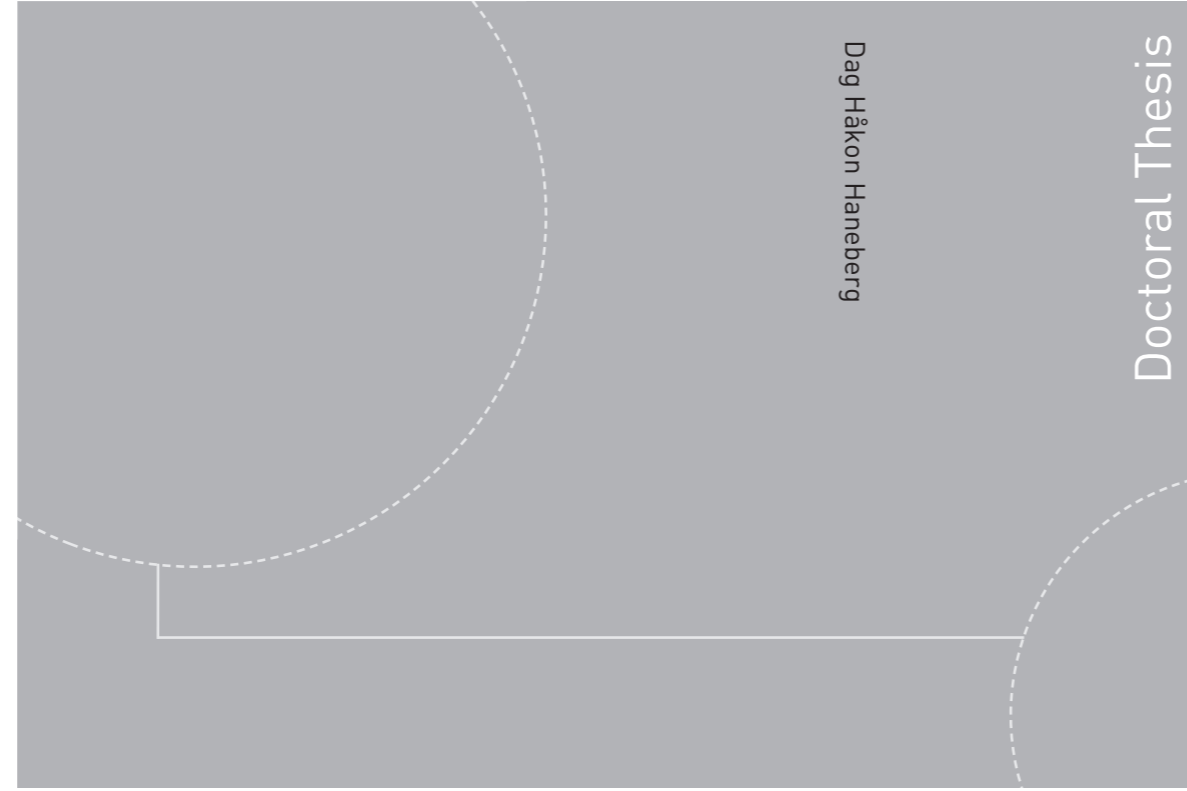


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Dag Håkon Haneberg

# Student Entrepreneurs' Learning from Action and Interaction

Dag Håkon Haneberg

# Student Entrepreneurs' Learning from Action and Interaction

Thesis for the degree of Philosophiae Doctor

Trondheim, January 2020

Norwegian University of Science and Technology  
Faculty of Economics and Management  
Department of Industrial Economics and Technology Management



Norwegian University of  
Science and Technology

**NTNU**

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## **Summary**

This thesis asks how student entrepreneurs learn and builds on the notion that student entrepreneurs' entrepreneurial learning is essential to their development into major contributors to university entrepreneurship. Previous research has focused on how student entrepreneurs' learning is facilitated through teaching, designing and managing university-based support initiatives. Less is known about the situated and social aspects of student entrepreneurs' learning, and there is a need to study the process of how student entrepreneurs' learning occurs based on facilitation. This thesis, therefore, focuses on student entrepreneurs' entrepreneurial learning processes in university-based support initiatives, venture creation programmes and extracurricular entrepreneurship initiatives.

This thesis contains four appended empirical research papers on how student entrepreneurs' learning is facilitated and occurs. The four papers also address the situated and social aspects of student entrepreneurs' entrepreneurial learning processes. The thesis cover paper presents a meta-analysis of the four papers using an analytical framework based on elements of the communities of practice concept to address the research questions in this thesis. The four papers all report empirical qualitative research studying student entrepreneurs and student entrepreneurship as a process involving multiple actors who engage in interactions at multiple levels. The research data come from two types of support initiatives for student entrepreneurs and student entrepreneurship (venture creation programmes and extracurricular entrepreneurship initiatives) as well as 47 interviews and a broad range of secondary data sources. The research papers use dyads, longitudinal studies and metaphor-based approaches, and the analysis of empirical data includes the concepts of entrepreneurial effectuation and organisational sponsorship in addition to entrepreneurial learning and communities of practice.

This thesis suggests that how student entrepreneurs' entrepreneurial learning is facilitated and occurs should be considered to be related to and integrated with each other. This thesis contributes to revealing how students entrepreneurs are central actors in co-creating the environments in which they learn—namely, their communities of practice. Previous research, in contrast, primarily has emphasised the roles of teachers, faculty and managers

in facilitating student entrepreneurs' learning. This thesis further highlights students' practice of contributing to others as a central element in learning by doing, and accordingly, this research uncovers the activities students do to contribute to university entrepreneurship. The implications for practice call for teachers, faculty, university managers and public policy makers to enable informal interactions as this thesis shows that they equip student entrepreneurs to take on central roles in other student entrepreneurs' learning.

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Dag Håkon Haneberg

Trondheim, November 3<sup>rd</sup>, 2019

# Table of Contents

<b>1. Introduction .....</b>	<b>1</b>
<b>2. Supporting Student Entrepreneurship at Universities .....</b>	<b>6</b>
2.1 Educating Students to be Entrepreneurs .....	7
2.2 University-Based Support and Incubation of Student-Driven Ventures.....	8
2.3 Extracurricular Entrepreneurship Initiatives for Student Entrepreneurship .....	9
2.4 Combining Education and Incubation in Venture Creation Programmes.....	9
2.5 Frame of Reference for Support of Student Entrepreneurship at Universities .....	10
<b>3. Frame of Reference: Students' Entrepreneurial Learning .....</b>	<b>11</b>
3.1 Entrepreneurial Learning as Processes Understood by Learning Events .....	11
3.2 Entrepreneurial Learning Beyond Individuals and Single Ventures .....	17
3.3 Multi-Actor and Multi-Level Entrepreneurial Learning of Student Entrepreneurs.....	24
3.4 Research Focus of this Thesis.....	33
<b>4. Analysis Framework: Communities of Practice .....</b>	<b>35</b>
4.1 The Concept of Communities of Practice.....	35
4.2 Learning Perspectives from Communities of Practice.....	37
<b>5. Methods .....</b>	<b>46</b>
5.1 Background and Research Motivation for this Thesis.....	46
5.2 Research Contexts.....	47
5.3 Philosophy of Science and Research Approach.....	49
5.4 Four Empirical Research Papers from Three Empirical Studies .....	51
5.5 Developing the Thesis Cover Paper.....	55
5.6 Thesis Development as an Abductive Process beyond Thesis Work .....	59
5.7 Methodological Reflections and Limitations.....	60



<b>6. Summary of Appended Research Papers</b> .....	<b>65</b>
6.1 Paper I: ‘An Evidence-Based Research Agenda for Action-Based Entrepreneurship Education’ .....	65
6.2 Paper II: ‘Student Venture Incubation as Multi-Actor Organizational Sponsorship’ .....	67
6.3 Paper III: ‘Entrepreneurial Learning as an Effectual Process’ .....	68
6.4 Paper IV: ‘Learning from Venture Creation in Higher Education’ .....	70
<b>7. Analysis of the Appended Research Papers</b> .....	<b>72</b>
7.1 Characterising Student Entrepreneurs’ Communities of Practice.....	72
7.2 Student Entrepreneurs’ Learning Trajectories .....	77
7.3 Design and Emergence of Student Entrepreneurs’ Entrepreneurial Learning.....	80
7.4 Consolidating the Analysis Results .....	83
<b>8. Discussion: Students’ Communities and Learning</b> .....	<b>87</b>
8.1 Student Entrepreneurs’ Communities of Practice.....	87
8.2 Understanding Student Entrepreneurs’ Entrepreneurial Learning.....	88
8.3 Supporting Student Entrepreneurship by Enabling Informal Interactions.....	90
<b>9. Conclusions, Implications and Further Research</b> .....	<b>92</b>
<b>References</b> .....	<b>97</b>
<b>PART II: APPENDED RESEARCH PAPERS</b> .....	<b>115</b>

## List of Figures

<b>Figure 1:</b> Illustration of support for student entrepreneurship at universities .....	10
<b>Figure 2:</b> Model of entrepreneurial learning processes .....	16
<b>Figure 3:</b> Extension of the process model .....	24
<b>Figure 4:</b> Illustration of the research focus of this thesis .....	34
<b>Figure 5:</b> Simplified illustration of the five types of learning trajectories .....	42
<b>Figure 6:</b> Illustration of how the analytical framework relates to the research focus .....	45
<b>Figure 7:</b> Model of important challenges and tensions in venture creation programmes .....	66
<b>Figure 8:</b> Conceptual illustration of the different configurations of students' learning .....	71
<b>Figure 9:</b> Illustration of how informal community interactions facilitate the networked relationships of student entrepreneurs .....	74
<b>Figure 10:</b> Analysis results appended to the model of the research focus .....	85

## List of Tables

<b>Table 1:</b> Summary of the multiple levels at which the situated and social aspects of entrepreneurial learning processes are considered .....	23
<b>Table 2:</b> Overview of research papers on students' situated and social entrepreneurial learning .....	26
<b>Table 3:</b> Types of support initiatives considered in the four papers in this thesis .....	52
<b>Table 4:</b> Overview of data collection in the three empirical studies in this thesis .....	55
<b>Table 5:</b> Overview of search strings used for the structured literature searches in this thesis .....	58
<b>Table 6:</b> Overview of the development process of this thesis .....	59
<b>Table 7:</b> Summarised analysis findings on the three fundamental characteristics .....	77



## **PART I: THESIS COVER PAPER**



# 1. Introduction

This thesis focuses on how student entrepreneurs learn. Student entrepreneurship is considered to make major contributions to university entrepreneurship (Åstebro et al., 2012; Beyhan and Findik, 2018; Guerrero et al., 2016; Hayter et al., 2017; Mars et al., 2008; Rae et al., 2012; Wright et al., 2017). In this thesis, the term *student entrepreneur* is used to refer to students who start and manage new ventures during their university education, while *student entrepreneurship* refers to the new venture creation activity performed by these students. Student entrepreneurs and student entrepreneurship primarily have been studied as part of entrepreneurship education (Bergmann et al., 2016; Fayolle, 2013; Neck and Corbett, 2018; Walter et al., 2013). A central focus has been on approaches, methods and resources related to teaching, designing and managing courses, programmes and initiatives that develop students into future entrepreneurs. Studies have also focused on how extracurricular entrepreneurship initiatives (Claudia, 2014; Pittaway et al., 2011; Preedy and Jones, 2015) and entrepreneurial ecosystems around universities (Gianiodis and Meek, 2019; Wright et al., 2017) are organised and managed to develop entrepreneurial ventures by students. Previous research thus has placed strong emphasis on how the development of student entrepreneurs and student entrepreneurship is facilitated through the roles of teachers, faculty and university management. Little research has addressed students' processes and what students do to become major contributors to university entrepreneurship. Learning is considered to be essential to how entrepreneurs act and develop (Minniti and Bygrave, 2001), so the overarching research question asked in this thesis is: *How do student entrepreneurs learn?*

Learning by doing is central to the understanding of entrepreneurs' learning (Cope, 2003; Deakins and Freel, 1998; Politis, 2005; Wang and Chugh, 2014) and the development of action-based methods for students' learning<sup>1</sup> in entrepreneurship education (Pittaway and Cope, 2007; Rasmussen and Sørheim, 2006). Previous research has emphasised that the

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<sup>1</sup> Several variations of the term *student entrepreneurs' learning* are purposefully used in this thesis, including *students' learning*, *students' entrepreneurial learning* and *student entrepreneurs' entrepreneurial learning*. In this thesis, *entrepreneurial learning* is understood to refer to student entrepreneurs' learning, so accordingly, *learning* is mostly stated as *entrepreneurial learning*. Not all students discussed in the literature are student entrepreneurs according to the definition used in this thesis, so the term *students* is used instead of *student entrepreneurs*.

combination of academic work and new venture creation facilitates students' learning (Lackéus and Williams Middleton, 2015; Ollila and Williams-Middleton, 2011). However, the dominant focus on individual experiences in studies on entrepreneurial learning has tended to overshadow the nature of entrepreneurship as a situated social process involving interactions with multiple other actors such as peers, role models, mentors, customers and social networks (Nogueira, 2019; Rae, 2005; Sullivan, 2000; Taylor and Thorpe, 2004). Consequently, an individual-level focus has dominated studies on student entrepreneurs' entrepreneurial learning (Pittaway et al., 2017; Pittaway and Cope, 2007; Toutain et al., 2017). However, a smaller body of research has focused on the situated and social aspects of student entrepreneurs' entrepreneurial learning and established that students' entrepreneurial learning is a process involving multiple actors engaging in interactions at multiple levels. These studies have emphasised, for example, students' entrepreneurial learning through network- and ecosystem-level relationships and interactions (Lockett et al., 2017; Preedy and Jones, 2017; Secundo, Del Vecchio et al., 2017) and students' exposure to situations involving interactions with entrepreneurs external to universities (Kubberød and Pettersen, 2017; Saukkonen et al., 2016).

Hence, although students' learning through network- and ecosystem-level interactions has been somewhat addressed in the literature on student entrepreneurs and student entrepreneurship, the 'communal context' (Pittaway and Cope, 2007, p. 223) involving students' mundane social interactions with, for instance, peers, team members and classmates has received less emphasis. Such more informal, localised, everyday social interactions have been referred to as venture communities (Karataş-Özkan, 2011), entrepreneurial communities (Toutain et al., 2017) and learning communities (Zhang and Hamilton, 2010) in the entrepreneurial learning literature. There is a need to focus on students' community-level interactions when studying student entrepreneurs' entrepreneurial learning, which motivates the first research question:

**RQ1:** How can student entrepreneurs' entrepreneurial learning be understood at the community level?

The emphasis on facilitation by teachers, faculty and management in previous research on student entrepreneurs and student entrepreneurship has also been evident in studies on the situated and social aspects of students' entrepreneurial learning. Examples of this facilitation include exposing students to new social situations external to universities (Kubberød and Pettersen, 2017), organising students' collaboration with external entrepreneurs (Costin et al., 2013) and facilitating students' social networks (Lockett et al., 2017). Understanding student entrepreneurs' entrepreneurial learning, however, requires knowledge of how student entrepreneurs' entrepreneurial learning occurs as well as how it is facilitated. To address the overarching research question and RQ1, therefore, the following question is also posed:

**RQ2:** How does student entrepreneurs' entrepreneurial learning occur in university contexts?

RQ1 and RQ2 both address aspects of the overarching research question on how student entrepreneurs learn by emphasising students' perspectives to understand how student entrepreneurs' entrepreneurial learning occurs at the community level. This thesis contains four appended empirical research papers on how student entrepreneurs' learning is facilitated and occurs in two types of support initiatives: venture creation programmes and extracurricular entrepreneurship initiatives. The four papers examine how student entrepreneurs' learning processes involve multiple actors and how the situated and social aspects of student entrepreneurs' entrepreneurial learning may be understood on multiple levels. The thesis cover paper presents a meta-analysis of the four papers using an analytical framework based on the concept of communities of practice (Lave and Wenger, 1991; Wenger, 1998; Wenger et al., 2002). This notion of socially situated learning has been applied in research on entrepreneurship and entrepreneurial learning (Hafeez et al., 2019; Hamilton, 2011; Kubberød and Pettersen, 2018; Pittaway et al., 2017). The communities of practice concept is suitable for this thesis for two main reasons. First, this thesis concerns how learning occurs through entrepreneurial action and social interaction, and at the core of the communities of practice concept is understanding how learning occurs through participation (which implies taking action) in communities of practice, which constitute environments of everyday social interactions. Second, this thesis and the



communities of practice concept have the same main focus: community-level interactions and learning. The communities of practice concept and this thesis both acknowledge that individual-, network- and community-level interactions are all essential to gain a holistic understanding of learning processes.

