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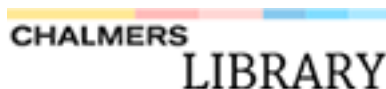
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Bridging the traditional-progressive education rift through entrepreneurship

Traditional-progressive education rift

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Abstract

Purpose – The purpose of this paper is to use entrepreneurship to bridge the traditional-progressive education rift.

Design/methodology/approach – The rift between traditional and progressive education is first deconstructed into five dualisms. Conceptual question-based analysis is then applied to determine if and how three entrepreneurial tools could contribute to bridging this rift; effectuation, customer development and appreciative inquiry. Finally, pattern-based generalizations are drawn from this analysis.

Findings – Patterns in the analysis motivate the articulation of an overarching educational philosophy – *learning-through-creating-value-for-others* – grounded in entrepreneurship and capable of bridging the educational rift.

Research limitations/implications – Only three entrepreneurial tools are included in the conceptual analysis, signifying a need to explore whether other tools could also help teachers bridge the traditional-progressive education rift. Entrepreneurial tools and the new educational philosophy manifesting entrepreneurship could also need to be further contextualized in order to be useful in education.

Practical implications – The tentatively new educational philosophy has been shown to be capable of bridging five dualisms in education which are currently problematic for teachers in their daily practice, and to remedy teacher challenges such as complexity, lack of resources, assessment difficulties and student disengagement.

Originality/value – An educational philosophy grounded in entrepreneurship has arguably not been proposed previously. Contrasting existent educational philosophies, this new philosophy goes beyond learning-through to also emphasize creating-value-for-others. This could facilitate bridging between traditional and progressive education, one of the most important challenges in education. It could also be used to facilitate the infusion of entrepreneurship into general education.

Keywords Effectuation, Appreciative inquiry, Entrepreneurial education, Customer development, Dualisms, Educational philosophy

Paper type Research paper

Introduction

Infusing entrepreneurship into primary, secondary and tertiary education has been high on the agenda for policymakers during the last decades (Hofer *et al.*, 2010; Mahieu, 2006). Some stated effects include job creation (Hindle, 2007; Jones and Iredale, 2010), economic growth (Kuratko, 2005), development of key competencies (Henry *et al.*, 2005; Hytti and O’Gorman, 2004), increased school engagement (Moberg, 2014) and increased ability to address societal challenges (Rae, 2010; Volkmann *et al.*, 2009).

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Competencies commonly 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, pro-activeness and perseverance (Fisher *et al.*, 2008; Mitchelmore and Rowley, 2010). The stated effects have however proven difficult to achieve in practice, given both generic challenges when changing educational practice (Fullan, 2007) and more specific challenges when instilling entrepreneurship into education. Common specific hurdles include lack of resources, teachers' fear of commercialism, impeding educational structures, assessment difficulties and lack of definitional clarity (Bennett, 2006; Johannisson, 2010; Surlmont, 2007).

Whereas a narrow definition of entrepreneurship, viewed as creating a venture and becoming an *entrepreneur*, is suitable only for a small fraction of the student population, a wider definition of entrepreneurship, aimed at making people become more *entrepreneurial* in general, has potential to be relevant to a majority of students in the educational system and thus helpful when infusing entrepreneurship into all levels of education (Draycott and Rae, 2011; Fayolle and Gailly, 2008; Jones and Iredale, 2010; Williams Middleton, 2013). However, research on adopting such a wide definition of entrepreneurship to general schooling and education is limited. This paper attempts to add to the limited research base by taking a value creation perspective to entrepreneurship, defined as a dialogic between the individual and the new value created (Bruyat and Julien, 2001). This contrasts to venture creation/organizational emergence (Gartner, 1985) and opportunity recognition (Shane, 2003) perspectives to entrepreneurship. While not as dominant in current scholarly debates, a value creation perspective offers particularly high explanatory power through being both generic and distinct (Moroz and Hindle, 2012).

The main purpose of this paper is to use entrepreneurship to bridge the traditional-progressive education rift. The bridging is done through analytical generation of a tentatively new educational philosophy grounded in entrepreneurship and manifested in the form of entrepreneurial tools. For the purpose of this paper, an educational philosophy is defined as a belief-based and coherent set of articulated prescriptive propositions offering normative advice to (principally) teachers on *what* to do, *how* to do it and *why* (Burbules and Raybeck, 2003; Curren, 2008; Dewey, 1938; Frankena, 2003). Such advice could help substantiate wide-spread desire and expectation of more entrepreneurship into the curriculum and facilitate bridging the rift between traditional and progressive education, described as "one of the greatest challenges in teaching" (Darling-Hammond, 2012, p. 189).

In many cases, *entrepreneurial* education has been seen as yet another form of progressive education, with difficulties gaining ground in a school system firmly resting on more objective, manageable and measurable formats (Hägg, 2016). Instead, this paper posits that the term *entrepreneurial* should be interpreted as "creating value for others" (cf. Bruyat and Julien, 2001), with potential to supporting both objective norm-based learning and subjective experiential learning. A value creation perspective to entrepreneurship emphasizes both individual and social components of learning, thereby offering alignment with the bridging purpose of this paper. Value is often deemed synonymous with economic wealth, but value can be perceived in many forms: economic, social, cultural, ecological or emotional (Hindle, 2010). Three tools stemming from and therefore manifesting entrepreneurship – effectuation (Sarasvathy, 2001), customer development (Blank and Dorf, 2012) and appreciative inquiry (Cooperrider *et al.*, 2008) – help demonstrate how entrepreneurship can bridge the rift between traditional and progressive education.

The paper will first describe the rift between traditional and progressive education, including how it is addressed in philosophy and general education, as well as in existing forms of entrepreneurial education. Following this, analytical steps are introduced. To begin, the rift is deconstructed into five dualisms. Then analysis addresses if and how entrepreneurship manifested in the form of entrepreneurial tools could bridge the rift. Finally, patterns identified across these entrepreneurial tools are conceptualized into an overarching educational philosophy – “learning-through-creating-value-for-others” – representing a concept that can help teachers use entrepreneurship to bridge the traditional-progressive education rift.

While presented as a conceptual paper, the idea of using entrepreneurship as manifested by entrepreneurial tools to facilitate bridging the traditional-progressive education rift has emerged through the authors’ active participation in multiple empirical settings. As an illustration of this empirical backdrop to the paper, the Appendix outlines how the selected entrepreneurial tools have been repetitively used in three educational settings.

A rift of dualisms

For the purpose of this paper, a rift is defined as a combination of multiple dualisms illustrating a fundamental divide between competing perspectives. The rift between traditional and progressive education can be traced back to ancient Greek philosophy. The distinction between the immaterial mind and the material world has survived to present-day as an integral part of contemporary Western philosophy, epistemology and culture (Biesta and Burbules, 2003). This foundational idea of a dualism between mind and matter has formed the premise for many other dualisms: facts vs values, objective vs subjective, theory vs practice, thought vs action, individual vs social, structure vs agency, etc. (Sayer, 2010).

