaching "recipes". Such prescriptive uses of the tentatively new educational philosophy could primarily be applied to wide definition based enterprise education, but perhaps also to narrow definition based entrepreneurship education. It thereby constitutes an early path towards issuing one single entrepreneurial education related teaching recommendation applicable in multiple settings.

Viewing this thesis as critical philosophy of education work, the focus on entrepreneurship as altruistic and collective activity could mitigate the problematic bias towards male white hero entrepreneurs currently at risk of being promoted unintentionally by less aware entrepreneurial educators (Gill, 2014). It could also be a way to provide teaching methods that cater for the needs of those students that do not thrive in the current educational paradigm, such as students at risk of dropping out of school (Moberg, 2014b), students diagnosed with for example ADHD (for an example, see Roth and Lee, 2007) and students viewing themselves as unsuccessful in the current emphasis on business related competitions and award schemes (Berglund, 2013; Petersen and O'Flynn, 2007).

In terms of research implications, a useful and novel educational philosophy could trigger new research efforts on a few different themes. This could include prescriptive research aiming to generate recommendations on *when*, *how* and *why* to infuse entrepreneurship into education. It could inform descriptive research aiming to assess the impact of infusing entrepreneurship into education. It could also spur more theoretical and conceptual research on the overlap between entrepreneurship and education, such as exploring the proposed term educational economics further; a different and perhaps new kind of entrepreneurship where the payback consists primarily of learning.

Viewing this thesis as analytical work in terms of language analysis implies a clarification on definitional level of what "entrepreneurial" signifies when used in connection with education. It thus allows for better distinguishing between entrepreneurial and non-entrepreneurial education. This aligns with the referee role of educational philosophers outlined by Burbules and Raybeck (2003). Such definitional language clarification, or perhaps narrowing, could allow scholars to unify the two currently separated fields of enterprise and entrepreneurship education.

6.3 Limitations and challenges

The work leading up to this thesis has surfaced many limitations and challenges of the work at hand. Some are on a philosophical level, others are on a more practical level and yet others are on a scholarly level.

6.3.1 Philosophical limitations and challenges

An educational philosophy asking students to focus on knowledge that can be useful for others will likely be criticized for its utilitarian emphasis. If focus is put primarily on useful knowledge, there is a risk of neglecting a disinterested pursuit of such knowledge that is deemed irrelevant for society short term. Value creation as educational philosophy can thereby be seen as a companion to consumerism and marketization of education with its focus on competencies valuable on a "market" of external stakeholders, even if no financial transactions take place.

Another philosophical challenge is whether it is ethical to expose students to the risk of experiencing strong negative emotions. This problem was brought up by Pittaway and Cope (2007b), and appended papers 1 and 2 indeed illustrate just how transformative and crisis-generating value creation as educational practice can be. Some ethical aspects are if such highly negative events are acceptable, how students are to be informed about the risks, how to manage problematic events once they occur, and how much resources to devote to the treatment of them.

A challenge with narrowing the definition of entrepreneurial education to student value creation could be its excluding effects. It is therefore important that such a strict definition of entrepreneurial education is not used to blame teachers for doing "wrong". Instead, a strict definition could perhaps be used as an ambitious vision that teachers could be working towards, sometimes reaching it and sometimes not depending on circumstances and available resources. Such progression based issues constitute an important focus for further research.

Another challenge with a narrowed definition would be what to label learning *about* entrepreneurship, since a value creation based definition of entrepreneurial education would exclude such courses and programs from the field of entrepreneurial education in its more strict

sense. Also, the mere use of the term entrepreneur-*ial* (rather than entrepreneur-*ship*) education could by some be interepreted as signifying that it is the education that is entrepreneurial rather than education being about entrepreneurship. Such perceptions are not necessarily misleading, given the definition proposed in section 5.1, likely leading to an embedded approach of entrepreneur-*ial* education rather than a separate approach of entrepreneur-*ship* education (cf. Smith et al., 2006; Smith, 2008; Pittaway and Edwards, 2012; Handscombe et al., 2008).