This thesis contributes by extending the literature on student entrepreneurship by demonstrating that multiple actors co-create the environments in which student entrepreneurs' entrepreneurial learning occurs and by highlighting students as central actors in co-creating communities and learning. Student entrepreneurs' communities of practice are found to be foundational to their entrepreneurial learning processes, so this thesis uncovers the activities students do to contribute to university entrepreneurship. This thesis emphasises that the practice of contributing to others is an essential practice alongside students' new venture creation and academic work, highlighting that student entrepreneurs perform several roles and play central roles in other student entrepreneurs' learning. Thus, how student entrepreneurs' entrepreneurial learning is facilitated is highly integrated with how learning occurs, and this thesis extends learning by doing—the central notion in entrepreneurial learning—to include contributing to others as a central element of doing. The community-level view on how student entrepreneurs learn helps to understand how student entrepreneurs learn through informal interactions.

The implications for practice suggested by this thesis centre on enabling informal interactions and are relevant to teachers, faculty, university managers and public policy makers. Teachers and faculty should encourage students to take central roles and responsibility for not only their own learning but also other students' learning. Informal interactions can enable student entrepreneurs who will eventually exit their ventures to reconfigure and continue their entrepreneurial learning processes. Student entrepreneurs' practice and learning extend beyond courses and classrooms, and teachers and faculty should embrace these important aspect of students' learning processes by making students central to how courses, programmes and initiatives develop. University managers can ensure the availability of arenas in which informal interactions can take place such as physical spaces for student venture incubation and networking events. University managers should further sponsor and assign both students and faculty responsibility to

fill these arenas with activities. Policy makers should acknowledge that multiple actors facilitate student entrepreneurship and that a considerable element of emergence of for example communities, learning and organising must be accepted. Multiple actors involved in student entrepreneurship at universities must be sponsored and provided with sufficient autonomy and accountability to emerge and develop. Emergent processes are not predictable, and policy makers must allow for occasional unfavourable outcomes.

### **Thesis Structure**

The next chapter introduces the specific support initiatives discussed in this thesis: venture creation programmes and extracurricular entrepreneurship initiatives. Chapter 3 reviews the development of entrepreneurial learning research, focusing on process perspectives and situated and social aspects. A more detailed overview of previous research specifically addressing the situated and social aspects of student entrepreneurs' entrepreneurial learning follows. An analysis framework based on the communities of practice concept is developed in Chapter 4. Chapter 5 explains the methodology of the thesis, including the philosophical approach and the qualitative methods applied in each of the four appended empirical research papers. The qualitative methods include longitudinal multiple-case studies, the use of dyads and data triangulation, and metaphor-based data collection and analysis techniques. Chapter 6 briefly summarises the four appended papers, while Chapter 7 presents an analysis of them using the conceptual framework in Chapter 4. The analysis findings are discussed in Chapter 8 before the conclusions and implications are presented in Chapter 9.

## **2. Supporting Student Entrepreneurship at Universities**

This chapter presents specific university support initiatives for student entrepreneurs and student entrepreneurship based on a review of previous research. This review provides a reference for understanding the practical environments within which student entrepreneurs learn, including the different ways in which student entrepreneurship at universities is facilitated and supported. The initial selection of research reviewed was based on a search for ‘student\* entrepreneur\*’ in the Scopus database. Additional contributions were later added through snowballing.

Several research streams have dealt with student entrepreneurs and student entrepreneurship (Walter et al., 2013). Studies on university-based entrepreneurship generally have focused on technology-transfer mechanisms such as university-based business incubation (Mian et al., 2016; Siegel and Wright, 2015), while student entrepreneurship has been primarily regarded as part of entrepreneurship education (Bergmann et al., 2016; Gianiodis and Meek, 2019). However, understanding student entrepreneurship at universities requires a holistic view of several types of university efforts in addition to entrepreneurship education courses and programmes as together, multiple initiatives can support student entrepreneurship (Saeed et al., 2015). A combination of entrepreneurship education and student-driven new venture incubation, for example, has been found to be fruitful (Lackéus and Williams Middleton, 2015; Ollila and Williams-Middleton, 2011). Informal factors and initiatives furthermore have been reported to be as effective as formal education and incubation programmes at supporting student entrepreneurship (Guerrero et al., 2016). Student entrepreneurs, for example, have been found to be active in social networking (Scuotto and Morellato, 2013) and to leverage information from multiple sources (Ozgen and Minsky, 2013). The diverse types and combinations of formal and informal support for student entrepreneurship deserve attention, and one significant example of support initiatives that may be both formal and informal are so-called extracurricular entrepreneurship initiatives. In this chapter, some support initiatives for student entrepreneurship covered in the literature are introduced.

## **2.1 Educating Students to be Entrepreneurs**

First and foremost, the research stream on entrepreneurship education has primarily examined student entrepreneurs and student entrepreneurship. Over the past few decades, ever-growing interest has introduced entrepreneurship education into higher education (Katz, 2003; Kuratko, 2005; Mwasalwiba, 2010; Neck and Greene, 2011; Rideout and Gray, 2013). Entrepreneurship education is considered to be instrumental to facilitating graduate entrepreneurship (Duval-Couetil, 2013; Hannon et al., 2005) and developing students' entrepreneurial mind-set, skills and attitudes in that process (Beránek, 2015; Stamboulis and Barlas, 2014). The outcomes of entrepreneurship education are viewed as useful for new venture creation and a broad range of other situations (Blenker et al., 2011; Neck and Corbett, 2018). Entrepreneurship education traditionally has been delivered in business schools (Gibb, 1996; Kirby, 2004) but has also gained attention within other fields such as engineering education (Duval-Couetil et al., 2012). Consequently, research must account for a large variety in approaches to and contexts of entrepreneurship education (Penaluna et al., 2012).

Entrepreneurship education courses and programmes may provide safe learning environments in which students may explore and experience entrepreneurship. Further, they constitute an arena for learning from and with others, including peer students and faculty (Hannon et al., 2005). Moreover, entrepreneurship education fosters students' identity development (Nielsen and Gartner, 2017) and allows students to develop their identities as both students and student entrepreneurs (Nielsen and Lassen, 2012). Entrepreneurship education can offer student entrepreneurs resources such as coaching and access to networks (Saeed et al., 2015), and previous research has found that student entrepreneurs develop their logic of how to leverage resources (Politis et al., 2012). Involving students' entrepreneurial action in entrepreneurship education to allow students learn through entrepreneurship has gained growing interest and has become broadly referred to as action-based entrepreneurship education (Rasmussen and Sørheim, 2006).

Nevertheless, previous research has found that student ventures are not necessary for students in entrepreneurship education to develop skills and knowledge (Ilonen et al., 2018). Instead of expecting students to start viable new ventures while still in education,

improving training methods and preparing students to be future entrepreneurs have been central focuses of entrepreneurship education research (Chang and Rieple, 2018; Jones, 2010; Mwasalwiba, 2010; Neck and Greene, 2011). Empirical investigations have found that most students choose to pursue venturing later rather than immediately after graduation (Wennberg et al., 2011), but other students; student entrepreneurs, start and manage their own ventures during university education (Bezerra et al., 2017). Entrepreneurship education that supports such students in different ways generally aligns with the understanding of student entrepreneurs in this thesis and is further addressed in this chapter.

## **2.2 University-Based Support and Incubation of Student-Driven Ventures**

The research streams on entrepreneurial universities and university-based new venture incubation and support have also dealt with student entrepreneurs and student entrepreneurship (Bergmann et al., 2016; Walter et al., 2013). Unlike in entrepreneurship education research, students traditionally have not been at the centre of scholarly discussions (Hayter, 2016; Hayter et al., 2017). However, a smaller body of research has explored the incubation of students' own ventures in conjunction with education courses and programmes as well as several other available university support services (Jansen et al., 2015; Preedy and Jones, 2015; Sjölundh and Wahlbin, 2008). Unlike the main body of entrepreneurship education literature, this stream of research has focused on students who start and manage new ventures during their education. Consequently, the general discussions on university-based entrepreneurship have yet not developed a solid knowledge base for understanding student entrepreneurship in particular (Bezerra et al., 2017; Hayter, 2016), but a smaller research stream has considered entrepreneurship education initiatives targeted specifically at supporting student entrepreneurs and student entrepreneurship at universities (Grimaldi et al., 2011; Guerrero et al., 2016; Siegel and Wright, 2015). In addition to specific support systems at universities, previous research has considered, for example, how national culture (Boissin et al., 2009; Laskovaia et al., 2017) and university characteristics and contexts influence student and graduate entrepreneurship (Ofstedal et al., 2018; Zollo et al., 2017). Support of student-driven ventures builds on several actors at the university who together are considered to be an ecosystem for student entrepreneurship (Wright et al., 2017).

### **2.3 Extracurricular Entrepreneurship Initiatives for Student Entrepreneurship**

Researchers have often referred to initiatives for student entrepreneurship that are not part of formal education courses and programmes or other support initiatives as extracurricular initiatives (Preedy and Jones, 2015). In contrast to most of the aforementioned initiatives for student entrepreneurship, extracurricular initiatives may be organised and managed by student groups in addition to university staff to support students who wish to engage in entrepreneurship as well students who have eventual ventures (Bell and Bell, 2016; Edwards, 2001; Preedy, 2018). In practice, extracurricular initiatives include a broad range of activities such as business plan competitions, seed funding opportunities, peer mentoring and hack-a-thons, among many others (Hayter, 2016; Jones et al., 2015; McGowan and Cooper, 2008; Ndou et al., 2018; Walter et al., 2013). Such activities often reach broader student populations than formal entrepreneurship education programmes (Ndou et al., 2016) and have been proven to be important, for example, to students' establishment of relevant networks (Shirokova et al., 2017). The core communicated practice of extracurricular entrepreneurship initiatives often is to support students' ventures, but research has found that a major outcome is students' development as entrepreneurs through learning rather than the production of successful student ventures (Pittaway et al., 2011, 2015; Preedy and Jones, 2017).

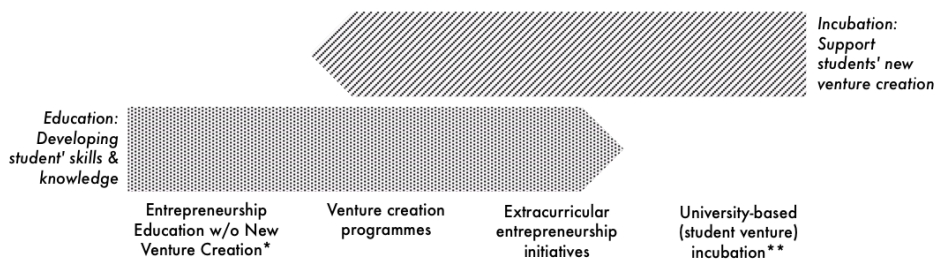
### **2.4 Combining Education and Incubation in Venture Creation Programmes**

Extracurricular entrepreneurship initiatives may be considered to be a rather informal way to combine supporting student entrepreneurship and facilitating students' learning, but in another type of entrepreneurship education, the combination of education and incubation is more formally organised and managed: venture creation programmes (Lackéus and Williams Middleton, 2015; Ollila and Williams-Middleton, 2011). Students in venture creation programmes start real-life ventures as an integrated component of their full-time education (Lackéus and Williams Middleton, 2015). Venture creation programmes extend suggestions that entrepreneurship education should simulate the experience of starting new ventures by actually starting new ventures (Fox et al., 2018; Gibb, 1993; Pittaway and Cope, 2007). Venture creation programmes use student-driven ventures as vehicles for students' learning and may simultaneously support university-based

entrepreneurship by using students as surrogate entrepreneurs in technology commercialisation projects (Lundqvist, 2014; Williams Middleton and Nowell, 2018).

### **2.5 Frame of Reference for Support of Student Entrepreneurship at Universities**

This chapter has introduced how education to teach students to become entrepreneurs in the future is delivered (Section 2.1) and how universities may support students' ventures without a particular focus on students or student entrepreneurs' learning (Section 2.2). Furthermore, this chapter has examined two ways in which both students' learning and venture creation have been found to be supported simultaneously: extracurricular entrepreneurship initiatives and venture creation programmes (Sections 2.3 and 2.4). Figure 1 illustrates the types of support for student entrepreneurs and student entrepreneurship introduced in this chapter. In Figure 1, the four types of support are positioned along a continuum between traditional entrepreneurship education and pure new venture support or incubation.



**Figure 1:** Illustration of support for student entrepreneurship at universities.

Given the thesis topic of how student entrepreneurs learn, the main focus in this thesis is on venture creation programmes and extracurricular entrepreneurship initiatives in which students create their own ventures. The next chapter introduces a frame of reference to understand students' entrepreneurial learning. To do so while building on a solid base of previous research, the contexts of the empirical papers discussed in the next chapter span broader than the two types of initiatives emphasised here. In other support initiatives, for example, do not create their own ventures but instead do simulations (Fox et al., 2018; Pittaway and Cope, 2007) and work in others' ventures (Costin et al., 2013; Secundo, Del Vecchio et al., 2017).

### **3. Frame of Reference: Students' Entrepreneurial Learning**

This chapter presents a frame of reference based on the available scholarly knowledge relevant to student entrepreneurs' entrepreneurial learning. This chapter has four main sections. Section 3.1 introduces the research field of entrepreneurial learning and presents an argument that entrepreneurial learning should be considered to be a process that can be understood through many learning events. This section also highlights the importance of the situated and social aspects of entrepreneurial learning. Section 3.2 presents a review of how previous research has treated the situated and social aspects of entrepreneurial learning, revealing a scarcity of research on certain types of actors and levels relevant to entrepreneurial learning processes. Next, to study student entrepreneurs and the ways in which student entrepreneurs have been studied, Section 3.3 narrows the focus to previous research on the situated and social aspects of entrepreneurial learning. This section finds that the facilitation and occurrence of students' entrepreneurial learning should be studied together. Based on the three preceding sections, Section 3.4 explains the chosen research focus in this thesis which guides the theoretical and empirical work of this thesis.

The selection of previous research reviewed in Section 3.2 was based on a search for ('entrepreneurial learning' AND (social\* OR interact\* OR contextu\* OR milieu\* OR communit\* OR collective\* OR collaborati\* OR network\* OR situat\*)). Next, the keyword 'AND student\*' was added to the same search, as shown in Section 3.3. Additional contributions were later added through snowballing.