Dualisms can be useful as a means to explain and classify our lifeworld (Egan, 2002). Both Dewey (Noddings, 2007, p. 24) and Descartes (Easton, 2013, p. 24) used dualisms as a methodology to keep things experienced as united more conceptually distinct. But dualisms also serve as a root cause of significant troubles in education. Many common views on learning appreciate only one side of the educational rift, for instance stating that the “best” learning resides in the mind rather than in the body, that rational knowledge-based thinking is superior to “irrational” feeling, or in a reverse manner, that the only valid learning comes from practical experience, or that teachers should refrain from guiding their students (Hager, 2005; Kirschner *et al.*, 2006; Pring, 2012; Roth and Lee, 2007). One-sided perspectives can prove problematic, such as more traditional views neglecting that which is intersubjective and relational (Sayer, 2010), or more progressive views neglecting basic characteristics of human cognitive architecture in their downplaying of explicit instruction (Kirschner *et al.*, 2006). Such one-sidedness risks missing out on the value provided by the other side, as well as the critical integration of both sides.

Educational philosophies illustrating the rift

Two contrasting fundamental philosophical positions – objectivism and subjectivism – have influenced different educational philosophies (Pring, 2010), and underlie the main rift between traditional and progressive education. Objectivism states that reality is a given and that it is possible to obtain real and objective knowledge about “truths” independent from humans observing the world; while subjectivism states that reality is

imagined and constructed by humans, and therefore all knowledge is personal and subjective (Cunliffe, 2011; Núñez, 1997).

Anchored in objectivism, traditional education emphasizes a teacher centered approach, and centers on lecturing, memorizing, repeating and testing of knowledge and theories deemed valuable for all students (Cuban, 2007; Pring, 2010). Anchored in subjectivism, progressive education emphasizes a student centered approach, and centers around active project work, problem-based learning and social team-based learning from practice (Jonassen and Land, 2000; Labaree, 2012; Tynjälä, 1999). The polarized discussion between traditional and progressive education was initiated in the eighteenth century when Rousseau (1762/2003) published his book “Émile or Treatise on Education,” exposing the “fundamental conflict between forming the citizen and forming the individual” (Egan, 2008, p. 23). In the on-going debate between competing perspectives, traditional education has remained predominant in practice (Labaree, 2005, 2012). A main reason for this dominance, according to Labaree, is that traditional education constituted a message more appealing to people in power and could provide convincing empirical evidence for its superiority through quantitative studies.

Teachers are often left with the two “equally unattractive options of inhuman rationality and human irrationality” (Biesta and Burbules, 2003, p. 21), forcing them to navigate between the rigidity of traditional education and the vagueness of progressive education (Egan, 2008). Research has shown that the choice many teachers opt for can be described as “hugging the middle” between these extremes, blending and creating hybrids of the two educational philosophies, albeit with strong emphasis on traditional education (Cuban, 2007). Teachers have had to find their own personal approaches for dealing with the rift, following the curriculum of standardized subject matter while at the same time attending to individual students’ differing “interests, abilities, starting points and pathways” (Darling-Hammond, 2012, p. 40). As teachers are faced with such continuous management of multiple “chronic educational dilemmas” (Labaree, 2012, p. 157), a solution that has been proposed is to provide new “concrete tools and practices” (Darling-Hammond, 2012, p. 37) that can bridge the rift between traditional and progressive education, rather than yet another version of one or the other. Entrepreneurial education employing a value creation-based definition of entrepreneurship holds such promise.

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, i.e. preparing people to assume the role *entrepreneur*. It also includes the wider term *enterprise education* defined more broadly as developing competencies necessary to generate and realize ideas, i.e. preparing people to be more *entrepreneurial* in their everyday life (Pittaway *et al.*, 2011; QAA, 2012). Research on entrepreneurial education is primarily emphasizing progressive education dimensions. Examples include proposing active, process-based, collaborative, experiential and multidisciplinary approaches to differentiate from passive, content focussed, standardized and single-subject-based approaches more often found in traditional education (see, e.g. Cotton, 1991; Kirby, 2007; Ollila and Williams Middleton, 2011; Wing Yan Man and Farquharson, 2015). This emphasis on progressive aspects does not suit the current purpose of bridging the educational rift. What progressive pedagogy can do for entrepreneurial education is not the current

focus of this paper. Rather, the interest of this paper is in the contrary direction: what entrepreneurship can do for education in general.

To summarize, the traditional vs progressive rift in education has been traced back to ancient Greek philosophy and found to posit a major challenge for teachers to date. When aiming to infuse entrepreneurship into general education, teachers risk ending up in a challenging cause, together with marginalized progressive approaches. This paper instead focusses on attempting to bridge this rift between traditional and progressive education, which may also have implications for the educational system in general.

Bridging the rift in four analytical steps

The disentanglement of a fuzzy lifeworld into dualisms is a philosophical clarification method championed by the likes of Plato, Descartes and Dewey (Easton, 2013; Lavazza and Robinson, 2014; Noddings, 2007). Plato disentangled our lifeworld into perceivable objects such as a tree, and immaterial entities such as souls, forms and universal knowledge (Gerson, 1986). Descartes disentangled the human experience, keeping conceptually distinct attributes of the mind from attributes of the body (Easton, 2013). Dewey (1938) disentangled the educational experience of the student into what is now labeled traditional and progressive education. In order to infuse entrepreneurship into education, there is a need to further disentangle the traditional-progressive education rift. Further disentanglement allows for breaking down the rift into more specific and manageable everyday challenges, faced by teachers and students in their educational experience.

Such disentanglement however requires not getting lost in separation, as is so often the case in education. This paper therefore aims to assert that entrepreneurship as manifested in the form of entrepreneurial tools could help bridge the rift between traditional and progressive education. To accomplish this, four analytical steps are employed. First, the paper deconstructs the educational rift into a framework consisting of five dualisms (see Table I). Second, this framework is used to derive solvable questions (see Table II) that illustrate challenging teaching situations. Searching for answers to these questions allows for appreciation of the extent to which a dualism has been resolved, i.e. addressing concerns on both sides of the rift. Third, the paper builds upon Vygotsky (1978) when qualifying entrepreneurial tools as useful for bridging the rift. Finally, three entrepreneurial tools are distilled from practice and applied to the five dualisms as a means for answering the derived questions.

Step 1: deconstructing the rift into a framework of five dualisms

Five dualisms are derived from literature to represent different aspects of the educational rift between traditional and progressive education (see summary in Table I). These dualisms are formulated to capture both sides of the rift equally, using neutral language to avoid normative preference toward either side.