There is also a general critique against any analytical work in philosophy of education that is worth taking into account here. An "ostensibly neutral and objective" definition of a term can also result in a hidden imposition of certain values (Burbules, 2000, p.23). Applied to this situation, an attempt to propose a more precise definition of entrepreneurial education, with all its plausible benefits, is still inevitably based on assumptions and values that are potentially excluding and too rigid. Such risks need to be taken into account here, in what seems to be a challenging choice between inclusive fuzziness and excluding precision.

6.3.2 Practical limitations and challenges

Applying value creation as educational philosophy is rife with practical challenges. There is currently no literature apart from this thesis describing it extensively. The entrepreneurial methods proposed to be used for supporting teachers and students are not contextualized to educational purposes in terms of removing unnecessary business terms and adjusting them for educational purposes. This constitutes a major endeavor, given that each method needs to be tested in a variety of different settings, adjusted in ways that are then found necessary, and then evaluated against the intended learning outcomes for the students as well as resource requirements that might limit its practical applicability in various settings. There is also a wide plethora of generic challenges in educational change (Elmore, 1996) that will likely impede the dispersion of the educational philosophy articulated here. Any application of the tentatively new educational philosophy will also likely be done in a combination with other established educational philosophies, leading to interaction effects not investigated at this stage. Another practical challenge will likely be the patronizing of students from adults. In appended paper 1 there is empirical evidence of students being seen as incapable of creating value to others.

6.3.3 Scholarly limitations and challenges

Research in entrepreneurial education is inherently interdisciplinary. The two scholarly domains of entrepreneurship and education are very distant from each other, representing what seems to be two different galaxies. Future research endeavors drawing on the work presented in this thesis will be reliant upon involving experts from both fields, thus applying a collaborative approach to research. Even if such dual expertise is secured, there will still be the challenge of getting the results diffused more widely through publication outlets. Journals are often employing rather strict delimitations when taking decisions on which contributions / contributors to accept (Burbules, 2000), making diffusion of results a challenge. Scholarly discussion that might follow will be hampered by the absence of dual experts. A scholar who is an expert in one of the fields might not even be a novice in the other field. This opens up for many kinds of miscommunication and misunderstandings. Given how rare it is for teachers to let students learn by creating value to others (see appended paper 3), there is probably a multitude of additional limitations and challenges that has not yet been identified.

6.4 Future work

Proposing a tentatively new educational philosophy can be viewed as the starting point of what might turn out to encompass a wide variety of both short-term and long-term future activities involving scholars, practitioners and policymakers. Short-term there is a multitude of tactical activities that could be done in order to develop and further expand the number of emerging examples of value creation as educational practice, constituting what Elmore (1996, p.1) has labeled "pockets of excellence". Long-term however, strategical work on a very different level is required, constituting a road paved with numerous failed attempts to achieve large-scale educational reform. It is important here to acknowledge that long-term and large-scale adoption of the tentatively new educational philosophy articulated here is a very different endeavor from the focus of this thesis. Large-scale adoption will require a quite different set of theories and activities than those outlined and focused on in this thesis. It is arguably an entire doctoral thesis in itself. Still, a brief attempt will be done below to also sketch out some long-term key issues.

6.4.1 The short-term future – Tactical work with pockets of excellence

Short-term scholarly work could include deductive research strengthening the evidence for links between emotional events and developed competencies. The evidence base for which entrepreneurial education practices "work" for teachers and students on a micro level could be carefully and meticulously expanded, perhaps by using the common method of establishing model schools (Elmore, 1996). Scholarly assessment of entrepreneurial education could be undertaken that employs the new methodological perspectives proposed in this thesis. The emergent research on the role of emotions in education could be connected more to entrepreneurship research on entrepreneurial events triggering emotion and learning. Deeply interdisciplinary research projects could be set up involving dual expertise from both fields of education and entrepreneurship. In such projects the app instrument developed in this research could be used to collect experiential data, as outlined in section 3.4.3.

Short-term practical work could include practitioners from all levels of education to participate in the contextualization of entrepreneurial methods to educational settings by testing them out and adjusting them according to what "works" for them and their students. An example bank could be built up illustrating how students can contribute to society while still in education if only they are given the chance by adults trusting their ability to create value. Existing and emerging information technology could be put to work further in order to facilitate the many human interactions required for value creation as educational practice, as well as the formative assessment and feedback required to support teachers and students in entrepreneurial processes. Literature and other support material tailored to the practical needs of teachers could be written in close collaboration between researchers and practitioners. Policymakers could consider whether value creation as educational philosophy could support the aims they currently have for infusing entrepreneurship into education, and if there are additional aims that they want to consider such as facilitating for teachers to balance between opposing educational philosophies and increasing school engagement among students. If that is of interest, policies need to be developed and decided upon that can support and guide teachers and other key educational stakeholders. Policymakers could also consider whether the emotional events based assessment strategy emerging from this research is useful for their needs of assessing and supporting entrepreneurial education.