#### **3.1 Entrepreneurial Learning as Processes Understood by Learning Events**

Learning has such a central role in entrepreneurship research that Cope (2005) stated that entrepreneurship is learning. As often quoted, Minniti and Bygrave (2001, p. 7) declared that 'entrepreneurship is a process of learning, and a theory of entrepreneurship requires a theory of learning'. Entrepreneurial learning emerged as a concept within entrepreneurship research as scholars found that neither cognition-focused, individual-centric conceptions of learning nor organisational learning models could be appropriately used to understand how entrepreneurs learn through developing their new ventures (Deakins and Freel, 1998; Gibb, 1997). Some major concerns about previous learning models were that they did not sufficiently account for dynamic critical events in the



venture creation process or the inherent ambiguity and uncertainty often involved with entrepreneurship. With Smilor's (1997, p. 344) declaration that 'effective entrepreneurs are exceptional learners', entrepreneurial learning became an area of broader scholarly interest at the turn of the millennium.

The concept of entrepreneurial learning builds on several other perspectives on learning that were—and still are—used within the field entrepreneurship research (Wang and Chugh, 2014). Perhaps the most notable ones include experiential learning (Kolb and Kolb, 2005; Kolb, 1984), organisational learning (Argyris and Schön, 1978; Fiol and Lyles, 1985; March, 1991), situated learning (Brown and Duguid, 1991; Lave and Wenger, 1991) and social learning (Bandura, 1977). Thus, from infancy, the conceptual understanding of entrepreneurial learning has included individual entrepreneurs' cognition, organisational-level processes, the continuously changing environment within which entrepreneurship occurs and the actors who comprise the social world in which entrepreneurship is embedded. In addition to the different learning perspectives on which entrepreneurial learning builds, other cornerstones of today's entrepreneurial learning research field are two special issues on the topic (Harrison and Leitch, 2005; Secundo, Schiuma et al., 2017) and literature reviews (Leitch and Harrison, 2008; Nogueira, 2019; Wang and Chugh, 2014). In addition, other research contributions include comprehensive overviews of previous research (e.g. Pittaway et al., 2017; Rae and Wang, 2015). The remainder of this section presents common views on entrepreneurial learning in research, focusing on connections to entrepreneurial action and experience and on the situated and social nature of entrepreneurial action, experience and learning.

### **Entrepreneurial Learning as an Experiential Process**

The concept of experiential learning (Kolb and Kolb, 2005; Kolb, 1984) has been fundamental to the development of the understanding of entrepreneurial learning (Nogueira, 2019; Pittaway et al., 2017; Wang and Chugh, 2014). Entrepreneurs' actions and behaviours are essential for entrepreneurship and new venture creation to occur (Baron, 2007), and scholarly research has built on the notion that entrepreneurial learning is learning by doing (Cope and Watts, 2000; Deakins and Freel, 1998; Minniti and Bygrave, 2001) as entrepreneurs learn through their actions in entrepreneurial ventures.

Entrepreneurial learning thus has been conceptualised as a way to make sense of experiences from action (Rae, 2000) and learning through trial and error' (Politis, 2008), guided by individuals' personal learning styles (Dimov, 2007; Honig and Hopp, 2019). Experiential learning provides a way to understand how individuals transform experiences of their own actions into knowledge (Kolb and Kolb, 2005), so it has been widely used to understand how entrepreneurs improve their behaviour based on their direct experiences of entrepreneurial action. Changes in action have been employed to indicate that learning has happened (Rae, 2000) as behaviour can be regarded as the observable part of (entrepreneurial) learning (Man, 2012).

Young and Sexton (1997) viewed entrepreneurial learning as acquisition of entrepreneurial knowledge over a period of time. Entrepreneurial learning thus may be considered to be an ongoing process that continuously creates and develops entrepreneurial knowledge. In entrepreneurial learning then, entrepreneurs continuously develop a stock of knowledge they use to inform their actions (Feldmann, 2014; Minniti and Bygrave, 2001; Politis, 2005). Rae (2000, p. 155) termed this stock entrepreneurs' own personal theory that informs what works for them. It, therefore, is important to distinguish among experience, learning and knowledge: knowledge may be considered to be an ever-developing stock, while the pure experiences that new venture creation offers may be considered to be a stream (Morris et al., 2012; Reuber and Fischer, 1999), and entrepreneurs' stream of experiences continuously develops their stock of knowledge through learning. In other words, entrepreneurial learning is a process that transforms the stream of entrepreneurial experiences from new venture creation into contributions to entrepreneurs' stock of knowledge (Morris et al., 2012).

Given that entrepreneurial action provides a stream of experiences, entrepreneurial learning processes, therefore, may be understood as consisting of multiple learning events that correspond to experiences positioned in time during the entrepreneurial learning process (Heinrichs, 2016; Pittaway and Thorpe, 2012; Rae, 2013). Cope (2003) specifically highlighted critical events as instrumental in entrepreneurial learning as they have exceptional potential to trigger entrepreneurs' actions, reflections and learning. Such critical events arise as in the new venture creation process, entrepreneurs are exposed to

liabilities of newness (Stinchcombe, 1965), of which uncertainty has been highlighted as a major liability (McMullen and Shepherd, 2006; Politis, 2005). Consequently, entrepreneurs have to act in conditions of uncertainty, which may trigger learning events in the entrepreneurial learning process. Entrepreneurs must also continuously adapt to navigate upcoming challenges (Pittaway and Thorpe, 2012; Song et al., 2017). Learning events might result in recognition of new entrepreneurial opportunities (Corbett, 2005, 2007), but they might also have terminal outcomes (e.g. new business closure; Stokes and Blackburn, 2002) and emotionally challenging, destructive and even fatal outcomes (e.g. unprofitable entrepreneurial exit and failure of the new venture; Cardon et al., 2012; Cope, 2011; Corbett et al., 2007; Pittaway et al., 2017).

Although the concepts of learning events and critical events have been widely adopted in the entrepreneurial learning literature (Wang and Chugh, 2014), a too strong focus on exceptional events in the entrepreneurial learning process has been criticised for disregarding the routine and everyday learning of entrepreneurs in new ventures (Cannavacciuolo et al., 2017). Events, therefore, should be seen as a means to analyse and understand but not completely represent continuous entrepreneurial learning processes. Moreover, entrepreneurs' stock of knowledge grows not only from their stream of experience of new ventures but also their prior industry and business experience (Politis, 2005; Sardana and Scott-Kemmis, 2010). Conceptions of entrepreneurial learning as a process in which entrepreneurs modify their actions based on experiential learning is further complemented by an understanding of entrepreneurial learning as a way in which learning itself is also modified. Cope (2005) emphasised that entrepreneurial learning also requires learning to adapt to all kinds of situations, including by adapting how to learn. The ways in which individuals learn, therefore, are not static but are developed based on prior experiences. Accordingly, entrepreneurs continuously develop their routines for learning (Cope, 2005), which implies that entrepreneurs process information from unique experiences, most likely in different ways (Holcomb et al., 2009). One set of experiences thus may lead to different knowledge for different entrepreneurs.

Entrepreneurs are considered to be self-directed learners (Young and Sexton, 2003), and the entrepreneurial learning process evidently does not follow a planned, predefined path (Deakins and Freel, 1998). Rae (2000, p. 145) focused on ‘emergent entrepreneurs’ who through learning—often undeliberately—discover ‘who they are’, ‘what they can do’ and even ‘who they want to be’. From entrepreneurs’ perspective, therefore, the entrepreneurial learning process may be considered to be more unintentional than entrepreneurs’ efforts to create new ventures (Soetanto, 2017). Entrepreneurial learning thus can be considered to be an emergent by-product of the entrepreneurial new venture creation process. The emergent nature of the entrepreneurial learning process has also spurred other ways of understanding the developing nature of entrepreneurial processes, including recognition of entrepreneurial ideas and opportunities (Corbett, 2005; Nogueira and Alsos, 2018; Ravasi and Turati, 2005), entrepreneurial effectuation (Politis, 2008) and entrepreneurial identity development (Fletcher and Watson, 2007; Rae, 2000). Literature reviews on entrepreneurial learning research have distinguished between experiential and alternative approaches to entrepreneurial learning (Nogueira, 2019) and between individual and collective types of learning (Wang and Chugh, 2014). In the latter, individuals are affected by others but also socially interact with others to establish entrepreneurial know-how, know-what and, last but not least, know-who of their surroundings. While this section has primarily considered the individual-focused notions of experiential entrepreneurial learning, the next section explores how entrepreneurial learning may be considered to be a process that extends beyond individual entrepreneurs and their personal experiences of their own venture creation processes.

### **Entrepreneurial Learning as a Situated and Social Process**

Scholars have questioned the reliance on experiential models to understand entrepreneurial learning and have emphasised that entrepreneurial learning is a social process (Taylor and Thorpe, 2004) that should not be considered in isolation from the contexts within which it occurs (Harrison and Leitch, 2005). Although prior reviews (cf. Nogueira, 2019; Wang and Chugh, 2014) have strictly separated experiential/individual and alternative/collective entrepreneurial learning, research contributions to the field of entrepreneurial learning have de-emphasised rather than dismissed the importance of factors beyond the individual entrepreneur to entrepreneurial learning processes. Deakins

and Freel (1998), for example, stated that purely individual-focused learning theories such as experiential learning (Kolb, 1984) are important but do not cover all learning by entrepreneurs as they change their behaviour based on interaction with others. The experiential focus has also had consequences, for example, in management education, and the view on experiential learning has been criticised as the principles of experiential learning (grasping and transformation) have commonly been analysed in isolation from the external environment (Holman et al., 1997). Consequently, educators may treat the social aspects of learning in an overly simplistic, mechanistic way.

The development of new ventures and entrepreneurs as individuals go hand in hand (Bruyat and Julien, 2001; Cope and Watts, 2000) and are facilitated by the social relationships through which entrepreneurs access information (Smilor, 1997). For example, entrepreneurial opportunities may be accessed through networks, and entrepreneurs may also learn from firms in networks (Deakins and Freel, 1998), customers, suppliers, competitors, employees, associates, entrepreneurial team members (El-Awad et al., 2017; Voudouris et al., 2011) and other individuals within the same organisation (Dutta and Crossan, 2005). Holcomb et al. (2009, p. 172) recognised entrepreneurial learning as both an experiential and a social process, in particular, ‘the process by which people acquire new knowledge from direct experience and from observing the behaviours, actions and consequences of others’. It, therefore, has been established that entrepreneurial learning processes indeed have situated and social aspects, in addition to lessons gained from personal experience in new venture creation, as graphically illustrated in Figure 2. The next section focuses on the situated and social aspects of entrepreneurial learning processes.



**Figure 2:** Model of entrepreneurial learning processes involving action, experience and situated and social aspects. The loop represents a continuous entrepreneurial learning process, and this model is used in the following sections to define the research focus of this thesis.

### **3.2 Entrepreneurial Learning Beyond Individuals and Single Ventures**

This section focuses on the situated and social aspects of entrepreneurial learning. The main point to be made is that entrepreneurial learning is a multi-actor, multi-level process, and while it is understood with whom and what entrepreneurs are learning, less is known about how entrepreneurs learn. Entrepreneurship and learning are both social processes (Hytti and Nieminen, 2013; Lundqvist et al., 2015; Rae, 2005; Summatavet and Raudsaar, 2015), and as mentioned, entrepreneurial learning is not limited to personal experiences but also extends to social interactions and experiences in the contexts and environments in which entrepreneurs operate (Cannavacciuolo et al., 2017; Erikson, 2003; Rae and Carswell, 2001; Taylor and Thorpe, 2004; Williams Middleton and Donnellon, 2014). Becoming an entrepreneur thus is a process involving social interactions in dynamic contexts (Higgins et al., 2013). The possibility to learn from observing others has been highlighted as especially useful in uncertain endeavours such as entrepreneurship (Bandura, 1977; Holcomb et al., 2009) in which mistakes may have significant consequences (Lévesque et al., 2009).

Research on the situated and social aspects of entrepreneurial learning remains a niche within the overall entrepreneurial learning literature, but nonetheless represents a broad concept. In this section, different viewpoints on how entrepreneurial learning can be considered to be situated and social are reviewed. The main finding is that entrepreneurial learning involves individuals other than the entrepreneur, so entrepreneurial learning may be considered to be a multi-actor phenomenon that involves varying degrees of interaction with others. For example, Seet et al. (2018) distinguished between collaborative learning as participative interaction and social learning as a broader concept that also includes instances involving few or no interactions such as learning through observing others. Another finding emerging from the research reviewed in this section is that entrepreneurial learning may be regarded as a multi-level phenomenon as the situated and social aspects of entrepreneurial learning may be considered at different levels of analysis. While Section 3.1 specifically highlighted the dominant individual-level focus of experiential learning, community-, network- and even contextual-level views exist. Entrepreneurial learning as a multi-actor and multi-level phenomenon is further elaborated in the rest of this section.

### **Entrepreneurial Learning as a Multi-Actor Phenomenon**

The terms ‘vicarious’ and ‘observational’ learning commonly have been used interchangeably within the entrepreneurial learning literature to describe how entrepreneurs learn from observing others’ actions (Zozimo et al., 2017). Doing so may be valuable as entrepreneurs may decrease uncertainty by leveraging others’ lived experiences (Lévesque et al., 2009). In principle, these others may be persons whom entrepreneurs can observe. However, a dominant category in the entrepreneurial learning literature is role models who can include parents, lecturers, teachers, guest speakers and peers (Rahman and Day, 2014; Zozimo et al., 2017). Other relevant actors, who can also be role models, are mentors important to entrepreneurs’ formal and informal entrepreneurial learning (Sullivan, 2000). Mentors have been found to have significant roles in developing entrepreneurs’ social capital or know-who (Seet et al., 2018). For example, mentors connect entrepreneurs to relevant social networks and facilitate informal social relationships that often underpin more formal business relationships. Zozimo et al. (2017) further found that entrepreneurs may access multiple social networks to find suitable role models from whom to learn, indicating that the search for role models is also a social process involving multiple actors.

Entrepreneurs are viewed as embedded in social networks (Johannisson, 1988; Klyver et al., 2008). Indeed, entrepreneurs’ personal social networks have been found to be important in the new venture creation process (Davidsson and Honig, 2003) as social networking is important for entrepreneurs’ development of appropriate strategies and tactics (Peltier and Naidu, 2012). Moreover, social networks support entrepreneurial learning as a knowledge acquisition process (Scarmozzino et al., 2017). Entrepreneurs’ social networks may include relationships and interactions both internal and external to their new ventures (Lans et al., 2016) as social networks also constitute infrastructure that facilitates knowledge-sharing among entrepreneurial ventures (Cannavacciuolo et al., 2017; Fang et al., 2010). Social networks provide another arena for informal learning by enabling participation in social events and mentoring and coaching from others (Saunders et al., 2014). Social relationships in networks may also be established through presence in physical workspaces and local environments where entrepreneurs learn from testing and receiving feedback on their offerings (Lans et al., 2016; Summatavet and Raudsaar,

2015). Business incubators are a specific type of arena for social relationships across entrepreneurial ventures (Fang et al., 2010). Entrepreneurs have also been found to learn through social networks on virtual platforms rather than in physical spaces (Hafeez et al., 2018; Scarmozzino et al., 2017). Through engaging in different social networks, entrepreneurs foster a positive feedback loop of building their social competencies, learning from and with others and developing their ventures (Lans et al., 2016). Entrepreneurs' learning of know-who thus enhances their know-how (Seet et al., 2018). Ekanem (2015) identified specific networked actors whom entrepreneurs learn from and with (e.g. investors, suppliers, educators and accountants) and the content of lessons from these actors (e.g. management procedures and strategic decision-making).