Simplicity vs complexity. The first dualism derived and presented in the framework addresses the continuous dilemma teachers face when delivering education, balancing between learning which can be easily delivered and quantified, and learning that is representative of sociocultural context. Deshpande (1983) describes an objective worldview as being outcome-oriented and reductionist, and contrasts it to the subjective worldview being process-oriented and holistic. This resonates with the contrasting views between on the one hand the reductionist Cartesian perspective

Traditional education	vs	Progressive education
<i>Simplicity</i>	<i>vs</i>	<i>Complexity</i>
A reductionist and simplistic perspective ^a	<i>vs</i>	A holistic and systemic perspective ^a
Standardized single-subject education ^b	<i>vs</i>	Preparing for multidisciplinary and complex tasks ^b
Single-subject-based learning about entrepreneurship ^c	<i>vs</i>	Multidisciplinary learning through entrepreneurship ^c
<i>Individual</i>	<i>vs</i>	<i>Social</i>
Reality a concrete structure ^d	<i>vs</i>	Reality a social construction ^d
Individual information processing-based learning ^e	<i>vs</i>	Social interaction-based learning ^e
A focus on know-that ^c	<i>vs</i>	A focus on know-who and know-how ^c
<i>Content</i>	<i>vs</i>	<i>Process</i>
Linear concrete processes ^d	<i>vs</i>	Iterative situated processes ^d
Product and content focus in education ^f	<i>vs</i>	Process focus in education ^f
Content-based conventional approach to education ^c	<i>vs</i>	Process-based enterprising approach to education ^c
<i>Detached</i>	<i>vs</i>	<i>Engaged</i>
Focus on being dispassionate/value free ^g	<i>vs</i>	Focus on the meaningful/value-bound ^g
Education where learner is passive ^h	<i>vs</i>	Education where learner is active and emotional ^h
Educational focus on absolute detachment ⁱ	<i>vs</i>	Entrepreneurial focus on emotional involvement ⁱ
<i>Theory</i>	<i>vs</i>	<i>Practice</i>
Objective knowledge exists beyond human experience ^j	<i>vs</i>	Knowledge constituted through lived experience ^j
Learning as acquisition of inert knowledge ^h	<i>vs</i>	Learning as participation in practical experiences ^h
Emphasis on entrepreneurship theory ^k	<i>vs</i>	Emphasis on entrepreneurial creation ^k

Note: Five dualisms derived from literature in philosophy, education and entrepreneurial education representing different aspects of the rift between traditional and progressive education

Sources: ^aDeshpande (1983); von Bertalanffy (1972); ^bTynjälä (1999); ^cCotton (1991); ^dCunliffe (2011); ^eJeffrey and Woods (1998); Egan (2008); ^fJeffrey and Woods (1998); ^gCunliffe (2011), Guba and Lincoln (1994); ^hTynjälä (1999), Egan (2008); ⁱGibb (1987); ^jWeber (2004); ^kOllila and Williams Middleton (2011)

Table I.

A framework of dualisms illustrating the educational rift

that any complex phenomenon can be reduced to and understood through its smallest and most simple parts (Spinoza *et al.*, 1999), and on the other hand a systems view where holistic understanding is needed in an increasingly complex and interdisciplinary world (Von Bertalanffy, 1972). Simplicity represents the traditional side, exemplified through focus on standardized and single-subject curriculum leading to manageable and measurable teaching. This is contrasted with a localized and multidisciplinary approach primarily found in progressive education (Cotton, 1991; Tynjälä, 1999), often resulting in a challenging complexity for the teacher (Dewey, 1938; Jonassen, 1999; Robinson and Malach, 2007).

Individual vs social. Cunliffe (2011) states that the subjectivist approach is to perceive reality as a social construction which is contrasted to the objectivist view that reality is a concrete given. In progressive education the social dimension plays an important role in the learning process (Cotton, 1991; Egan, 2008; Jeffrey and Woods, 1998), and is frequently contrasted to the individually focussed information-processing approach in traditional education. Information processing at an individual level is relatively

Table II.
Ten bridging
questions

Dualisms – A vs B	Bridging questions – from B to A	Bridging questions – from A to B
(A) Simplicity vs (B) complexity	1. How can we make complex learning environments more simple?	6. How can we help teachers design a complex learning environment?
(A) Individual vs (B) social	2. How can we connect the fuzzy social learning environment to the individual?	7. How can we help individual students engage with the social learning environment?
(A) Content vs (B) process	3. How can we package the learning process in a reified/teachable way?	8. How can we help teachers design a learning process based on teachable content/principles?
(A) Detached vs (B) engaged	4. How can we facilitate detachment and reflection for the individual?	9. How can we help teachers design an emotional engagement-based learning environment?
(A) Theory vs (B) practice	5. How can we facilitate generalizing from practical experiences?	10. How can we help teachers and students let theoretical subject matter inform practice?

Note: Ten questions bridging in both directions between outlier positions of five key dualisms for teachers taken from Table I

uncomplicated to monitor and assess, whereas capturing independent individual outcomes when embedded in group activity or teamwork presents several hurdles. Final performance is not often easily dissected into individually associated parts, and additional extenuating circumstances of real world experience may also influence outcome. This dualism therefore represents the problematic implications teachers face in regards to assessment of individual students. For example, when teachers let students participate in preferably team-based social learning environments they also need to be able to manage the resulting challenge of assessing each of them individually.

Content vs process. According to Cunliffe (2011), the conception of time and progress differs between subjectivism and objectivism, being iterative in subjectivism and linear in objectivism. Jeffrey and Woods (1998) report about a product focus among school inspectors representing traditional education values, whereas teachers prefer a process focus, being more oriented towards progressive education. Cotton (1991) states a similar dualism between focus on content in traditional education vs focus on process in entrepreneurial education. This dualism was included as a response to the common critique of progressive education to neglect the importance of canonical content knowledge and the reverse critique of traditional education to neglect the importance of a learning process directed by student initiative and interest (Dewey, 1938; Labaree, 2005).

Detached vs engaged. Traditional education emphasizes objective pursuit of truth, distinct from circumstance, contingency, whim or caprice. Guba and Lincoln (1994) position traditional approaches as value-free inquiry, contrasting them to value-bound progressive approaches. In progressive education there is frequent emphasis on the importance of emotionally engaged and active learners, which stands in contrast to the detached learners focussing on in-depth knowledge acquisition depicted in traditional education (Egan, 2008; Gibb, 2011; Tynjälä, 1999). The inclusion of this dualism in the framework reflects a challenging need for teachers to bridge between detached study and emotionally engaged learning, representing the difference between learning which can be gained without practical experience, and learning which is contingent upon the learner's own action and reaction/reflection to what is happening specifically to him/

her. The key role that emotions play for learning is an emerging theme in educational research, but represents a challenge to teachers in terms of managing student emotions and linking to theory-based detached reflection and study (Boekaerts, 2010; Jarvis, 2006; Pekrun, 2005; Roberts, 2012).

Theory vs practice. Theory vs practice is a long-standing dualism. One main issue concerns which view of knowledge is used, and in what fields production and publication of relevant propositional “expert” knowledge is feasible (Kennedy, 1999). The use of theory is very different in the scholarly fields of education, entrepreneurship and management compared to fields such as medicine and law (Khurana *et al.*, 2005; Nuthall, 2004). Epistemologically these differing views on knowledge could be regarded as mirrored through the dualism between the objectivist view that there is an objective reality and the subjectivist view that knowledge is constructed through lived experience (Weber, 2004). The centrality of lived experience is frequently discussed in entrepreneurial education (Cotton, 1991; Jack and Anderson, 1999), and entrepreneurship is even posited as a methodological alternative to scientific method (Sarasvathy and Venkataraman, 2011). The various approaches in entrepreneurial education – learning *about*, *for* and *through* entrepreneurship – span from an emphasis on knowledge about the phenomenon to learning generated through practice of the phenomenon, illustrating either side of the rift (Neck and Greene, 2011).