6.4.2 The longer-term future – Strategic work towards widespread adoption

Elmore (1996) has pointed out how fundamentally different the challenge of developing a new educational idea into emerging pockets of excellence is from the challenge of getting to full scale adoption. As illustrated in Figure 1 the focus of this thesis is on the former of these two kinds of challenge. The latter challenge was rather identified as a future possibility in Figure 1. There is thus little ground in appended papers that could serve as basis for robust recommendations on how to put the educational philosophy described in this thesis to widespread use. Still, the considerable empirical exposure from the nine different studies presented here has arguably generated some clues that could help in future attempts to spread the ideas developed in this thesis. This section therefore outlines some admittedly speculative ideas on aspects to consider in future work of trying to scale value creation as educational practice. They build to a large extent on a framework developed by Rogers (2002) on how to foster the diffusion of innovations and on an article by Elmore (1996) on how to scale good educational practice. First some recommendations from Rogers' innovation diffusion theory will be related to what a variety of stakeholders will likely expect from value creation as educational practice. Then a number of long-term implications for policymakers, school principals, university presidents and other potential reformers will be derived from Elmore.

6.4.2.1 *Innovation diffusion theory considerations*

Rogers (1983, p.16) claims that "innovations that are perceived by receivers as having greater relative advantage, compatibility, trialability, observability, and less complexity will be adopted more rapidly than other innovations". This has a number of implications for the long-term adoption of value creation as educational practice. In terms of *relative advantage*, evidence needs to be developed showing that value creation as educational practice yields better results than alternative educational practices in a number of dimensions that matter for a variety of stakeholders. *Compatibility* is required in a number of dimensions according to Rogers (ibid, p.223-230), such as in relation to values and beliefs, and to previously introduced ideas. The issues of values and relations to existing educational philosophies have been discussed at length in this thesis, and are now through Rogers also related to the expected rate of adoption of entrepreneurial education. Similarities to existing practices can here in fact be regarded as a positive driver towards adoption. *Trialability* stipulates that dividing an innovation into small nuggets that can be tested small-scale is beneficial for its adoption. Here I posit that the question "For whom could this knowledge be valuable today?" outlined in sections 5.3 and 5.5 is crucial as a small-scale way to test value creation for the first time in the classroom. Future work could focus more systematically on the role of this question in early steps of adoption, and on how to optimize the use of it. *Observability* has been discussed extensively in connection to assessability in section 5.3.4. Here the app instrument could play a key role in raising the level of observability. Finally, *complexity* has also been discussed extensively in connection to simplification in section 5.3.1. Here Rogers' framework illustrates how simplification could lead to an increased rate of adoption for entrepreneurial education. Different definitions of entrepreneurial education could thus lead to different rates of adoption depending on their level of complexity.

6.4.2.2 Some implications for policymakers, principals, presidents and reformers

Elmore (1996) states that educational change is primarily a problem of low demand for new ideas, since the number of ideas and initiatives for change is much higher than the number of schools and teachers asking for change. Any attempt to introduce new ideas coming from above therefore needs to be based on something more than a mere willingness of teachers to voluntarily change their practice in the classroom. Elmore shows how the history of educational change contains ample evidence that good educational practice does not spread spontaneously on a wider scale, but at its best reaches "roughly 25 percent of the total [teacher] population" (p.16). What is needed to reach larger scale change is strong normative structures for good teaching, evaluation, monitoring, inspection and feedback to teachers. Such structures need to be established by multiple levels of authority both within and outside schools. Associated incentive structures are also crucial. Elmore also warns against two common but flawed practices in educational change. First, the idea of letting energetic early adopters work with change initiatives separated from the more sceptic and timid teachers is a common road to failure, since this alienates and separates the majority of teachers from the change initiative and confirms beliefs that only the most ambitious teachers are able and willing to deal with the new practice. Secondly, teacher training that is not coupled with organizational support and pressure to apply the new ideas treated in the training sessions are equally bound to fail.