Relationships in entrepreneurs' social networks are often characterised by stronger and weaker network ties (Granovetter, 1973; Jack, 2005), and entrepreneurs respond to challenges and crises by strengthening their network ties. These tendencies imply that critical events in the entrepreneurial learning process leads to the establishment of new networked relationships or the development of existing relationships (Soetanto, 2017). Soetanto (2017) also highlighted the dynamic nature of social networks and entrepreneurs' agency in developing their own networks based on their concurrent needs for knowledge and resources during the venture creation process. Similarly, Peltier and Naidu (2012) found that throughout the entrepreneurial learning process, entrepreneurs shift from developing their ventures through their social networks of family and friends to their social networks of professional actors. Social networks may be instrumental in guiding the entrepreneurial learning process, and Cantino et al. (2017) found that networked firms' entrepreneurial learning relates to adapting to their social context. Moreover, a network of other entrepreneurs may supply not only observational and interactive learning but also social support for entrepreneurs (Mansoori, 2017). The development process of entrepreneurs may affect their social networks as severe critical events such as new venture failure can have fatal consequences for entrepreneurs' social relationships and networks (Cope, 2011). Learning from failure teaches about relationships and networks as extreme situations put them to the ultimate test.



The mechanisms through which experiences—based on factors from incremental events to fatal events in the entrepreneurial learning process—are shared between network actors are storytelling and discussions. Storytelling is one means that facilitates entrepreneurial learning from others (Rae, 2004; Seet et al., 2018) and articulating experiences to oneself and others (Johansson, 2004; Rae, 2005; Rae and Carswell, 2001). Entrepreneurs' stories can provide the basis for developing knowledge about what works in entrepreneurship (Rae, 2004), and what works can be incorporated into learning know-what, know-how and know-who. Thus, the stories of one entrepreneur—with sufficient information about that entrepreneur's conditions and environment—may be a useful source of vicarious learning for other entrepreneurs. In some circumstances, entrepreneurial learning involving multiple actors may be limited to vicarious learning from hearing others' experiences, stories and advice, but social learning mechanisms may also be directly engaged in entrepreneurs' venture creation process (Saunders et al., 2014). For example, discussions with other entrepreneurs can facilitate entrepreneurial learning (Lévesque et al., 2009).

Entrepreneurs' learning from observing and interacting with role models, mentors and other social network actors through storytelling and discussions is in some respects fundamentally different from learning by doing. However, these ways of learning may be considered to be supplementary drivers of the individual transformation process common in studies on entrepreneurial learning (Man, 2012). Multiple actors can be further integrated with entrepreneurial action by leveraging social relationships and interactions to resolve critical events (Saunders et al., 2014) and acquiring tangible and intangible resources essential to entrepreneurs' ventures (Fang et al., 2010). Entrepreneurial learning research, therefore, has potential to complement action in the entrepreneurial process with the involvement of multiple actors. While the reviewed literature on entrepreneurial learning as a multi-actor phenomenon has primarily considered how know-who and know-how are shared and developed through social relationships, social networks as learning networks may also develop into communities of shared practices (Lefebvre et al., 2015). The next section addresses how the network and community levels may be differentiated.

## **Entrepreneurial Learning as a Multi-Level Phenomenon**

As elaborated, entrepreneurial learning processes involve multiple actors and their relationships and interactions, which may be understood at different levels. A multi-level conceptualisation of entrepreneurial learning has emerged from the organisational learning literature, where a social learning process occurring at several different levels has been considered (Breslin, 2019; Brettel and Rottenberger, 2013; Crossan et al., 1999). Multi-level models from organisational learning, particularly the 4I organisational level framework (Crossan et al., 1999), have informed multi-level conceptions of entrepreneurial learning and been adopted in studies on it (Dutta and Crossan, 2005; El-Awad et al., 2017). A multi-level view on entrepreneurial learning also includes levels beyond organisational boundaries, and entrepreneurs may establish social relationships with entrepreneurs external to their ventures (Seuneke and Bock, 2015). This section investigates the different levels of understanding learning considered in the entrepreneurial learning literature.

The situations and contexts within which entrepreneurial experiences and social interactions occur influence how and what individuals learn (Song et al., 2017; Wilson and Myers, 2000). Hunter and Lean (2018) emphasised the need to understand the broader social context within which entrepreneurs learn by doing as their consciousness of the context of their experiences can facilitate their learning process (Argyris and Schön, 1978; Mansoori, 2017). The industry context and the national context are commonly considered, but a specific venture itself may also constitute a more local context for entrepreneurial learning (Higgins and Elliott, 2011; Rae, 2006; Seuneke and Bock, 2015). So may an educational context, which also affects entrepreneurial learning processes as a context for learning (Higgins and Elliott, 2011) in which educators can be understood as actors at the contextual level in entrepreneurship education programmes (Hunter and Lean, 2018). Warren (2004) introduced a multi-level model of entrepreneurial learning emphasising the bi-directional relationship between individual entrepreneurs and their social context as entrepreneurs influence their context, and their context influences them. How context influences entrepreneurs' learning depends on multiple factors such as the industry, regional economic situation, market conditions and gender (Ettl and Welter, 2010).

Conceptually, social interactions are seen as a means to relate learning at different levels (Voudouris et al., 2011). In a review of the entrepreneurial learning literature, Wang and Chugh (2014) found that the field has separated an individual type of learning from a collective type of learning, in which individuals socially interact to establish entrepreneurial know-how, know-what and, last but not least, know-who in their social surroundings. Thus, interactions in social relationships involve a higher degree of multi-actor involvement than how individuals influence and are influenced at the contextual level. Within new venture teams, entrepreneurial learning occurs through interactions in social relationships at the team level in intra-organisational learning (El-Awad et al., 2017). Inter-organisational entrepreneurial learning may also occur, meaning that learning also spans across different entrepreneurial ventures (Warren, 2004). Hence, entrepreneurial learning through social interactions constitutes how learning occurs in social networks—at the network level—as discussed in the sub-section above on entrepreneurial learning as a multi-actor phenomenon.

Karataş-Özkan (2011) added nuance to the understanding of entrepreneurial learning by differentiating the meso level on which teams or networks of individuals co-participate in entrepreneurship from the macro level or the socio-cultural environment that generally corresponds to the aforementioned contextual level. Karataş-Özkan (2011) used the term *venture communities* to describe how individuals may interact at the meso level, sharing not only knowledge but also practices within and across ventures. This behaviour emphasises how networks can develop into communities of shared practice (Lefebvre et al., 2015). The network level thus may be differentiated from the community level, which involves collaboration (cf. Seet et al., 2018), co-participation and shared practices in addition to interactions in (networked) social relationships. Entrepreneurial learning thus may be considered at the contextual, network and community levels in addition to the individual level, which has been well covered in the entrepreneurial learning literature (Section 3.1). Furthermore, entrepreneurial learning can also be conceptualised as interlinked and occurring on multiple levels simultaneously (Bonfanti et al., 2019; El-Awad et al., 2017; Karataş-Özkan, 2011). Table 1 summarises the levels at which to consider entrepreneurial learning mentioned in this section.

**Table 1:** Summary of the multiple levels at which the situated and social aspects of entrepreneurial learning processes are considered in which the individual entrepreneur is inevitably essential (\*). All levels may include intra- and inter-organisational influences and relationships.

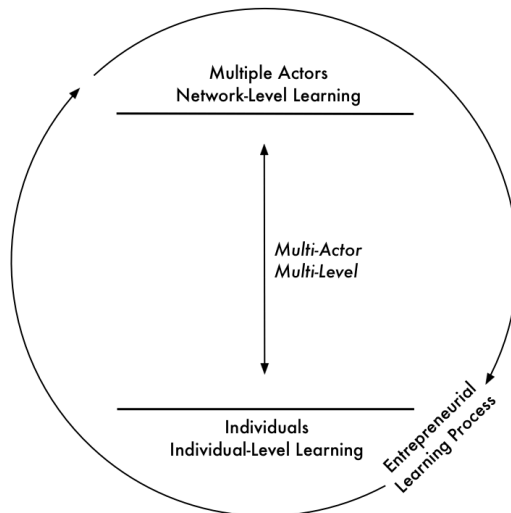
		<i>Levels at which to consider entrepreneurial learning</i>			
		<b>Individual*</b>	<b>Community</b>	<b>Network</b>	<b>Contextual</b>
<i>Degree of involvement</i>	Shared practices and collaborative learning				
	Learning in relationships and interactions				
	Influences learning and influenced by learning				

**Summary: About What, With Whom and How**

This section has introduced how entrepreneurial learning involves multiple actors and has shown how previous research has provided comprehensive insights into who some of these actors might be, including role models, mentors and actors in social networks. Entrepreneurial learning may further be studied and understood at multiple levels. Previous research has emphasised the social interactions among multiple actors in social networks and at the network level. The multiple actors and levels are illustrated in Figure 3, in which the model of the entrepreneurial learning process from Section 3.1 is extended to incorporate the multi-actor and multi-level perspectives on entrepreneurial learning.

Cope (2005) called for future research to address the what, with whom and how regarding the social aspects of entrepreneurial learning processes. Previous research has provided an understanding of who the actors important to entrepreneurial learning processes are, but few studies have explored how entrepreneurial learning occurs through interactions among these actors. Although previous contributions have argued well for the need to understand entrepreneurial learning at different levels, for example, by leveraging the multi-level perspectives from organisational learning, little literature has focused on how learning occurs at and across these different levels. We, therefore, need to build on knowledge of ‘with whom’ to enhance understanding of how social interactions are

important to entrepreneurial learning. Despite some exceptions such as Seet et al. (2018) who provided insights into the importance of entrepreneurs' interactions with mentors, experts and peers for their learning, there remains a need to focus on the interactions that go beyond the main scope of concepts from organisational learning—in particular, learning in interactions across entrepreneurial ventures (Voudouris et al., 2011; Warren, 2004). For a significant period of time, the content of entrepreneurial learning was not well understood (Sardana and Scott-Kemmis, 2010). While previous research has addressed this gap, as mentioned, it is still necessary to consider the learning content (what) and the actors involved (with whom) to understand the process of entrepreneurial learning (how).



**Figure 3:** Extension of the process model in Section 3.1 (Figure 2) that incorporates entrepreneurial learning that involves multiple actors with whom interactions may be understood at multiple levels. This model is used in the next section to further define the research focus of this thesis.

### **3.3 Multi-Actor and Multi-Level Entrepreneurial Learning of Student Entrepreneurs**

Section 3.2 elaborated on several perspectives on the situated and social aspects of entrepreneurial learning. While some of these perspectives are related to student entrepreneurs, the literature reviewed so far has covered many types of entrepreneurs: the founders of biotech ventures (Sardana and Scott-Kemmis, 2010), entrepreneurs with prior

industry and entrepreneurial experience (Politis and Gabrielsson, 2005), agricultural entrepreneurs (Lans et al., 2016; Seunke et al., 2013) and technology firms (Karataş-Özkan, 2011). This section focuses specifically on student entrepreneurs as they operate within the specific context of universities and perhaps entrepreneurship education programmes and extracurricular initiatives, which, based on the insights discussed in Section 3.2, influence students' entrepreneurial learning processes. As argued, previous research has addressed the content, actors and processes of entrepreneurial learning, and these topics guide the review in this section.

This section presents a review of the literature on aspects of student entrepreneurs' entrepreneurial learning beyond the individual level and primarily builds on 17 previous contributions. These papers are briefly presented in Table 2 and further applied throughout this section. While these papers share a focus on students, they are still different in many ways. They, for example, consider different degrees of student involvement in new ventures. Some included papers report studies on students who own and manage their own ventures (Lockett et al., 2017; Pittaway et al., 2011), while others focus on students whose roles in new venture creation processes may be time limited (Kubberød and Pettersen, 2017, 2018), supportive (Saukkonen et al., 2016; Secundo, Del Vecchio et al., 2017) and rather marginal (Hyclak and Barakat, 2010).

In addition, the selected papers cover different ways students' entrepreneurial learning is facilitated. In some instances, students facilitate other students' learning—although commonly in collaboration with universities such as through extracurricular initiatives (Pittaway et al., 2011; Preedy and Jones, 2017). Other means of facilitation include entrepreneurship education programmes and organised in-course interactions with external entrepreneurs (Kubberød and Pettersen, 2017; Pittaway and Cope, 2007). Two columns in Table 2 present the varying degrees of student involvement in new ventures and the different ways of facilitating students' entrepreneurial learning. The remainder of Table 2 show how situated and social aspects of students' entrepreneurial learning have been considered in previous research, which is the main focus of the following review.

**Table 2:** Overview of research papers on students' situated and social entrepreneurial learning. \* Some papers considered different degrees of involvement in the same study (Hahn et al., 2017; Shirokova et al., 2017) or did not clarify students' degree of involvement. \*\* Pittaway and Thorpe (2012) reviewed and discussed Jason Cope's scholarly work and thus focuses on several studies relating to student entrepreneurship.

<b>Literature reference</b>	<b>Students' involvement in new ventures</b>	<b>How students' entr. learning is facilitated</b>	<b>Relationships and interactions</b>	<b>Contexts and situations</b>
Preedy and Jones (2017)	Full ownership	Students	Social networks	-
Lockett et al. (2017)	Full ownership	University and students	Social networks	University as the context for entrepreneurship
Blackwood et al. (2015)	Full ownership	University	Social networks	-
Ollila and Williams-Middleton (2011)	Full ownership	University	Co-creation of knowledge	Situations for reflection
Pittaway et al. (2011)	Full ownership	University and students	Social practice and engagement	Student entr.ship club as the practice context
Kubberød and Pettersen (2018)	Internships	University and external ventures	Participation in a community of practice	Ambiguous situation
Kubberød and Pettersen (2017)	Internships	University and external ventures	-	Ambiguous situation
Saukkonen et al. (2016)	Coaching entrepreneurs	University and external ventures	Collaboration with start-ups	-
Costin et al. (2013)	Coaching entrepreneurs	University and external ventures	Coaching and social networks	Accountability and autonomy
Secundo, Del Vecchio et al. (2017)	Mentorship	University and external ventures	Collaboration in a community of actors	Adapting to situations
Shirokova et al. (2017)	Educational component*	University	Social networks	Co-curricular initiatives
Hahn et al. (2017)	Educational component*	University	External social relationships	-
Günzel-Jensen and Robinson (2017)	Educational component*	University	Learning through social interaction	Noviceness and university context
Pittaway and Cope (2007)	Educational component*	University and external ventures	Communal work context	Ambiguous and uncertain situations

Hyclak and Barakat (2010)	Connected through education*	University	Connections to entrepreneurs	-
Rae et al. (2009)	Focus on faculty	University	Social networks (of external entrepreneurs)	University entrepreneurship culture
Pittaway and Thorpe (2012)	(Not applicable**)	(Not applicable**)	Situated and social aspects of students' entrepreneurship	

### **Multiple Actors and Levels**

The literature on student entrepreneurs' entrepreneurial learning has incorporated both multi-actor and multi-level aspects, as introduced in Section 3.2. Similar to entrepreneurial learning in general, the multi-actor perspectives commonly refer to students' learning through social networks, including mentoring and coaching. Students often do not create their own ventures as part of educational programmes (Aadland and Aaboen, 2018), so to facilitate their entrepreneurial learning, many initiatives allow students to observe and interact with external entrepreneurs (Costin et al., 2013; Hyclak and Barakat, 2010; Saukkonen et al., 2016; Secundo, Del Vecchio et al., 2017) and establish social networks relevant to entrepreneurship (Lockett et al., 2017; Preedy and Jones, 2017). The literature adopting multi-level perspectives has paid attention to many situations and contexts. However, many studies have focused on students who do not create their own ventures, so they have been divided between situations and contexts in which students' learning occurs and in which new venture creation occurs. For example, students may learn in the context of an entrepreneurship education programme, while external entrepreneurs do the actual venture creation. Although not abundant—and here represented by a selection of 17 papers—the literature on students' situated and social entrepreneurial learning has revealed how students' entrepreneurial learning is facilitated. and thus some ways through which it may be understood.