Step 2: deriving solvable bridging questions

While the educational literature contains many descriptions of the educational rift (Ackerman, 2003; Cuban, 2007; Fletcher, 2009; Labaree, 2005; Tobias and Duffy, 2009), fewer innovative or viable attempts have been presented as bridges to the rift. Jones (2006) has leaned on Whitehead (1929) to propose a model allowing teachers to balance between knowledge-based disciplined teaching and process-based freedom to learn in a relevant context. Sfard (1998) has advocated for solving the dualistic dilemma in general education by constantly combining the two competing perspectives of acquiring knowledge vs participating in communities of practice, i.e. living with the contradictions. Sfard (1998, p. 11) states that “an adequate combination of the *acquisition and participation metaphors* [for learning] would bring to the fore the advantages of each of them, while keeping their respective drawbacks at bay” (italics in original). Such a combination of two dualistic positions can according to Sfard turn two seemingly competing and incompatible positions into a complementary and reflective discourse. This gives hope for developing tools capable of merging dualistic positions into one practically adequate and empirically testable meta-framework (Little, 1991).

For the purpose of this paper, a set of ten questions has been derived from Table I to explore opportunities to balance and combine across the five dualisms outlined (see Table II). Each of the ten questions bridges in one direction of one key dualism. Trying to answer some or all of these ten questions potentially leads to finding new ways of achieving the constant balancing and combining of competing approaches to learning, as recommended by Whitehead (1929), Jones (2006) and Sfard (1998). In the fourth analytical step outlined below, the ten questions will be used to analyze whether any bridging attempt holds merit in bridging the rift.

Step 3: qualifying three entrepreneurial tools appropriate for bridging

While the idea of bridging between competing learning approaches by applying entrepreneurial tools was empirically inspired (see the Appendix), it also leans

theoretically on work by educational psychologist Lev Vygotsky. A century ago, Vygotsky introduced the idea of tools mediating between individuals and their environment, forming an “individual – tool – environment” triangle to overcome the “split between the Cartesian individual and the untouchable societal structure” (Engeström, 2009, p. 54). Three kinds of mediating tools for learning were proposed by Vygotsky (1978); human beings (teachers or parents), material tools (pen and paper, etc.) and psychological tools (concepts to think with) (Egan, 2008; Kozulin and Presseisen, 1995). Such mediating tools fundamentally shape and transform our mental processes (Cole and Wertsch, 1996). According to Egan (2002, p. 70), “the tools we use, when learning, shape and very largely determine what and how we can learn.” and that “from a Vygotskian perspective, our intellectual abilities are not ‘natural’ but are sociocultural constructs” (p. 113). Literature contains many examples of what could be considered a psychological tool in the Vygotskian tradition. A common example is natural and artificial languages (Kozulin and Presseisen, 1995), constituting the “ultimate” psychological tool (Wertsch, 1998). Other examples include signs, symbols, numeracy, schemas, models, methods, concepts, algorithms, graphic organizers, maps, diagrams and heuristics (Arievitch and Stetsenko, 2000; Egan, 2008; Jonassen and Rohrer-Murphy, 1999; Kozulin, 2003).

Relating to the purpose of this paper, a key question is which entrepreneurial tools could be appropriate for bridging the traditional-progressive education rift. Vygotsky’s social learning approach contributes with at least three different requirements that can be placed on an entrepreneurial tool for it to be considered a psychological tool. First, considering that psychological tools constitute what people “think with” (Egan, 2008), the entrepreneurial tool needs to provide a philosophy of its own, i.e. a way of *thinking*. Second, since the psychological tools to think *with* profoundly impact how individuals take action in the world (Wertsch, 1998, p. 519), the entrepreneurial tool needs to provide hands-on *advice* on how to manage complex environments, social interactions, iterative processes, emotional involvement and practical creation experiences (Table I). Third, given the instrumental role that language plays in social functioning (Wertsch, 1998, p. 519), the entrepreneurial tool needs to provide some novel words, principles and resulting key *terms* illustrating the helpfulness of the particular tool in question, thereby establishing a “social language” of its own (Wertsch and Toma, 1995, p. 165).

Based on appreciation among teachers and students in many empirical iterations between theory and practice (see the Appendix), three entrepreneurial tools from the field of entrepreneurship are selected as representing the Vygotskian tool criteria previously stated. These entrepreneurial tools are effectuation, customer development and appreciative inquiry. The tools are seen as exemplifying how the traditional vs progressive rift could be bridged.

Qualifying effectuation as an entrepreneurial tool. Effectuation has been developed by Saras Sarasvathy and colleagues (see, e.g. Sarasvathy, 2001; Sarasvathy and Dew, 2005). Effectuation starts with the premise “what could be the effect of my available resources?” rather than focussing on “for what cause am I doing this?” applying causal logic. Whereas causal logic would stipulate a chef to cook a meal based on a recipe and a visit to the grocery store, effectual logic would ask the chef to open a refrigerator and begin to cook a meal from its contents (Sarasvathy, 2001).

Effectuation has been described from the outset as a way of *thinking* about entrepreneurship. Sarasvathy (2003) presents it as a logic embedded in “three principles that together form the core of effectual reasoning” (p. 210). These principles offer *advice* for taking entrepreneurial action. While Sarasvathy did not invent the word effectuation,

she gave it new meaning and introduced it to a mainstream audience of both scholars and practitioners, suggesting it as a *term* that could guide entrepreneurial thought and action.

Qualifying customer development as an entrepreneurial tool. Originating from Silicon Valley in the USA, customer development (Blank, 2005; Blank and Dorf, 2012) has been adopted worldwide among practicing entrepreneurs. Customer development states that entrepreneurs need to quickly validate whether or not a hypothetical product or service creates value for users. A common technique used in customer development is to build a stripped down version of the imagined product or service, a minimum viable product (MVP), and test it iteratively on potential customers. The testing generates opportunities to learn about necessary adjustments, which, if resulting in major changes to the business concept, is termed a “pivot.”

Blank and Dorf (2012) state that customer development represents a shift in *thinking* from building the perfectly engineered product towards a more agile and iterative development process. Hands-on *advice* for this process comes from the customer development manifesto (Blank and Dorf, 2012, pp. 31-49), consisting of 14 rules outlining do’s and don’ts for a start-up founder, such as “There are no facts inside your building, so get outside” and “No business plan survives first contact with customers.” These rules together with the key *terms* pivot and MVP have changed the current social language and reasoning of many practicing entrepreneurs.