This illustrates that any attempt to spread value creation as educational practice needs to be coupled with normative structures of multiple kinds and on multiple levels in order to succeed long-term and on a wider scale. Every bottom-up based teacher training program needs to connect to top-down normative structures for support, monitoring and incentives. Future work on how these couplings play out in practice could be a key theme for both practice and research.

Drawing on Elmore as well as on discussions held in some of the empirical cases associated to this thesis, another tentative implication here for future work is that it could be better to let all teachers in an educational institution do a little something around value creation as educational practice than letting a small group of teachers become champions. Any hope that such champions would lead the way for the rest of the teachers conflicts with previous experience of what works. It might instead be better to leverage on Rogers' ideas of trialability and observability by demanding and then monitoring that each teacher does at least one minor value creation assignment with their students over the course of a given time frame. This means that key actors in change initiatives will be principals, presidents and project managers of change projects running whole school / university / municipality projects rather than any given small group of enthusiastic and ambitious teachers attempting to lead the way through own practice.

Policymakers also have a key role to play in long-term adoption endeavors. New teaching practices need to be supported by policies and regulations in order to be adopted on a wider scale (Kliebard, 1988). If principals and presidents are going to be willing and able to change organizational structures, they will likely need support from policymakers on multiple levels. And if policymakers are to take such measures, more empirical evidence of positive impact is likely needed. The inevitable conclusion from the educational change perspective taken in this section must be that the pragmatic focus of this thesis on value creation as educational practice for teachers and students is but an early start. We are in the infancy of value creation as educational practice and substantial future work remains to be done.

7 Conclusions

The purpose of this thesis has been to qualify a tentatively new educational philosophy grounded in entrepreneurship viewed as new value creation. It was developed through an abductive five-year action research process of iterating between theory and practice. In terms of theoretical grounding it was supported by entrepreneurial methods, entrepreneurial competencies, entrepreneurial interactions, entrepreneurial altruism and entrepreneurial learning. In terms of practice, a total of nine empirical studies on all levels of education were drawn from, employing a few hundred primary, secondary, tertiary and continuing education teachers, around 2000 students and around 100 different educational institutions in three different countries. The resulting definition of a tentatively new educational philosophy became: Let students learn by applying their existing and future competencies to create something preferably novel of value to at least one external stakeholder outside their group, class or school/university. This was labeled *learning-through-creating-value-for-others*, constituting a way to tightly connect education and entrepreneurship by means of value creation as a stepping stone in between them.

In this thesis I have endeavored to show that this is both a novel and a useful proposition to educational practitioners. In terms of novelty, it represents a fundamentally different philosophical proposition than established philosophies such as traditional, progressive and experiential education, or at least a novel combination thereof. In terms of usefulness, it allows teachers to draw on a thoughtful and coherent description and justification of entrepreneurial education when trying to infuse entrepreneurship into education, giving firm advice to questions of *what* to do, *how* to do it and *why*. I have shown how this can mitigate many of the challenges inherent in entrepreneurial education, such as definitional confusion, organizational issues, lack of resources, assessment challenges and fear of capitalism. A tentatively new educational philosophy thus represents a means to increase the chances of successful outcomes from calls by policymakers on regional, national and international levels to infuse entrepreneurship into education.

The tentatively new educational philosophy has been argued to simplify for teachers, to make students learn from taking responsibility in society, to allow for using available means when learning by doing, to facilitate assessment and to help students apply theories in practice. It thereby provides teachers with a "rhythm" to better perform the crucial "dance" of moving between multiple and conflicting educational philosophies in their daily work. The tentatively new educational philosophy also has analytical implications in that it allows for a more precise definition of entrepreneurial education, potentially useful both in enterprise education and in entrepreneurship education.

Some important challenges and limitations with the proposed educational philosophy have also been discussed. Focusing on useful knowledge and value creation constitutes a risk of neglecting a disinterested pursuit of knowledge for its own sake and excluding educational practices that some deem to be entrepreneurial. The interdisciplinary challenge of bridging between education and entrepreneurship was also shown to be significant. A stepping stone has been introduced, but will scholars and practitioners be able to keep their feet dry?

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