### **Facilitating Situations of Ambiguity, Uncertainty and Conflict**

Pittaway and Thorpe (2012) emphasised Cope's recognition that learning processes and events are located within social situations and contexts, which allow students to gain insights into others' practices and share their own knowledge with others. Several interesting views on how university-based initiatives may facilitate students' situated



entrepreneurial learning have emerged. Students may be unfamiliar with situations involving entrepreneurship, so the entrepreneurial learning process includes becoming used to working and learning in new ways (Blackwood et al., 2015; Kubberød and Pettersen, 2017, 2018). Pittaway and Cope (2007) found that ambiguity, uncertainty and conflict in learning situations such as tensions within student teams can be important components of entrepreneurial learning. Ambiguous situations drive students' decision-making, encouraging proactive and action-oriented behaviour. Blackwood et al. (2015) demonstrated that students' identities and entrepreneurial learning are closely interrelated in team-based learning environments and found that students often misinterpret learning as a transfer of knowledge from teacher to student. The specific situation of a programme characterised by social networking and collective work is important for students to develop their identities and sense of belonging, enabling them to guide their own learning.

Entrepreneurship education programmes may facilitate entrepreneurial learning by introducing students to new situations in different ways. In Kubberød and Pettersen's (2017) study, students experiencing entrepreneurship through internships in new ventures operating in foreign countries experience 'situated ambiguity', in short, ambiguity triggered by a new (ambiguous) situation. Kubberød and Pettersen (2017) argued that critical incidents involving uncertainty, ambiguity and emotional exposure facilitate students' entrepreneurial learning and can increase the realness of entrepreneurial learning in entrepreneurship education, as emphasised by Pittaway and Cope (2007). Kubberød and Pettersen (2018) used the same initiative as in Kubberød and Pettersen (2017) to argue that the learning situation of being on the periphery of an external new venture creates a particular situation for entrepreneurial learning in situated ambiguity. Providing another example of the introduction of students to new situations, Ollila and Williams-Middleton (2011) focused on a specific approach to entrepreneurship education in Sweden integrating venture creation and university-based incubation. Students create their own ventures in contrast to working on others' ventures (e.g. Kubberød and Pettersen, 2017). The approach described by Ollila and Williams-Middleton (2011) decreases teachers' control of the learning process and benefits students' entrepreneurial learning by exposing students to external stakeholders such as customers. The programme thus facilitates social situations, and the specific market and stakeholder situation of each

student venture varies, giving all students unique experiences of social situations in which students must take responsibility.

New situations promote students' entrepreneurial learning (Blackwood et al., 2015; Kubberød and Pettersen, 2017; Ollila and Williams-Middleton, 2011), but such an approach may also induce challenges. Günzel-Jensen and Robinson (2017) studied a programme aimed at facilitating students' experimentation, networking and iterative learning and found that the context of university education presents certain barriers to students' entrepreneurial learning. Students' focus on completing their schoolwork the correct way, for example, can result in 'misplaced' commitment that discourages them from exploring possible entrepreneurial opportunities. Another barrier to entrepreneurial learning is that students may question teachers' entrepreneurial experience, hindering teachers from becoming the entrepreneurial role models they aim to be. The work by Rae et al. (2009) provide insights into how universities may address challenges similar to those raised by Günzel-Jensen and Robinson (2017). Rae et al. (2009) described the development of an entrepreneurial learning team of faculty members whose ability to provide access to external (extracurricular) activities and networks the researchers deemed to be essential to facilitating students' entrepreneurial learning. Rae et al. (2009) hence suggested that faculty should be regarded as co-actors in students' entrepreneurial learning processes. Hahn et al. (2017) argued that it is difficult to include social interactions that facilitate entrepreneurial learning in entrepreneurship education programmes. Nevertheless, Ollila and Williams-Middleton (2011) stressed that teachers and peer students must allow each other to experiment in real social interactions and sometimes make mistakes and even fail to sustain the self-directed nature of students' entrepreneurial learning processes.

Students' situated entrepreneurial learning, therefore, may entail working in situations where both activities (involvement in new venture creation) and unfamiliar contexts (new countries, cultures, social relationships and responsibilities) affect their entrepreneurial learning. Furthermore, the studies discussed have demonstrated that situated entrepreneurial learning may not only be influenced by or embedded in specific kinds of situations but can also be facilitated by being exposing students to new situations. These

situations may also be unique for each student (Ollila and Williams-Middleton, 2011), making students' entrepreneurial learning processes unique. Students are still expected to deliver academically (Günzel-Jensen and Robinson, 2017; Ollila and Williams-Middleton, 2011), and teachers may have limited entrepreneurial experience (Günzel-Jensen and Robinson, 2017), so some tensions between structure and uniqueness appear in situated approaches that facilitate students' entrepreneurial learning.

### **Students' Interactions with External Entrepreneurs**

To encourage students' entrepreneurial learning, university-based initiatives not only expose students to new situations but also facilitate interactions between university students and entrepreneurs. From the perspective of university policy, Hyclak and Barakat (2010) described how the Cambridge Cluster connects university educational programmes with high-tech entrepreneurs to facilitate students' entrepreneurial learning. Secundo, Del Vecchio et al. (2017) studied a similar initiative in which students collaborate with external entrepreneurs as part of their learning process. University researchers may also take part in the collaboration and act as mentors for the students. The university's overall goal is for students and faculty to explore and develop new ideas and build awareness of entrepreneurship and entrepreneurial approaches. University-based initiatives thus may facilitate interactions between students, faculty and external entrepreneurs. Secundo, Del Vecchio et al. (2017) emphasised that it is the combination of entrepreneurs' experiences and students' positive attitudes that fosters exploration, experimentation and entrepreneurial learning.

Saukkonen et al. (2016) studied a similar initiative involving students in collaboration with entrepreneurs in local start-up companies during an eight-week intensive coaching programme within a curricular specialisation course in entrepreneurship. As in the initiative studied by Secundo, Del Vecchio et al. (2017), students do not have their own ventures but act as assistant coaches for external entrepreneurs, helping them develop strategies and business plans for their nascent ventures. In a third similar initiative studied by Costin et al. (2013), teams of students act as entrepreneurship coaches for small businesses to give students experience with the habitat of entrepreneurs. Costin et al. (2013) highlighted the larger amount of accountability and autonomy granted to student

teams (as compared to in their educational setting otherwise) and demonstrated how challenging situations involving students' decision-making in real businesses facilitates their learning. Such situations include disagreements in the relationships with the client businesses supported by students. Thus, some ambiguity exists in the relationships between actors in the entrepreneurial processes and has been found to facilitate students' entrepreneurial learning processes (Costin et al., 2013).

Studies on how universities facilitate students' interactions with external entrepreneurs to encourage students' entrepreneurial learning (Costin et al., 2013; Hyclak and Barakat, 2010; Saukkonen et al., 2016; Secundo, Del Vecchio et al., 2017) have provided insights into with whom students may interact and learn (e.g. faculty and external entrepreneurs). Interacting with these actors exposes students to new situated roles such as being start-up mentors and experiences such as the habitats of entrepreneurs. Furthermore, studies have shown that through interactions, students may learn not only knowledge from external entrepreneurs but also ways of working entrepreneurially such as entrepreneurial approaches (Secundo, Del Vecchio et al., 2017) and developing new ways of learning (Costin et al., 2013).

### **Developing Social Networks and Learning through Social Networking**

Facilitating students' entrepreneurial learning through collaborative initiatives with external entrepreneurs and stakeholders has been reported to be valuable for students' social networking (Costin et al., 2013). In a study on student-led enterprise groups in the United Kingdom, Preedy and Jones (2017) found that extracurricular initiatives make social networks a way to support students' ventures. Students' social networks may also be developed through exposure to like-minded peers in contrast to the external entrepreneurs discussed. Pittaway et al. (2011) emphasised that social learning is a main ways that entrepreneurship clubs and societies complement and provide value to entrepreneurship education, supporting social learning in a way that traditional curricular education does not. Lockett et al. (2017) found that the university environment creates awareness of the need for social networks, which triggers student entrepreneurs to engage in social interactions to develop their networks and acquire the resources needed for their ventures. Lockett et al. (2017) found that informal social interactions gradually shift

towards formal interactions with networks over time. For example, student entrepreneurs recruit individuals to their ventures to acquire needed knowledge and skills (Lockett et al., 2017). Shirokova et al. (2017) also showed that student entrepreneurs who generally lack prior experience and networks leverage the university environment to access such resources through coaching, networking and other types of social interactions.

Opportunities for social interactions, however, also pose some challenges. Lockett et al. (2017, p. 77) emphasised that entrepreneurs may be ‘lost in space’. In other words, students do not have a straightforward way to become aware of the structure of self-directed and informal learning opportunities in the university context. Responsibility for developing social networks can be a very different experience for students than participating in a programme in which a teacher, for example, organises social interactions. However, the studies presented here (Lockett et al., 2017; Pittaway et al., 2011; Preedy and Jones, 2017) have suggested that a more self-directed process can facilitate students’ entrepreneurial learning in a different—and perhaps more ambiguous—way through letting students be in charge of their interactions. Shirokova et al. (2017), for instance, found that both inexperienced and experienced student entrepreneurs benefit from social networks and suggested that the university environment is well suited to facilitate the establishment of relationships between entrepreneurs and external actors. Similarly, Preedy and Jones (2017) proposed that extracurricular initiatives could consider engaging in more collaboration with industry stakeholders to extend the networks available to students. Scholarly contributions thus have suggested that social networking efforts by student entrepreneurs can be supplemented by university initiatives that aid students in interacting with relevant actors, leading to a fruitful balance between university-initiated and student-led social interactions.

### **Summary: How Learning is Facilitated and How Learning Occurs**

The situated and social aspects of entrepreneurial learning, as introduced in Section 3.2, generally have been recognised in contributions, particularly on students’ entrepreneurial learning. Coaches, mentors and social networks, for example, have been found to have a significant role in students’ entrepreneurial learning processes. However, faculty commonly have been considered to be the most essential actors in the various

programmes and initiatives discussed, with the clear exception of mainly student-led initiatives (Pittaway et al., 2011; Preedy and Jones, 2017).

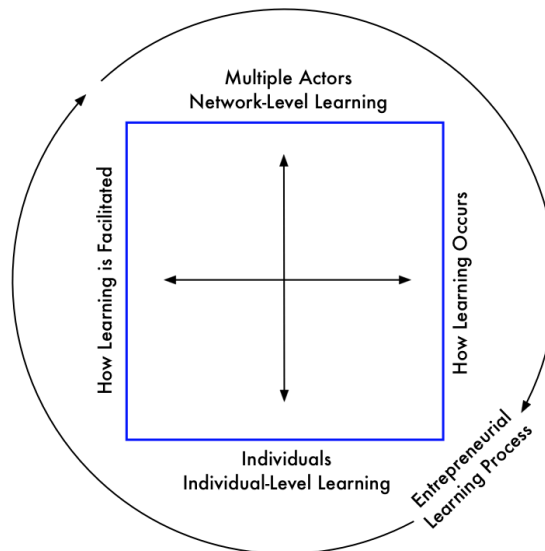
Accordingly, scholars have generated more insights into and understanding of how students' entrepreneurial learning is facilitated through social interactions involving several actors than how students' entrepreneurial learning occurs through social interactions. Researchers have developed a broad repertoire of ways through which students may be exposed to different situations that facilitate entrepreneurial learning, but less has been understood from students' perspective on how learning occurs in such ambiguous, uncertain, conflict-laden situations. Research on student entrepreneurs' entrepreneurial learning, therefore, has been overly reliant on an understanding of facilitation to explain how learning occurs. The occurrence of learning is an emerging process, so how learning occurs cannot be directly anticipated from how it is facilitated. Research thus should explore the perspectives of students as well as faculty and facilitators. Given the recognition that entrepreneurial learning may be considered at different levels (Section 3.2), the situated and social aspects of students' entrepreneurial learning have often been considered at the network level. To some degree, several of the 17 papers reviewed in this section acknowledge the relevance of community-level perspectives (Kubberød and Pettersen, 2018; Pittaway et al., 2011; Pittaway and Cope, 2007; Preedy and Jones, 2017), but they focus on introducing students to other communities rather than considering social interactions within students' communities.

### **3.4 Research Focus of this Thesis**

Based on Chapter 2 and Sections 3.1–3.3, the following viewpoints on student entrepreneurs' entrepreneurial learning constitute suggestions for the research focus in this thesis: (1) Entrepreneurial learning is learning through entrepreneurship, in this case, learning during the new venture creation process in curricular and extracurricular programmes and initiatives (referring to the support initiatives introduced in Chapter 2). (2) Entrepreneurial learning is a process, not a single event or outcome, but nevertheless, entrepreneurial learning processes can be considered to encompass an indefinite number of learning events (see Section 3.1). (3) Entrepreneurial learning is a multi-actor and multi-level process of social interactions (see Section 3.2). The particular context of

university student entrepreneurs facilitated by entrepreneurship education and student venture support initiatives leads to the fourth focus on entrepreneurial learning (as introduced in Section 3.3). (4) How students' entrepreneurial learning is facilitated can be differentiated from how it actually occurs, and despite insights into with whom and what, there remains a need for more research on how students' entrepreneurial learning occurs.

In summary, the four points made above means that a process perspective on how student entrepreneurs learn should take into account both the facilitation and the occurrence. While a multi-level approach is necessary, specific attention should also be given to the community level as relatively little research has addressed it compared to the individual and network levels. A two-dimensional representation of the research focus of this thesis is presented in Figure 4. The first dimension defining the research focus is the need to understand the facilitation and the occurrence of students' entrepreneurial learning in conjunction. Along the second dimension, the multi-actor and multi-level nature of entrepreneurial learning is emphasised, which requires combining individual-level learning and learning involving multiple actors at different levels.



**Figure 4:** Illustration of the research focus of this thesis developed throughout this chapter. The two dimensions are illustrated by the arrows.

## **4. Analysis Framework: Communities of Practice**

This chapter introduces elements from the communities of practice concept and applies them to the development of an analytical framework—a tool—to understand student entrepreneurs’ entrepreneurial learning. Consequently, this chapter does not give a holistic elaboration of the communities of practice concept, which is much broader than the research focus of this thesis. The analysis framework developed in this chapter has utility in the analysis of the four appended papers in this thesis.

### ***4.1 The Concept of Communities of Practice***

The core concept of communities of practice was first proposed by Jane Lave and Etienne Wenger (1991) and later developed by Wenger (1998; Wenger et al., 2002). The concept combines earlier theoretical perspectives on situated and social learning (Lave and Wenger, 1991), such as social learning (Bandura, 1977), and incorporates elements of social psychology (Vygotsky, 1978). Later works (cf. Wenger, 1998; Wenger et al., 2002) have also connected the communities of practice concept more to the management literature by including organisational learning (Argyris and Schön, 1978), for example, in the development of communities of practice as a concept. It is now argued to be the most widely used theoretical reference to social learning (Farnsworth et al., 2016).

The concept of communities of practice provides a way to understand learning as occurring in the relationships between the individual and the social world (Wenger, 2010). Individuals learn through active participation in social situations, and learning consists of the co-creation of knowledge rather than mere transactions of knowledge as occur in very traditional teacher—student models (Lave and Wenger, 1991; Wenger, 1998). The concept of communities of practice has been applied in management, education and healthcare (Mercieca, 2017; Wenger, 2010). In the field of entrepreneurial learning, it complements the experiential learning perspectives by stressing that learning is linked to the social and situated conditions where it occurs (Pittaway and Cope, 2007).