Qualifying appreciative inquiry as an entrepreneurial tool. Appreciative inquiry is presented as a means for change management within the field of organizational behavior (Cooperrider *et al.*, 2008). The association of change management to organizational renewal and opportunity recognition implicitly anchors appreciative inquiry in the field of entrepreneurship as well (cf. definitions by Shane, 2003; Sharma and Chrisman, 2007). Appreciative inquiry has been deemed useful in entrepreneurial education due to its solution (as opposed to problem) orientation (Blenker *et al.*, 2011; Ollila and Williams Middleton, 2011; Saiduddin *et al.*, 2009). It allows for collaborative generation of new ideas in groups by asking appreciative questions, triggering new perspectives to old issues (Bushe and Kassam, 2005). The key principle of appreciative inquiry is to locate and highlight an organization’s strength base, building upon what works well and use this to collectively imagine a dream of what might become. Common questions posed are “What has been successful before?” and “What can be learned from what works well?”

By virtue of focussing on strengths, appreciative inquiry has been described as a counter-intuitive way of *thinking* (Cooperrider *et al.*, 2008), since the human nature is prone to focus on weaknesses and threats (Stavros *et al.*, 2003), reacting more strongly on negative than on positive stimuli (Cameron, 2008). It also provides *advice* for organizational renewal activities, such as focussing on what works rather than what is problematic, instigating change by asking powerful yet simple questions, and opening up discursive arenas in which individuals are allowed to freely dream and be optimistic (Cooperrider *et al.*, 2008). While appreciative inquiry does not define new *terms*, as has been illustrated for effectuation and customer development, it does follow a four-step logic labeled the 4-D cycle (Cooperrider *et al.*, 2008).

Step 4: applying the three entrepreneurial tools to bridge the five dualisms

Having identified three entrepreneurial tools, representative of entrepreneurship and therefore appropriate for bridging the traditional-progressive education rift, the paper proceeds by utilizing the ten bridging questions (Table II), derived from the framework

of dualisms (Table I), to illustrate how the tools address the rift-based challenges that teachers face in their daily work. A summary of findings is presented in Table III.

Bridging using effectuation. Effectuation can be put to use in schools by letting students initiate an iterative process of trying to create value to stakeholders outside their classroom. The process is based on the students' available means and knowledge, starting with students asking themselves "For whom is this knowledge valuable today?" Addressing bridging questions 1, 3, 6, 8 and 9 in Table II, teachers can rely on the iterative and dynamic process of effectual interactions outlined by Sarasvathy and Dew (2005), leading to identification of committed stakeholders, access to resources and gradual clarification of goals. Addressing bridging questions 2 and 7 in Table II, teachers can support student engagement with such a social learning environment by letting them ask themselves questions such as "Who am I?" "What do I know?" "Whom do I know?" and "What effects can I create?" These effectual questions could also address bridging question 4 in Table II by allowing for detached reflection in between each iteration. Addressing bridging question 10 in Table II, teachers could let students connect theoretical knowledge in the curriculum to an iterative process of interaction with people outside the classroom by putting emphasis on the effectual question "What do I know?" and then exploring which of this knowledge that leads to stakeholder commitment. Such stakeholder commitment could then help in answering bridging question 5 in Table II by allowing students to relate back to theory, based on students'

Dualistic challenge	Effectuation	Entrepreneurial tools Customer development	Appreciative inquiry
Bridging simplicity and complexity	A teachable logic for value creation, based on how experienced entrepreneurs create value	A set of 14 rules for how to validate value creation hypotheses, relying on extensive target group interactions	A set of principles that can simplify the complex task of driving change by triggering people to identify, shape and act on opportunities
Bridging individual and social	Four individually phrased questions are posed at the outset of each iteration in the effectuation cycle	Emphasizes first-hand feedback from real people iteratively collected by the people running the project	Specifies basic sets of questions that individuals can use to navigate a wide variety of social contexts
Bridging content and process	A reification of an uncertain value creation process of embracing surprises	A reification of the iterative and fail-prone process of honing a value proposition to external stakeholders	A reification of a collective opportunity identification process based on strengths
Bridging detachment and engagement	Four self-focussed questions starting each cycle, promoting individual reflection and detachment	Emphasizes detached design of experiments that can then be carried out in the all-engaging real world	Outlines a repeatable and teachable process for triggering positive emotions and engagement
Bridging theory and practice	The initial "What do I know" question connects theory to practice, allowing for curriculum linkages	Links theory with practice by emphasizing iterative formulation of hypotheses that are tested in practice	Turns inert knowledge into meaning-laden stories of past and future success and practical adequacy

Note: Outline of how three entrepreneurial tools can help bridging between five main dualisms in education outlined in Table I

Table III.
Entrepreneurial tools
bridging a rift of
dualisms in
education

own practical experiences of what knowledge proved to be valuable to stakeholders outside the classroom.

Bridging using customer development. Similar to effectuation, customer development prescribes a process where students can try to create value for stakeholders outside of the classroom. They are advised to form hypotheses about what could be valuable to people and then design experiments involving an MVP that allow them to test these hypotheses. Addressing bridging questions 1, 3, 6, 8 and 9 in Table II, the customer development manifesto provides rules and principles for how to design such an iterative learning process. Translated to education recommendations could include “Books are only hypotheses, so get outside your school building and test them” and “No project plan survives first contact with stakeholders outside school.” Addressing bridging questions 2 and 7 in Table II, students are encouraged to go out and test their ideas on people outside school by designing an MVP and performing pass/fail experiments. Addressing bridging question 4 in Table II, reflection upon failure is facilitated through the term *pivot* which defuses the perceived risk of failure. Finally, customer development is all about iterating between theoretical hypotheses and the complex and surprising real world of practice, addressing bridging questions 5 and 10 in Table II.

Bridging using appreciative inquiry. Appreciative inquiry as an entrepreneurial tool allows teachers to facilitate identification and creation of opportunities by students, building upon students’ own experiences as well as the experiences of others regarding previous success and accomplishment. The opportunity identification outcome of appreciative inquiry addresses bridging questions 1, 3, 6, 8 and 9 in Table II. By opening a positive discursive arena and letting students reflect on their knowledge, past successes and associated dreams, students can be compelled to take action and inquire with people outside the school setting about opportunities to put their knowledge and skills to practical use. Addressing bridging questions 2 and 7 in Table II, appreciative inquiry specifies some basic questions that individuals can use when interacting in a social learning environment. Addressing bridging question 4, it provides explicit mechanisms for students to reflect on past experiences with emphasis on what worked well. Finally, addressing bridging questions 5 and 10, appreciative inquiry emphasizes the importance of “life-giving” storytelling as a means to make inert knowledge come alive (Cooperrider *et al.*, 2008). Used in the classroom, such stories can facilitate generalizing from students’ past experiences (Rae, 2000). They can also inspire teachers to identify stories that illustrate how knowledge has been and can be put to use in practice (Hadzigeorgiou *et al.*, 2012).

Discussion

The previous sections have illustrated the paper’s proposition that entrepreneurial tools could help teachers address challenges faced due to the traditional-progressive rift in education. Next the paper qualifies *how* these tools are helpful by connecting back to the dualisms representing the rift. Such a discussion allows for making visible generalizable patterns across the tools examined. If a single entrepreneurial tool could help bridging the described rift in education, generalizable patterns across multiple tools could arguably be even more useful for teachers and thus merit being explored here. Such patterns could also be more useful on educational policy level than any single tool could be. These patterns are then conceptualized as a new educational philosophy, stemming from the field of entrepreneurship, termed *learning-through-creating-value-for-others*, and argued as viable across disciplines and levels of education.