### **Legitimate Peripheral Participation**

Situated learning activity originally was conceptualised as legitimate peripheral participation in communities of practice and as an inevitably social activity (Lave and



Wenger, 1991). This view matches very well with notions of the situated and social aspects of entrepreneurial learning. Rae (2006) emphasised that entrepreneurs should not only be considered to operate within specific contexts but also to participate in these contexts through social interactions. Lave and Wenger (1991) described learning in communities of practice as an apprenticeship in which newcomers (apprentices) learn from engaging in the practices of experienced practitioners (masters). As an example, Lave and Wenger (1991) explained how training new butchers involves observing the practices of experienced butchers and then engaging in the simpler tasks of butchers' work. During the learning process, the newcomers gradually become more skilled and perform more complex tasks in butchers' practice. In short, individuals learning and participating in a community of practice start on the periphery where they observe and become acquainted with the practice at the centre—more correctly, the inside—of the community before they gradually developing into insiders themselves (Handley et al., 2006; Zhang and Hamilton, 2010). It, therefore, is crucial that newcomers who are learning be offered the possibility to be legitimate participants in the practice. Consequently, community access is key to supporting newcomers' learning (Lave and Wenger, 1991).

### **Previous Research and Application in this Thesis**

The communities of practice concept has been widely applied in many fields of interest and research. For example, in previous research, learning through participation in communities of practice has been considered in the context of business incubators (Peters et al., 2004) and entrepreneurship clubs (Pittaway et al., 2011) as it facilitates and constrains how action and learning occur (Lumpkin and Lichtenstein, 2005). Previous research has also shown how learning is transferred between members in a community of practice such as family firms (Hamilton, 2011). Furthermore, a community of practice may provide an arena to contribute to others (Hafeez et al., 2019) and emotional security for participating entrepreneurs (Howorth et al., 2012; Preedy and Jones, 2017). The next section elaborates on what student entrepreneurs' communities of practice may be considered to be and highlights elements of the communities of practice concept related to the research focus of this thesis presented in Section 3.4. The next section thus

describes a set of elements derived from the communities of practice concept and their usefulness to understanding how student entrepreneurs learn.

#### **4.2 Learning Perspectives from Communities of Practice**

As explained in Chapter 3, particularly Section 3.4 and Figure 4, the research focus of this thesis is defined by two dimensions. In the vertical dimension, entrepreneurial learning may be understood as a multi-level phenomenon, and the focus in this thesis is on the community level inbetween the individual-level on one hand, and the network- and contextual-levels on the other hand. To address this dimension of the research focus, three fundamental characteristics of communities of practice, along with legitimate peripheral participation, are integrated to create an understanding of what the community-level entrepreneurial learning of student entrepreneurs actually involves. Then, given that entrepreneurial learning is a process (see Section 3.1), the notion of learning trajectories is emphasised and applied to avoid the misconception of student entrepreneurs' communities of practice and students' entrepreneurial learning as static and pre-structured.

In the horizontal dimension defining the research focus in Figure 4, the facilitation of students' learning differs from the occurrence of students' learning. To address this dimension of the research focus, the duality of designed and emergent practices and learning is introduced and applied to understand the conditions for and process of students' entrepreneurial learning. The remainder of this section focuses on the development of an analysis framework comprising:

- **Fundamental characteristics:** domain, community and practice
- **Learning trajectories:** peripheral, inbound, insider, outbound and boundary
- **Duality of design and emergence:** learning and communities

#### **Fundamental Characteristics of Student Entrepreneurs' Communities of Practice**

Further conceptual development (cf. Wenger, 1998; Wenger et al., 2002) of communities of practice has complemented the emphasis on legitimate peripheral participation and

introduced a set of three fundamental characteristics of communities of practice: domain, community and practice. The first characteristic, domain, refers to participants' common field of interest including their commitment to some shared activities and goals and to the competence developed within the community through the engagement of its participants. The domain thus may be but is not necessarily defined by a specific organisation or localisation. To assess what the domain of student entrepreneurs' community of practice may be like, the definition of student entrepreneurs given in the introduction of this thesis is revisited: students who start and manage new ventures during their university education. This definition implies that the domain of student entrepreneurs' communities of practice is related to (1) new venture creation and (2) studying at a university. Venturing and studying both require certain commitments from student entrepreneurs. This two sidedness of students' commitment is supported by Günzel-Jensen and Robinson's (2017) finding that students have a misplaced commitment, focusing on their schoolwork at the cost of their potential entrepreneurial endeavours.

Another characteristic of the domain is competence. The literature on entrepreneurial learning reviewed in Chapter 3 has provided insights into how entrepreneurs generate knowledge, for example, from social interactions and experience in new venture creation. Thus, competence within student entrepreneurs' communities of practice likely includes the knowledge students develop during their new venture creation processes. However, competence also encompasses the collective competence of community participants. This type of competence includes the competence developed during student entrepreneurs' interaction with peers as a feature of communities of practice is co-creation processes that foster the overall competence of the community (Wenger, 1998). Thus, learning through participation in a community of practice is about the collective acquisition and creation of knowledge (Lave and Wenger, 1991). The literature reviewed in Section 3.3 mentioned peers as part of student entrepreneurs' social networks with whom they interact (Seet et al., 2018) but did not very specifically address how competence may be developed in student entrepreneurs' communities.

The second characteristic, community, consists of the relationships between participants and the social interactions occurring within these relationships. In other words, the

community characteristic comprises the social fabric that makes individuals engaging in a domain into community of mutual engagement (Wenger et al., 2002). The different possible relationships student entrepreneurs may establish, to a certain degree, have been covered in the literature as many studies have investigated those with whom students interact such as peers, mentors, role models, teachers, and customers (Rahman and Day, 2014; Seet et al., 2018; Zozimo et al., 2017). Specifically, mentors have been highlighted as important in communities of practice (Cope and Watts, 2000; Rigg and O'Dwyer, 2012). Nevertheless, as mentioned, communities of practice may be designed and emerge in different ways, and the internal and external relationships established with student entrepreneurs' communities of practice have not been precisely outlined.

The previous literature (Sections 3.2 and 3.3) has provided some hints about with whom student entrepreneurs may have community relationships. Among the different ways interactions may occur in these relationships, storytelling is regarded as instrumental to learning in both communities of practice (Hafeez et al., 2019; Lave and Wenger, 1991) and entrepreneurial learning (Rae, 2004; Seet et al., 2018). Sharing information such as stories about problematic and especially difficult cases is also fundamental to learning in new venture teams (El-Awad et al., 2017), and the amount of sharing in a community depends on the level of participation. In another type of interaction, some community participants set expectations for others in the community, as shown in the case of peripheral entrepreneurial learning studied by Kubberød and Pettersen (2018). Overall, the entrepreneurial learning literature has provided some insights into with whom student entrepreneurs establish relationships and, to some degree, how they interact (Section 3.4).

The third characteristic, practice, consists of the specific activities performed by participants. This characteristic emphasises that communities of practice comprise not only relationships between individuals interested in a common domain but also action and sharing a common practice along with resources that support the practice. Such resources may be experiences, stories, perspectives and tools to aid resolve challenges, and they form a shared repertoire available to participants in the community of practice. Entrepreneurial learning, as discussed in Section 3.1, is closely connected to practicing entrepreneurship (Cope, 2005; Cope and Watts, 2000). Experiential learning depends on

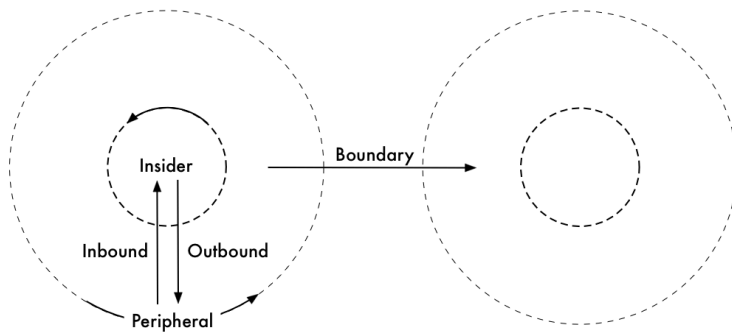
the actions of entrepreneurs, and in this thesis, the activity in focus is the process of new venture creation. However, Section 3.3 has shown that how students are active in new venture creation varies. Similarly, Handley et al. (2006) problematised the differentiation between practice and participation in communities of practice. On one hand, it is not sufficient that individuals perform the same type of actions as some interactions and mutual interest must also exist. On the other hand, social participation is insufficient without active involvement in the practice of the community. The problematisation of Handley et al. (2006) and the example of Lave and Wenger (1991) have left open the question whether both active and inactive student entrepreneurs exist in communities of practice. Entrepreneurial activities involve contingencies and uncertainties (McMullen and Shepherd, 2006), raising the question of what happens to individual entrepreneurs' community membership if their new ventures fail and cease to exist. The second aspect of the practice characteristic is the development and existence of a shared repertoire of resources for community members to leverage in their activities. Accordingly, in this section, storytelling is introduced as a means of social interaction, and such stories can be one type of resource in a community of practice (Wenger, 1998).

### **Learning Trajectories as a View on Entrepreneurial Learning Processes**

Wenger (1998) emphasised that the initial engagement with the practice is regarded as peripheral, but it is not entirely appropriate to consider experienced practitioners to be central participants. While student entrepreneurs' communities of practice may be understood through the fundamental characteristics, it is still important to recognise that the participation by a community member continuously evolves over time. Thus, the notion of trajectories is used to describe such evolving processes (Wenger, 1998). Learning trajectories are interesting for this thesis as they resemble notions of entrepreneurial learning processes (Section 3.1), first and foremost, in the sense that learning is a process. The learning process is continuously in development, so it has no specific beginning or end (McMullen and Dimov, 2013). Furthermore, entrepreneurial learning is about developing different ways of learning (Cope, 2005; Holcomb et al., 2009), and trajectories depict different ways of learning and thus different (entrepreneurial) learning processes.

Wenger (1998) identified five types of trajectories or ways of learning: peripheral, inbound, insider, boundary and outbound. Perhaps the most traditional entry into a community of practice is through an inbound trajectory that starts with peripheral participation and develops towards increasing involvement in the practices and interactions in the community. However, individuals may stay on a peripheral trajectory and not become more involved. For example, take students in internships in new foreign ventures (Kubberød and Pettersen, 2017, 2018). A peripheral trajectory is not necessarily less attractive or less effective for learning, and Rae (2017) pointed out that peripheral wisdom exists as some kinds of knowledge may only be available at the periphery. Kubberød and Pettersen (2018) demonstrated empirically that the periphery of a community of practice represents a specific learning situation in which the team of new venture founders may be considered to be insiders in the community. Once an individual becomes an insider or a full member at the centre of the community, the insider trajectory continues to full participation. In principle, participation in communities of practice is voluntary (Handley et al., 2006), so an individual may choose to leave the community or, in other ways, be on an outbound trajectory becoming less involved in the practice and interactions in the community.

The fifth type of learning trajectory is a boundary trajectory. Over a lifetime, individuals probably participate in multiple communities of practice, often simultaneously (Mercieca, 2017). A boundary trajectory entails simultaneously participating in multiple communities and accordingly being subject to the learning benefits—and the challenges—a boundary trajectory offers. A specific type of role in a boundary trajectory is brokers who connect multiple communities of practice and facilitate knowledge flows among communities (Mercieca, 2017). The initiative studied by Saukkonen et al. (2016), introduced in Section 3.4, is perhaps an example of students acting as brokers. In that specific initiative, students bring theoretical knowledge from their studies to support external entrepreneurs. In turn, external entrepreneurs bring experiences and opportunities to engage in real-life businesses. Students thus are enabled to relate their theoretical insights to the practice of entrepreneurship. Figure 5 illustrates the five different learning trajectories.



**Figure 5:** Simplified illustration of the five types of learning trajectories. Each set of circles represents a community of practice.

An entrepreneurial community of practice may be considered to be an individual’s initial opportunity to engage with and become active in entrepreneurship (Nieminen and Hytti, 2016), and becoming active is—as described—a matter of being on a learning trajectory in one or several communities of practice. Section 3.3 reviewed how different groups of students have different ways of engaging in new ventures ranging from acting as coaches and motivating new venture founders to being founders with full ownership and responsibility for their ventures. Different ways of engaging in new ventures can be understood as different levels of participation, which indicates developing on different learning trajectories. Thus, understanding the different learning trajectories may aid grasping how different levels of engagement in new ventures may affect students’ entrepreneurial learning processes. Such knowledge is important to understand not only how learning occurs but also how individuals in a community may facilitate learning by others in the same community. For example, Hafeez et al. (2018) found that individuals’ membership in a group is central to how much they contribute to collective knowledge sharing among participants in a virtual community of practice. The following sections address facilitation of learning and focus on the designed–emergent learning duality, which is the third element in the analytical framework of this thesis.

### **Duality of Designed and Emergent Learning**

Wenger (1998) presented a set of four interdependent dualities or (sometimes also referred to as tensions) in communities of practice: participation–reification, designed–emergent, local–global and identification–negotiation. The designed–emergent duality,

in particular, has been related to learning in previous research (Barab et al., 2003) and corresponds well with the difference between the facilitation and the occurrence of students' entrepreneurial learning highlighted in the research focus of this thesis (see Section 3.4). The designed–emergent duality models the difference between what is designed (e.g. the curriculum taught and the organisational model selected) and what is emergent (e.g. what students actually learn and how the members of an organisation self-organise). For students' entrepreneurial learning, the designed–emergent dimension suggests a difference between how faculty design students' learning process and how students' learning occurs as an emergent process, as discussed in Sections 3.3 and 3.4. Faculty, for example, may organise interactions with external entrepreneurs (Costin et al., 2013; Secundo, Del Vecchio et al., 2017) or, in other ways, get students to engage in new responsibilities, roles and situations (Ollila and Williams-Middleton, 2011; Pittaway and Cope, 2007). As introduced in Section 3.3, this view on students' entrepreneurial learning mainly relies on an understanding of how students' learning is facilitated in order to understand how students' learning occurs. The entrepreneurial learning literature, however, has primarily suggested that entrepreneurs' learning emerges from their actions, experiences and informal interactions in their venture creation processes (Cope, 2003; Politis, 2005; Taylor and Thorpe, 2004). The learning dimension designed–emergent, therefore, is highly relevant to student entrepreneurship, particularly given the research focus involving both the facilitation and the occurrence of students' learning (see Section 3.4).