Bridging simplicity vs complexity

All three of the stated entrepreneurial tools can be regarded as a reification[1] of inherently complex and fuzzy processes. This indicates a potential for reducing the complexity inherent in the daily work of teachers trying to balance between traditional and progressive education. While none of the identified entrepreneurial tools were originally designed for use in educational curriculum, all have nevertheless been put into practice. Thus far, their use in education is largely limited to entrepreneurship specific courses and programs, most of whom adhere to a more narrow definition of entrepreneurship. Only appreciative inquiry seems to have been applied to general education (Yballe and O'Connor, 2000), although Sarasvathy and Venkataraman (2011) recently identified use in education as an opportunity also for effectuation. The lack of resources commonly required to manage the complexity perceived by teachers considering adoption of progressive education could also be addressed using the entrepreneurial tools outlined in this paper; taking advantage of their focus on what has worked previously (appreciative inquiry), what resources are currently available (effectuation) and what is useful (customer development).

Bridging individual vs social

The entrepreneurial tools allow for utilizing key questions that can facilitate bridging between individual and social life-worlds, such as “Who am I?” “What can I do” (effectuation), “How can I test this?” (customer development) and “When have I succeeded before here?” (appreciative inquiry). These individually focussed questions could help teachers support students in the often frightening task of interacting with external stakeholders (Arpiainen *et al.*, 2013). For a teacher acting as a coach rather than as a sage on stage (Löbler, 2006), such a collection of questions could be useful. They could also be used when constructing written reflection assignments. For the individual student the task of exploring the needs of others and responding to them also represents an opportunity to develop one’s ability and willingness to take collective responsibility (Deuchar, 2007).

Bridging content vs process

The perceived lack of content knowledge in progressive education could be addressed in two ways through use of entrepreneurial tools. The tools are extensively described in literature and constitute content knowledge in themselves. However, such scholarly content is not always helpful or viable for a teacher trying to connect student action to standardized national curriculum documents. To address this challenge, the paper posits that teachers could start a value creation process by asking their students to find answers to the following bridging question: “For whom is this knowledge valuable today?” This question could be used in connection with other starting point questions taken from entrepreneurial tools, such as “What methods have been useful?” (appreciative inquiry), “What do I know?” (effectuation) and “Do people care?” (customer development). These same questions could be restated after the end of each action iteration, facilitating reflection and theory connection. This way the tools first facilitate student thinking about content, then they facilitate the initiation and management of a purposeful process rife with uncertainty and external interaction, but nevertheless grounded in content.

Bridging detachment vs engagement

All three entrepreneurial tools could be perceived as supporting the management of uncertainty, ambiguity and risk of failure; factors that could deter teachers from

achieving a balance between traditional and progressive education. This opens up for a simplified route to balancing without the teacher running the risk of losing control of the educational process or the student feeling too exposed. Infusing uncertainty, ambiguity and failure in educational environments has been shown to be a key factor in developing entrepreneurial competencies among students (Carrier, 2007; Cope, 2011; Cope and Watts, 2000; Shepherd, 2004). The challenge is how to lead and assess it in a manageable way for teachers. The three examined entrepreneurial tools are argued to provide hands-on guidance, facilitating concepts, identifiable emotional events useful for formative assessment and a language for constructively managing common sources of negative emotions and uneasiness among both students and teachers. Being proven wrong is rephrased as a “pivot” (customer development), not always getting stakeholder commitment is being positioned as a natural step in an iterative process (effectuation) and fear of failure is countered with an explicit focus on what works (appreciative inquiry).

Bridging theory vs practice

Many of the questions and perspectives outlined in previous sections contribute to the bridging between theoretical curriculum content and practical value creation processes, such as the questions “What do I know?” (effectuation) and “For whom is this knowledge valuable today?” Entrepreneurship could contribute to education by letting students test theories and concepts in practical value creation processes as a formal part of their education.

A new educational philosophy: learning-through-creating-value-for-others

A key commonality between the three entrepreneurial tools is the focus on providing knowledge-based means for individuals to attempt to create value to external stakeholders in cycles of testing and inquiry. The means, methods and underlying concepts differ, but the end result is frequently some kind of valuable artifact appreciated by the external stakeholder. While value creation is certainly not the main goal of education, students could be allowed such a focus if it triggers increased engagement and deeper learning (cf. progressive education) without losing out on content knowledge (cf. traditional education). It does not represent a paradigmatic move from traditional to progressive education, but rather regards knowledge, theory and content as both key starting points in each iteration as well as potential outcomes. The paper posits that these identified patterns across multiple entrepreneurial tools could be conceptualized into a novel educational philosophy, labeled *learning-through-creating-value-for-others*. This is tentatively defined as letting 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. Such assignments could be supported by entrepreneurial tools such as the three outlined in this paper, or others exhibiting similar Vygotskian qualities.

Usefulness and novelty of learning-through-creating-value-for-others

Letting students learn through creating value for others could offer a simplification in terms of a starting point which is easy to understand and communicate, and an end result which is easy to comprehend and assess for all parties involved, including those external to the formal educational system. It also adds an altruistic element in education in that it lets students create value for others immediately in addition to for themselves in a distant future. Further, it contains a more robust answer to the “What’s

in it for me?" question often posed by stakeholders outside the educational system when asked to be involved in education.

A coupling of learning with value creation is in line with a Vygotskian view on learning, stating that human activity triggers two main outcomes; learning through "internalization of activity and gradual formation of mental actions" (Arievitch and Haenen, 2005, p. 159), and value creation through "externalization of activity into artifacts" (Miettinen, 2001, p. 299). The importance of a learner perspective for value creators such as entrepreneurs has been acknowledged before (see, e.g. Cope, 2003, 2005). Building upon Cope, but drawing attention to the reverse in terms of the usefulness of considering a value creation perspective for learners, Table IV illustrates how the identified patterns conceptualized as a new educational philosophy contribute to bridging the rift between traditional and progressive education.

Providing value creation assignments as an explicit educational philosophy has, to the authors' knowledge, not been defined in previous literature on adjacent[2] educational philosophies such as problem-based learning (Blumenfeld *et al.*, 1991; Savery, 2006; Tan and Ng, 2006), project-based learning (Blumenfeld *et al.*, 1991; Helle *et al.*, 2006; Jones and English, 2004) or service-learning (Desplaces *et al.*, 2009; Spring *et al.*, 2008). Given the importance of substantiating such a novelty claim, some definitional similarities and differences between them are summarized in Table V,