As an additional note on the duality of designed and emergent learning, some perspectives on the design and emergence of communities—not only learning in communities as so far discussed—should be considered. Lave and Wenger (1991) illustrated peripheral legitimate participation through apprentice–master relationships, but it is not a given that student entrepreneurs' communities of practice involve new student entrepreneurs acting as apprentices and more experienced student entrepreneurs acting as masters. Fundamental to involvement in communities of practice is the influence of the communities' structures on individuals. Learning thus is a matter of alignment within a community structure, but the community structure also emerges from learning (Wenger, 1998). In other words, learning and communities develop in interaction. Learning,



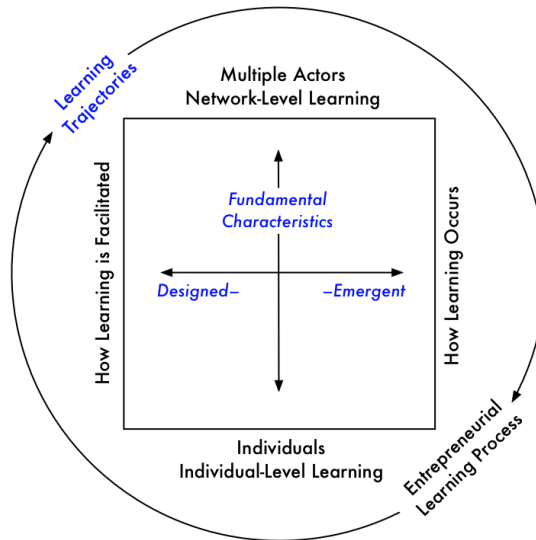
therefore, is a means through which communities—not only the individual participants within them—develop over time. Similar to learning, communities may be designed—or, more appropriately, cultivated—and emerge. The designed–emergent duality, therefore, is also relevant to understanding how communities develop. Communities of practice initially were viewed as informally organised group of individuals sharing a common activity and interacting socially (Lave and Wenger, 1991; Raelin, 1997). Thus, the boundaries of communities of practice may extend across several organisations and include, for example, customer and suppliers (Raelin, 1997; Roberts, 2006). Communities of practice also emerge from loose, informal networks of practice (as also mentioned in Section 3.2) that might span organisational boundaries (Brown and Duguid, 2001; Swan et al., 2002).

The concept of communities of practice has been applied to understand communities and learning within organisations (Brown and Duguid, 1991), and specific organisations and workplaces—which are formal structures defined by management—have also been regarded as communities of practice (van Weele et al., 2018). Planned and organised programmes such as venture accelerator programmes (Politis et al., 2019) and business plan competitions (Watson et al., 2018) have been seen as time-limited communities of practice. Scholars have even considered how a community of practice for learning in entrepreneurship may be implemented (Vorley and Williams, 2015) and cultivated through interventions in which organisations facilitate the emergence of a community of practice. Take, for example, universities offering entrepreneurship education programmes (Carey et al., 2009). In summary, student entrepreneurs’ communities of practice may be partly designed by university management and faculty and partly emerge based on students’ learning processes, for example. Considering the discussion on the multi-level nature of entrepreneurial learning in Section 3.2, communities of practices thus may encompass even the network level and the types of relationships and actors included in the meso level by Karataş-Özkan (2011).

### **Analysis Framework of this Thesis**

In this section, the fundamental characteristics, learning trajectories and designed–emergent duality in learning and communities have been introduced as analytical

perspectives to understand student entrepreneurs' entrepreneurial learning at the community level. As stated, all the three elements in the analytical framework relate to the research focus proposed in Section 3.4 and illustrated in Figure 6.



**Figure 6:** Illustration of how the analytical framework relates to the research focus specified in Section 3.4. The framework elements are highlighted in blue.

## 5. Methods

This chapter introduces the research process and methodological approaches of this thesis. The research context, specific support initiatives, literature choices and empirical studies in this thesis are described, along with how they have interrelated over the course of the PhD project. This chapter also discusses how the research approach has been informed by pragmatism as a philosophical perspective on doing research.

### 5.1 Background and Research Motivation for this Thesis

I enrolled in a venture creation programme, the NTNU School of Entrepreneurship (NSE), in 2013 and graduated in 2015. In that programme, I experienced what it is like to be a student in a venture creation programme and, with a couple classmates, co-founded a student venture on which I worked until 2017. Our venture achieved revenues of €200,000 before closure in 2018 and provided me with a personal experience of being a student entrepreneur. In December 2013, I also took on the role of student coach in an extracurricular entrepreneurship initiative, Spark\* NTNU, and coached approximately 50 different student ventures through 2018. Several of these ventures became limited companies established in their markets. I became involved in the extracurricular initiative during its formation, so I gained deep insights into the development of and the rationale behind it. Being a coach gave me hands-on experience facilitating student ventures and broader insights into the processes and challenges involved in student entrepreneurship in comparison to my own venture. In Spark\* NTNU, I saw that students with some entrepreneurial experience could provide value to new student entrepreneurs and that such initiatives were unheard of at most universities, which motivated me to research extracurricular entrepreneurship initiatives in which students create their own ventures.

Enrolling in the PhD programme in 2016, I joined the NSE faculty. During my first year of PhD studies, I gained experience facilitating students' learning in a venture creation programme through organising and teaching an entrepreneurship course (Idea Search and Market Assessment) and supervising students' master theses. Through this experience, I learned about current discussions and challenges in the facilitation of student entrepreneurship. The NSE faculty had long discussed the importance of students' ventures for students' learning during the programme and the impacts on students'

learning if they choose to exit their ventures sometime during the programme. This motivated my research on both students' learning and facilitators' challenges in venture creation programmes.

Another process that influenced this thesis was my involvement in the core group that outlined, applied for and eventually established Engage, a centre for excellence in education. The centre received a total grant of €20 million to develop future entrepreneurship education in both specialised and broad senses. The process of developing Engage prompted me to reflect on the needs of entrepreneurship education as a practice field and the potential of research to develop and improve practice. The various involvements mentioned in this section thus motivated me to ground this thesis not only in the relevant literature streams but also in the practice of student entrepreneurship and the practice of facilitating student entrepreneurship.

### **5.2 Research Contexts**

This section introduces the specific support initiatives of which I had personal experience and drew most of the empirical material used in this thesis, which is to be considered a contextual backdrop of the rest of this chapter.

#### **Norwegian University of Science and Technology**

Established in 1910, Norwegian University of Science and Technology (NTNU) is the largest university in Norway today. The university initially was a college with a national mandate to educate engineers but, through mergers with other schools, has grown into a broad university conducting education and research in most disciplines, with some exceptions such as law. NTNU's main campus is in Trondheim, and today, NTNU has more than 40,000 students and 7,000 employees. Although NTNU has become a broad university, it still positions itself as a technical university that relates, for example, the social science perspectives to the development and use of technologies. This thesis was written at NTNU, and the support initiatives studied in this thesis were mainly NTNU institutions, including the NSE and Spark\* NTNU, elaborated upon as follows.

### **Venture Creation Programme: NTNU School of Entrepreneurship**

The NSE is a two-year, full-time master of science programme in entrepreneurship. Originally inspired by the Chalmers School of Entrepreneurship, the NSE combines a full-time academic programme and students' new venture creation to educate business developers. Initially open exclusively to engineering students at NTNU, the NSE now accepts students from all disciplines who have completed at least a bachelor of science or a similar degree. Students are accepted into the programme based on academic transcripts and personal interviews to assess their motivations. The first student cohort was enrolled in 2003, and since then, the programme has graduated around 450 students. Although the student ventures are regarded a vehicle for learning and not the primary outcome of the programme, around 50% of graduates in recent years have continued to work in their new ventures after graduation. The total revenue of ventures originating from the NSE has exceeded €40 million.

NSE students spend their first semester searching and evaluating business opportunities and ideas. At the end of the first semester, students self-assemble into new venture teams and develop a new venture based on one of the ideas they evaluated. At the NSE, business opportunities and ideas come from a broad variety of sources: private companies, research institutions and foundations, university employees and the technology transfer office, as well as the students themselves. Thus, the opportunities and ideas on NSE students work vary greatly in focus and maturity, especially compared to the Chalmers School of Entrepreneurship, which has a formal relationship with a university-based incubator to source business ideas for students' ventures (Lundqvist, 2014; Ollila and Williams-Middleton, 2011). Students' ventures are not directly included in assessments or grades, but a majority of the academic courses are related to students' venturing activities. The NSE also offers an on-campus office space where all the student ventures are co-located.

### **Extracurricular Entrepreneurship Initiative: Spark\* NTNU**

Spark\* NTNU is an extracurricular entrepreneurship initiative at NTNU. In 2012 and 2013, it was in a pilot phase before its official launch in February 2014. The core of Spark\* NTNU is coaching as students with some experience in entrepreneurship coach students and student teams who want to engage in entrepreneurship and have projects or

ideas they wish to pursue. Facilitating student entrepreneurship thus is central to Spark\* NTNU as the coaching activity centres on supporting student ventures. In addition to the one-on-one coaching of student entrepreneurs, Spark\* NTNU offers seed funding grants of up to €2,500 for student ventures, as well as networking and matchmaking events. Over the past five years, Spark\* NTNU has supported more than 300 student venture projects and ideas involving more than 1,000 students. Some have developed into economically profitable companies, while many have been abandoned during their first year.

### **5.3 Philosophy of Science and Research Approach**

Studies on entrepreneurship have adopted a wide range of different philosophical perspectives over the years, and while a positivist view has predominated in much of entrepreneurship, constructivist approaches have also had a significant presence in the entrepreneurship field (Watson, 2013a). In recent decades, studies on entrepreneurship have seen the emergence of other philosophies such as pragmatism (Watson, 2013a). This approach has guided my philosophical view in this thesis as it offers a way to understand how student entrepreneurs learn in close connection with the practice and contexts of student entrepreneurship. This section introduces pragmatism as a philosophical view in entrepreneurship research and shows how this view has guided the work in this thesis.

#### **Pragmatism: Researching Processes and Interaction**

Pragmatism was pioneered by Charles Pierce, William James, John Dewey and George Herbert Mead during the second half of the 19<sup>th</sup> century and the first half of the 20<sup>th</sup> century (Joas, 1993). Pragmatism, in line with realism, supports the notion that an objective reality exists, but pragmatism holds that this real world is too complex to be uncovered entirely (Watson, 2013a). Instead, what can be known about reality is how individuals interact with reality (Johannisson, 2011). Pragmatism thus evaluates knowledge as truthful based on how it can guide human action (Van de Ven, 2007). Knowledge, according to pragmatism, can be developed through studying how individuals act, and a conception of an object is defined by the effect(s) it may have on individuals' action (Putnam, 1995). Pragmatism does not adhere to any of the extremes in the subjective–objective debate in the social sciences (Morgan and Smircich, 1980). Instead, pragmatism acknowledges and combines both the subjective—the world is

understood through individuals' actions—and the objective—individuals react to a reality that exists regardless of them. Pragmatism thus has similarities to critical realism (Van de Ven, 2007), but whereas critical realism focuses on approximating the mechanisms of a real world, pragmatism concerns how individuals interact with the real world and does not focus on revealing the real world as such (Johnson and Duberley, 2000; Watson, 2013a).

A characteristic of pragmatism is acknowledgement of human willpower, and a central assumption in a pragmatist view is that 'we think as we act; we act as we think' (Watson, 2013a, p. 25). Pragmatism thus emphasises that individuals interact with—not only react to—reality; therefore, individuals are constantly developing the real world through their interactions with it. Consequently, the truth is constantly changing as the knowledge that is useful to inform practice is also constantly changing (Putnam, 1995): 'what exists is not what is already made but what is currently in the making' (Watson, 2013a, p. 18). Pragmatism emphasises processes of becoming through action and interaction rather than the being of mechanisms or objects (Steyaert, 2007), and consequently, a strength of pragmatism as a philosophical view is that it builds knowledge about the processes of how individuals' interactions with the real world develop. Stressing that knowledge is developed in iterative interactions with practice, pragmatism as a philosophical view promotes an abductive approach to scientific discovery (Van de Ven, 2007), continuously evaluating the ability of knowledge to explain the empirical world.

### **Entrepreneurs' Situated Creativity and Effectuation in Pragmatism**

The concept of situated creativity (Joas, 1993) has been proposed to be representative of pragmatism as in situated creativity, individuals such as entrepreneurs constantly face new circumstances demanding that they adapt and act creatively (Joas, 1993; Watson, 2013b). Situated creativity thus suggests that entrepreneurship as a phenomenon can be understood through how entrepreneurs act and interact with their environment (Steyaert, 2007). The situations and circumstances to which entrepreneurs are exposed may both enable and constrain entrepreneurial behaviour (Watson, 2013b). Entrepreneurial effectuation (Sarasvathy, 2001) is an example of a entrepreneurship research stream that views entrepreneurial action as a result of human creativity (Steyaert, 2007).

Entrepreneurial effectuation does so by considering individuals' actions to be based on the available means in the environment, including physical objects and social relationships. The effectuation concept, in line with pragmatism, thus provides a way to understand entrepreneuring as the activity of an individual who performs entrepreneurial actions (Johannisson, 2011; Watson, 2013a).

### **Research Approaches in this Thesis**

Pragmatism argues for not restricting research to understanding specific objects, mechanisms and interpretations but expanding it to also understand situations, in this thesis, the facilitation and organisation of contexts where student entrepreneurship occurs. In this thesis, qualitative research methods were used to capture the action and interpretations of individuals (cf. Graebner et al., 2012) and, based on the research questions, took a constructivist-like approach to data collection allowed by a pragmatist view (Biesta, 2010). In the data collection, individuals were asked to elaborate on the entrepreneurial actions, learning, perceived challenges and facilitation by themselves or others. The interviewed individuals thus were enabled and allowed to define what was critical (Cope, 2003; Sardana and Scott-Kemmis, 2010) and to provide insights into the situations of their entrepreneurial behaviour (Gaddefors and Anderson, 2017).

The choice of analytical framework in this thesis was also in line with the pragmatist view as the concept of communities of practice holds that communities provide the enabling and constraining social situations within which participants act and learn. The elements from communities of practice used in the analytical framework (fundamental characteristics, learning trajectories and the designed–emergent duality) provided ways to understand how individuals interact with their (social) situations.

### **5.4 Four Empirical Research Papers from Three Empirical Studies**

This thesis contains three empirical studies reported in four empirical papers. The four papers treated different aspects of the research focus defined in Section 3.4 and two major types of contexts for student entrepreneurship. The four papers all contributed to understanding how student entrepreneurs learn and addressed the two research questions (RQ1 and RQ2) but also applied their own frames of reference based on previous



research, as summarised in Table 3. As also shown in Table 3, the four papers were positioned along the horizontal dimension in the model of the research focus (Section 3.4) regarding how learning is facilitated and occurs.

**Table 3:** Types of support initiatives considered in the four papers in this thesis (as introduced in Chapter 2 and Section 5.2) and the positioning of the papers in the facilitation–occurrence dimension of the research focus in Section 3.4. The table also shows the literature fields applied in the frame of reference in the four empirical papers in this thesis.

	<b>How student entrepreneurs’ entrepreneurial learning is facilitated</b>	<b>How student entrepreneurs’ entrepreneurial learning occurs</b>
Venture creation programmes (VCP) <i>(NSE + 10 other VCPs)</i>	<b>Paper I:</b> Action-based entrepreneurship education	<b>Paper IV:</b> Entrepreneurial learning and communities of practice
Extracurricular entrepreneurship initiatives <i>Spark* NTNU</i>	<b>Paper II:</b> Organisational sponsorship	<b>Paper III:</b> Entrepreneurial learning and entrepreneurial effectuation

The four papers, including their positioning and their results, are summarised in Chapter 6, so this section focuses on the three empirical studies on which the four papers are based.

### **Empirical Study 1: Longitudinal Study of Coach–Student Entrepreneur Dyads**

In February 2016, a research proposal for the PhD project was developed alongside work on the first empirical study (Study 1). While entrepreneurship education programmes of various sorts have been well covered in the scholarly literature, the literature on extracurricular initiatives related to entrepreneurship has remained much smaller and centred on a few papers (e.g. Claudia, 2014; Edwards, 2001; Pittaway et al., 2011, 2015; Preedy and Jones, 2015). Based on that finding, a deeper investigation into extracurricular entrepreneurship initiatives in which students created their own ventures was initiated, and a first round of interviews with five student entrepreneurs and their student coaches in Spark\* NTNU was performed, marking the beginning of what was to become Study 1. Data from this first round of interviews were used in a pilot study presented at the 3E Conference in Leeds in May 2016. The work on and presentation of the pilot study led to

increased emphasis on the learning processes of student entrepreneurs and facilitation in the empirical study and later to a separate paper specifically on the centrality of students to providing resources and networks to student entrepreneurs.