Traditional education	Bridging benefits Value creation as educational philosophy	Progressive education
<i>Simplicity</i> Easy for teacher ^a . Routinized ^a . Scientific reductionist method ^l	<i>Simplification</i> Tool-based. Succinct purpose of creating value which is easy to communicate	<i>Complexity</i> Difficult for teacher ^a . Unpredictable ^c . Entrepreneurial method ^f
<i>Individual</i> Learning through acquisition ^b . Standardized content ^a	<i>Responsibility-taking</i> Tool derived questions that push students to dare to make a difference in society	<i>Social</i> Learning through participation ^b . Unique experience ^m . Intersubjective ^d
<i>Content</i> Cognitive skills ^j . Linear ^l . Subject matter ^l	<i>Effectuation</i> Theory and content used as the start and end points of a value creation process	<i>Process</i> Non-cognitive skills ^j . Iterative ^k . Entrepreneurial competencies ^l
<i>Detached</i> Passive learners ^d . Value free ³ . Disengaged ^a . Easy to assess ^b	<i>Assessability</i> Assessment of emotional events and reflective questions as stipulated by tools	<i>Engaged</i> Action-based ^g . Emotional learning ^e . Engagement ^d . Difficult to assess ^b
<i>Theory</i> Inert knowledge ^m . Objective reality ⁿ . Material ^o . Timeless ^o	<i>Applicability</i> Let students test theories and concepts in practical value creation processes now	<i>Practice</i> Lived experience ^p . Co-creation ^p . Meaningful ^o . Cultural ^o . Realtime ^o

Note: A summary of five different bridging capabilities of the tentatively new educational philosophy proposed in this paper

Sources: ^aDewey (1938); ^bSfard (1998); ^cGuba and Lincoln (1994); ^dTynjälä (1999); ^eWoods (1993); ^fSarasvathy and Venkataraman (2011); ^gCotton (1991); ^hLabaree (2005); ⁱDeshpande (1983); ^jMoberg (2014); ^kCunliffe (2011); ^lFisher *et al.* (2008); ^mEgan (2002); ⁿWeber (2004); ^oLatour (2014); ^pOllila and Williams Middleton (2011)

Table IV.
Bridging benefits of
value creation as
educational
philosophy

Value creation in education focussing on ...	Categorization	Problem-based learning (according to Savery, 2006, pp. 9-15)	Project-based learning (according to Blumenfeld <i>et al.</i> , 1991, pp. 369-372)	Service-learning (according to Furco, 1996, pp. 2-6)
... problems	Learning-through ... (i.e. learning-by-doing)	“develop a viable solution to a defined problem”	“a question or problem that serves to organize and drive activities”	“placing [students] in challenging situations”
... authenticity		“selection of authentic problems”	“engage students in investigation of authentic problems”	“active participation in [...] thought-fully organized service experiences”
... team-work		“students work in collaborative groups”	“working with others”	–
... artifact creation		–	“activities result in a series of artifacts”	–
... work across extended time periods		–	“engaged with subject matter over an extended period of time”	–
... real world (inter-) action	... creating-value-for-others (i.e. entrepreneurship)	–	–	“places curricular concepts in the context of real-life situations”
... value creation to external people		–	–	“service experiences that meet actual community needs”
... opportunities		–	–	–
... iterative experimentation		–	–	–
... newness/innovativeness		–	–	–
... failure an integral part of the process		–	–	–

Note: The comparison is based on selected highly cited definitional texts. If no quote is given it signifies that the aspect was not covered in the text where the educational philosophy was defined

Table V. Definitional comparison of value creation as educational philosophy with three common educational philosophies

illustrating contrasts by quoting highly cited papers defining these existing educational philosophies. A categorization in Table V illustrates how existing philosophies have focussed on *learning-through* aspects but have largely neglected *creating-value-for-others* aspects, thereby arguably lacking a clear answer to the question: *learning-by-doing-what?*

Challenges in using entrepreneurial tools to bridge dualisms

Novel approaches take time to spread throughout social systems. The entrepreneurial tools and associated patterns outlined here have not yet had time to spread throughout the educational system. If they are as useful to teachers and policymakers as proposed,

they might constitute a major contribution that entrepreneurship can make outside its own domain. Rogers' (1983) five factors of innovation diffusion will most likely determine their rate of adoption in the domain of education, i.e. relative advantage, compatibility with existing values, complexity, trial-ability and observability of results. Given the inherent challenges in observing the results of entrepreneurial education (Bae *et al.*, 2014; Fayolle, 2007; Lackeus, 2014; Martin *et al.*, 2013; Pittaway and Cope, 2007), considerable assessment research remains to be done in order to produce the observability necessary for teachers and policymakers in general education to adopt the tools, patterns and educational philosophy described here. Previous research has also outlined significant value clashes between entrepreneurship and education in terms of anti-commercialism (Johannisson, 2010). This puts attention to the importance of further exploring the various possible meanings associated to the word *value* when letting students learn by creating value for others. Another key challenge is whether educators will be willing to use entrepreneurial tools or a new educational philosophy. Wertsch (1998) states that even if a new audience, such as teachers and educational policymakers in this case, knows about a potentially useful cultural tool taken from a different domain, it does not equate to them attempting to appropriate the tool. Wertsch states that the linguistic form plays a key role here, in that the audience at the receiving end of a new tool or educational philosophy needs to create their own understanding and terminology around it in order to embrace it and feel ownership. How this is to be accomplished is another key topic of future work.

Implications

The main purpose of this paper has been to use entrepreneurship to bridge the traditional-progressive education rift. The paper has endeavored to show how three tools from the field of entrepreneurship – effectuation, customer development and appreciative inquiry – could help teachers on all levels of education in the crucial task of bridging the educational rift by combining standardized subject matter with individual students' needs and abilities. Some main challenges in education have been outlined along with how these three entrepreneurial tools could help teachers address these challenges. This has opened up a new research strand in terms of a Vygotskian tool-based approach to infusing entrepreneurship into education. Further research into this area could benefit from the framework of five key dualisms presented in Table I and the ten bridging questions presented in Table II.

Patterns across the analyzed bridging tools motivated the authors to conceptualize a tentatively new educational philosophy of *learning-through-creating-value-for-others*. This offers a new and potentially useful concept for teachers and policymakers related to but also significantly adding to existing educational philosophies such as problem- or project-based learning and service-learning. In addition to the potential of further infusing engagement, relevancy and joy to disengaged students without losing out on content focus, it also represents a starting and ending point easy to understand and appreciate by teachers. Students could be asked to create value to stakeholders outside their classroom based on the theory connecting question "For whom is this knowledge valuable today?" Such an assignment could be supported by the three outlined entrepreneurial tools, as well as by other tools fulfilling the Vygotskian tool criteria. The new educational philosophy could simplify and facilitate teachers' practice of progressive education, often perceived as too complex to manage and too difficult and risky in terms of student assessment and potential neglect of important traditional education values. The paper posits that the student activities stipulated by the

tentatively new educational philosophy could lead to increased student motivation, developed responsibility-taking and deeper learning, by virtue of a more explicit answer to the seldom posed question: learning-by-doing-*what*?

Some challenges and associated future work have also been outlined. This paper posits that the diffusion rate of entrepreneurial tools and a new educational philosophy into general education will be determined by their compatibility with existing values in education and by the observability of any positive effects in terms of improved student learning. How linguistic transformation of such tools and an educational philosophy is managed when applying them in educational settings will arguably also determine the rate of adoption.

Notes

1. The intended meaning of “reification” here is related to making something practically complex and intertwined (i.e. “entrepreneurship”) more concrete and tangible, i.e. making complex entrepreneurial processes more accessible to teachers.
2. While there are other educational philosophies that could be claimed to be more or less similar, these three were frequently mentioned in discussions with practitioners involved in the three cases outlined in Appendix.

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Appendix. Three cases

Three cases are outlined below that have been instrumental in the research process leading up to this paper. Each case is outlined with basic information, brief history, key activities and outcomes. Each case description is followed by an outline of how the case represents a bridging of educational dualisms, its relevance to this paper and how it exemplifies the claims made by the authors. Relevant links between the three cases are also outlined.

Case 1: an entrepreneurship master program at Chalmers University of Technology

Entrepreneurship and Business Design at Chalmers University of Technology is a two-year entrepreneurship master program started in 1997 by one of the authors of this paper. Today, all authors are part of the faculty. The program has four different tracks – technology, bioscience, corporate and intellectual property entrepreneurship – accepting a total of around 50 students each year. The program has a strong venture creation track record with 75 ventures still up and running that were started as educational projects constituting formal part of the program. These ventures are as of 2016 employing some 400 people and have a total annual turnover of €40 m. A number of publications authored by faculty members as well as by external researchers are available outlining this case more in-depth (see, e.g. Jacob *et al.*, 2003; Rasmussen and Sørheim, 2006; Lundqvist and Williams Middleton, 2008; Berggren, 2011; Ollila and Williams Middleton, 2011; Lundqvist, 2014).

Bridging capabilities of the case

The case is a rare example of a venture creation approach, defined in research as "entrepreneurship education programs which utilize the on-going creation of a real-life venture as the primary learning vessel" (Lackéus and Williams Middleton, 2015, p. 15). Previous research has shown such an approach to be able to balance between multiple dualisms such as theory vs practice, reflection vs action, learning vs value creation and research vs practice. The ambition at the program to not only produce exams but also tangible venture results has created an environment of teachers and students being open to new tools and perspectives, allowing for a natural selection and application of tools appropriate for bridging the rift of educational dualisms developed in this paper.

Case relevance for this paper

The case constitutes the main empirical setting from which the authors generated key insights that were subsequently applied and tested on other environments, such as but not limited to Case 2 and 3. The authors' status as insiders over an extended time period and with unique access to data allowed for the articulation and honing of working hypotheses that led up to propositions put forward in this paper. All three entrepreneurial tools outlined in this paper have been extensively used at the master program.

Case 1 does not constitute an example of how entrepreneurship can contribute to general education, but represents the idea origin and primary cultivation environment for the authors' research endeavors. What it does exemplify is the powerful impact of value creation as educational practice on student engagement and learning, as well as some important challenges that teachers face when letting students create value to external stakeholders (see Lackeus *et al.*, 2011).

Case 2: an educational platform at non-profit foundation Drivhuset

Drivhuset is a non-profit non-governmental organization supporting student entrepreneurs. It employs 55 people at 14 different locations across Sweden. In 2011 Drivhuset initiated the construction of an educational platform to better inform their support activities towards student entrepreneurs. This platform was developed in close collaboration with one of the authors of this paper, taking advantage of key insights made at Case 1. The platform was designed as five one-day workshop sessions spread out across two to three months, complemented by value creation assignments towards key external stakeholders to be completed between each workshop. It was built by synthesizing a careful selection of a dozen different entrepreneurial tools. Since the launch of the new educational platform in 2013, it has been used for supporting and educating around 2,000 people around 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.

Bridging capabilities of the case

The educational platform constitutes a theory-informed set of practical assignments, thereby building on current research in entrepreneurship packaged in an accessible way suitable for extracurricular activities at universities, but also for a wide range of non-academic settings such as companies, municipalities, youths, unemployment support organizations and city development projects. A course book has been written by two employees at Drivhuset, supported by faculty at Chalmers University of Technology, summarizing a wide range of theories and methods from the scholarly domain of entrepreneurship to a wide audience of potential practitioners (ben Salem Dynehäll and Lärk Ståhlberg, 2015). The partnership with Chalmers University of Technology has been formalized in a written agreement between the parties, constituting an institutionalized link between theory and practice.

Case relevance for this paper

Two of the entrepreneurial tools outlined in this paper have been used as key building blocks of the educational platform at Drivhuset. Effectuation has informed the design of the idea generation workshop, and customer development has informed the design of the value creation assignments in between workshops. The educational philosophy of letting people learn through creating value for others has been integrated into the core of the platform by making it the most important recurring theme throughout the workshop series. Case 2 shows that value creation to others can be practiced without having to start a company as done in Case 1, thereby simplifying the educational format for value creation and allowing it to be used in less extreme conditions and in a shorter time span than the two-year process applied in Case 1. Case 2 also shows that value creation to others is relevant not only to budding entrepreneurs, but also to employees in existing companies and organizations, to youths, and to unemployed people currently not contemplating to start a business. The quick diffusion of the educational platform across Sweden

and the rather uniform acclaim from thousands of participants show that entrepreneurial tools as well as a general value creation assignment constitute a feasible way to apply entrepreneurship in wider educational settings as claimed in this paper.

Case 3: a municipality-wide education reform initiative in Sundsvall, Sweden

Sundsvall municipality in northern Sweden has a population of around 100,000 people. It is the 17th largest of the 290 municipalities in Sweden. The public education sector in Sundsvall employs some 3,000 people and consists of around 130 schools from preschool to secondary education. 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 one of the authors of this paper, in order to apply value creation as educational philosophy in all schools in Sundsvall. This was chosen as the main strategy for infusing entrepreneurship into public education. The project managers also initiated a collaboration with Drivhuset (Case 2), using their educational platform to train key people in value creation. As of 2016 the project is still in an early phase. Around 500 people have been educated through the Drivhuset educational platform. Seven specialists employed at the municipality are championing the process, and have received special training in theoretical as well as practical perspectives of value creation in education, and have also contributed significantly to the development of the tentatively new educational philosophy. Some 60 teachers have so far started practicing value creation assignments with their students, putting the number of students being explicitly involved to 1,000 so far.

Bridging capabilities of the case

A survey sent to the four project managers in Sundsvall asking them to outline any bridging capabilities of the project has confirmed many of the stated ways in which value creation as educational philosophy could help teachers bridge multiple educational dualisms. Administrators, principals, teachers and students have used effectuation as a tool to spot opportunities and get started instead of getting stuck in searching for resources, which they state is otherwise commonplace in educational change projects. School administrators and principals have found customer development to be particularly useful in school development due to its emphasis on finding out what students and others need rather than guessing, leading to an appreciated outside-in approach. Appreciative inquiry has been found to trigger enjoyment, engagement and initiative among participants.

Case relevance for this paper

Case 3 represents the third step in a decades-long research process, where a tentatively new educational philosophy stemming from Case 1 and entrepreneurial tools incorporated into an educational platform outlined in Case 2 have been applied to primary and secondary education in Case 3. While still early in the implementation, rich data have emerged indicating the usefulness and appreciation of the tentatively new educational philosophy in general education settings. Many of the hypotheses developed from Case 1 and Case 2 have been confirmed in Case 3.

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