Study 1 followed coach–student entrepreneur dyads through three rounds of interviews over a one-year period. The pilot study was the first round. Study 1 thus was a longitudinal study in line with suggestions for more process-oriented studies (cf. McMullen and Dimov, 2013; Shepherd, 2015). Five student ventures were selected from Spark\* NTNU, and student entrepreneurs as well as their student coaches were interviewed in each round. The interviews had two focuses, which each formed the basis for a research paper. The first was how coaches supported student ventures and how student entrepreneurs viewed support from Spark\* NTNU, which became Paper II. The second focus was how student entrepreneurs learned, which became Paper III.

In Study 1, data collection followed the approach of identifying critical incidents (Cope, 2003; Heinrichs, 2016) to concretise how student entrepreneurs acted upon situations. Changes in behaviour over time were taken as signs of learning (Huber, 1991). This approach followed the suggestion from Deakins and Freel (1998, p. 149) ‘to expand on the process that led to the incident, how it was resolved and, more important, what was learned from the incident’. Accordingly, the interviews were semi-structured. While a procedure to elicit critical incidents was planned, the interviews first and foremost opened up to the interviewees’ perceptions of events and actions relevant to their venture creation and learning processes. The 27 critical events identified in Study 1 thus represented situations and circumstances to which student entrepreneurs reacted and in which they learn. In Paper II, Study 1 was used as a single-case study of Spark\* NTNU as a student venture incubation initiative in which the five student ventures represented embedded cases. In Paper III, the five student ventures were cases in a multiple-case study design. Paper II was co-authored by Lise Aaboen, while Paper III was written only by me.

### **Empirical Study 2: Using the Zaltman Metaphor Elicitation Technique**

The second empirical study in this thesis (Study 2) also considered processes but was more in depth rather than a longitudinal investigation. In Study 2, the Zaltman metaphor

elicitation technique (ZMET; Zaltman and Coulter, 1995) was applied to gain rich, deep insights into the perspectives of NSE students in their final year in the programme to understand how they viewed their education. Here, the main circumstance examined was student entrepreneurs' exit from their ventures, and the study investigated the impacts students' exit from their ventures may have had on their learning processes. The ZMET method focused on bringing out the participants' inner thoughts and feelings to build mental maps (Christensen and Olson, 2002). Study 2 thus had an inductive approach to data collection, and the development of mental maps for each interviewee fit best with a constructivist view on research. However, the method further involved combining the mental maps of individuals into consensus maps for each group in the study, and individuals' views were placed in the context of their situations (which in Study 2 revolved around exiting or continuing in their student ventures). Study 2 formed the basis for Paper IV in this thesis, and before journal submission, it was presented at the 3E Conference in Enschede in 2018 and nominated for an award for the most innovative researcher whose research made a difference by helping real-world young entrepreneurs.

### **Empirical Study 3: Two-Level Investigation of Facilitators' Challenges**

Although studies have explained the venture creation approach at Chalmers University of Technology (cf. Lackéus and Williams Middleton, 2015; Lundqvist, 2014; Ollila and Williams-Middleton, 2011), most literature on the facilitation side of entrepreneurship education has not specifically examined programmes in which students create their own ventures, as mentioned in Section 3.3. A broader view on facilitators' current challenges in venture creation programmes (and similar approaches involving student ventures), therefore, was deemed to be needed. The third empirical study in this thesis (Study 3) followed a two-level process addressing facilitation of student entrepreneurs in curricular programmes. The first level in the research process was to build a suggested conceptual framework based on written data from a workshop in which managers of venture creation programmes and similar initiatives met to share, discuss and possibly resolve common challenges. The written data consisted of pre-workshop submissions from all the study participants and their written notes from the interactive workshop sessions. The conceptual framework was represented by an illustrated model distributed to the participants before the second-level data collection, which consisted of semi-structured

interviews with the participants. In these interviews, the participants were asked for their viewpoints on the conceptual framework and whether they had any additional viewpoints beyond those included in the framework. Study 3 provided the basis for Paper I written together with Lise Aaboen and Karen Williams Middleton. Table 4 summarises the empirical approaches and data in the three empirical studies.

**Table 4:** Overview of data collection in the three empirical studies in this thesis.

<b>Empirical study</b>	<b>Interviews</b>	<b>Additional data</b>	<b>Research papers</b>
Study 1	24 student entrepreneurs, three student coaches and five five student venture founders, interviewed in three rounds.	Spark* NTNU intranet system, information about student ventures and student coaches	Paper II Paper III
Study 2	12 VCP students divided in two groups	Authors' knowledge of the structure and content of the VCP. An informant in the student cohort was used to ensure that the sampling for each group was correct.	Paper IV
Study 3	11 VCP managers in Europe and North America	Before participating in the workshop, VCP managers submitted a document stating their better practices and current challenges. Written notes from the workshop were also used.	Paper I

Ethical concerns regarding the anonymity of respondents and secure data storage were addressed in the three empirical studies in this thesis. In the three studies and the four research papers, pseudonyms were used instead of the real names of individuals and ventures. Audio recordings, transcribed data and files related to the coding process were handled and stored according to the university's regulations and national and international guidelines for protection of personal data.

### ***5.5 Developing the Thesis Cover Paper***

In addition to the three empirical studies and the four appended research papers, another significant research process in this thesis was development of the thesis cover paper. Work on all of the four research papers involved an abductive process of reading relevant

research streams and revisiting empirical findings. Thus, the four papers included different research streams, as shown in Table 3. For example, organisational sponsorship (Amezcuca et al., 2013; Flynn, 1993) was found to be fruitful in Paper II to understand how Spark\* NTNU facilitated student entrepreneurs. In Paper III, entrepreneurial effectuation (Sarasvathy, 2001) was found to be relevant to analysing how student entrepreneurs developed through learning over time. To frame the contributions from the four papers and address the research questions, the research for the thesis cover paper consisted of a more in-depth investigation of the literature on student entrepreneurs, student entrepreneurship and the situated and social aspects of entrepreneurial learning. Whereas interviews and secondary data were the material analysed in the four papers (as summarised in Table 4), the four research papers themselves were the material subjected to the analytical framework in the thesis cover paper.

### **Choice of Literature for the Thesis Cover Paper**

The literature reviewed in Chapter 2, Sections 3.2 and 3.3 and the thesis cover paper was selected through structured searches of the literature. Study 1 (Papers II and III) found that interactions among multiple actors were central to facilitation of student entrepreneurs' learning. Study 2 (Paper IV) further found social interactions were instrumental for students' learning, and Study 3 (Paper I) found that student venture creation involved external actors. In addition, the findings on how students' learning occurred (Papers III and IV) showed that facilitation of learning processes was key to understanding learning processes and with which actors students interacted. Consequently, the situated and social aspects of entrepreneurial learning became a focus of the thesis cover paper and guided the first structured search for literature in that paper.

The search for literature on situated and social aspects of entrepreneurial learning consisted of two parts. The first targeted the general understanding of the situated and social aspects of entrepreneurial learning in the literature (Section 3.2). The second investigated previous research specifically on the situated and social aspects of students' entrepreneurial learning (Section 3.3). The research papers found in the second structured search provided insights into some contexts of student entrepreneurship, but their scope had to some degree a limited emphasis on initiatives involving the situated and social

aspects of students' entrepreneurial learning. For the purpose of understanding the contexts where student entrepreneurship was facilitated and occurred, therefore, another structured search focused on student entrepreneurs and student entrepreneurship, forming the basis for Chapter 2.

The Scopus database was used for the structured searches. Sections 3.2 and 3.3 discussed the situated and social aspects of entrepreneurial learning. For the frame of reference section in Paper III, a number of works addressing the different characteristics of entrepreneurial learning processes were identified and used. From this set of papers, a list of keywords related to situated and social aspects of entrepreneurial learning were generated, including: social, interactive, contextual, milieu, community, collective, collaborative, networked and situated. These keywords formed the basis for the structured searches in Sections 3.2 and 3.3. During the evaluation of the relevance of abstracts and papers, additional keywords to be included in the search strings were considered, but none were found to increase the number of relevant search results. Section 3.3 focused exclusively on students' entrepreneurial learning, whereas Section 3.2 focused on all kinds of entrepreneurs. The search term 'student\*' differentiated the search strings for Sections 3.2 and 3.3, and the papers used in Section 3.3 were a subset of the papers found in Section 3.2. Chapter 2 focused on the literature on student entrepreneurs and student entrepreneurship, so the search string 'student\* entrepreneur\*' was used in this chapter. In addition, snowballing (cf. Jalali and Wohlin, 2012) was performed to identify additional relevant papers. Snowballing involved scanning the reference lists of relevant papers to find additional sources. In particular, papers referred to by several other papers found through structured searches were considered. Table 5 gives an overview of the search strings used and the number of results and papers included in this thesis directly from the structured searches.

**Table 5:** Overview of search strings used for the structured literature searches in this thesis.

Search strings	Primary place in this thesis	Total yield	Number included
'student* entrepreneur' OR 'student* venture*' OR 'student* new venture*' OR 'student* startup*' OR 'student* start-up*'	Chapter 2	133	27
'entrepreneurial learning' AND (social* OR interact* OR contextu* OR milieu* OR communit* OR collective* OR collaborati* OR network* OR situat*)	Section 3.2	148	64 <i>including the following 17 papers about students</i>
student* AND 'entrepreneurial learning' AND (social* OR interact* OR contextu* OR milieu* OR communit* OR collective* OR collaborati* OR network* OR situat*)	Section 3.3	47	17

An important note must be made regarding the focus of Section 3.3. While Chapter 2 focused specifically on papers on student entrepreneurs and student entrepreneurship, this search was found to be too restrictive in Section 3.3. Thus, for Section 3.3, only 'student\*' was added to the search string in Section 3.2 instead of 'student\* entrepreneur\*'. Thus, Section 3.3 concerned students' entrepreneurial learning, which was somewhat broader than student entrepreneurs' entrepreneurial learning. Chapter 3 thus included literature on students' entrepreneurial learning that did not necessarily match the definition of student entrepreneur used in this thesis.

### **Communities of Practice as an Analytical Framework in this Thesis**

The literature review showed that previous research on the situated and social aspects of entrepreneurial learning pointed to the importance of the multiple actors involved in entrepreneurial learning with which interactions may be understood at multiple levels. No particular frameworks, though, specifically addressed the situated and social aspects of entrepreneurial learning as such. However, some previous research pointed to the communities of practice concept as a viable perspective to use (Kubberød and Pettersen, 2017; Pittaway and Cope, 2007). Communities of practice related to the nature of learning as socially situated, although it was much broader than entrepreneurial learning and student entrepreneurs' ways of learning. I, therefore, chose to use communities of practice in a framework to analyse student entrepreneurs' entrepreneurial learning. The analysis

framework in Chapter 4 thus was built on a thorough evaluation of how the conceptual elements introduced in the central literature on communities of practice (Lave and Wenger, 1991; Wenger, 1998; Wenger et al., 2002) provided perspectives contributing to understanding the situated and social aspects of entrepreneurial learning.

### ***5.6 Thesis Development as an Abductive Process beyond Thesis Work***

The development of the three empirical studies, four research papers and thesis cover paper followed an abductive process as I iterated between practical experiences (Section 5.1), literature reviews and empirical studies (Sections 5.4 and 5.5). The overall thesis development process is summarised in Table 6.

**Table 6:** Overview of the development process of this thesis.

	2016	2017	2018	2019
Development of the research proposal for the PhD project	X			
Abductive process of reading the relevant literature streams and reflecting on practical experiences and empirical results	X	X	X	X
Study 1: Longitudinal study of coach–student entrepreneur dyads	X	X		
Study 2: In-depth ZMET study on VCP students			X	
Study 3: Interviews with 11 VCP managers			X	X
Structured literature searches for the thesis cover paper				X
Development of the analytical framework based on the concept of communities of practice for the thesis cover paper				X
Other empirical studies not included in this thesis		X	X	X

### **Research and Practice Beyond this Thesis**

In addition to the empirical studies and research papers included in this thesis, I was involved in several other research efforts during the abductive process of the PhD project, as noted in Table 6. The largest project in my additional research efforts was the development of a database of NSE alumni. For this database, the entire career histories of more than 90% of alumni were gathered through secondary data and telephone interviews. In collaboration with Chalmers University of Technology and Lund University, a survey was developed and sent to alumni to complement the alumni database with additional variables and cross-institutional data. At the time of this writing,



I have co-authored one full paper based on the alumni database, ‘Career Characteristics of Entrepreneurship Education Alumni’. This work on alumni of venture creation programmes provided insights into the ultimate outcomes of the stock of knowledge (Section 3.1) student entrepreneurs developed through their learning processes. Consequently, I reflected on how the context of venture creation programmes influenced students’ learning so that they engaged in different post-graduation entrepreneurial action than entrepreneurs who did not go through venture creation programmes.

In addition to the alumni project, I co-authored a published paper<sup>2</sup> on the influence of students’ project ownership on team processes in venture creation programmes. The paper provided insights into the differences in students’ learning situations and learning processes even within the same course in the same programme. Furthermore, I co-authored a book chapter addressing the importance of the amount of time student ventures spent in student venture incubation initiatives. Work on this book chapter gave me insights into the centrality of facilitation mechanisms to students’ skill development and student entrepreneurs’ need for time to develop as entrepreneurs. Findings in the published paper and the book chapter further motivated my research. While evaluating other research efforts in which I was involved for inclusion in this thesis, I selected research that (1) focused on processes rather than outcomes (2) emphasised direct relevance to students’ learning processes and (3) used qualitative research methods in the paper.

### **5.7 Methodological Reflections and Limitations**

This section presents a reflection on the overall methodology of this thesis, including how reliability and validity were evaluated and addressed as common quality criteria for qualitative research (Golafshani, 2003; Steinke, 2004). The transferability of results and limitations of this thesis are also discussed.

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<sup>2</sup> Haneberg, D.H., Brandshaug, S.W. and Aadland, T. (2018), ‘Eierskap og teamprosess i aksjonsbasert entreprenørskapsutdanning’, *Uniped*, Vol. 41 No. 1, pp. 42–53.

The abductive research process for this thesis involved my participation in two support initiatives (NSE and Spark\* NTNU) before and throughout the PhD project. While this chapter has elaborated on how this participation was instrumental to the abductive research process and allowed grounding the research findings in practice, the thesis results likely were influenced by my participation. For example, my role as NSE faculty may have affected how the student entrepreneurs responded in the interviews. They may have explained themselves differently if they assumed that I had prior knowledge about their learning or student ventures in NSE and Spark\* NTNU. As well, the research process may have been guided by the needs of the Engage centre. My participation in the support initiatives, therefore, should be kept in mind when reading this thesis.

### **Approaches to Reliability**

The reliability of research refers to which degree a chosen research approach can produce similar results within consistent conditions. It is more challenging to ensure reliability in qualitative research following a pragmatist view than, for example, quantitative research with a positivist view as replication and repetition often are not practically viable (cf. Golafshani, 2003). Some methodological choices were made to increase the reliability of this thesis. First, I thoroughly documented the research process of this thesis and the four appended papers. All the interviews were recorded and completely transcribed and then imported into the NVivo software to keep track of the multiple data sources (see Table 4). Reliability was also purposefully addressed in Study 2 by following the rigid data collection and analysis process suggested by the ZMET approach. Zaltman and Coulter's (1995) steps were followed, as further elaborated upon in Paper IV. To improve the structure of the analysis process, customised schemas tracking the identified construct relationships in the data were developed. Golafshani (2003) emphasised that in qualitative research, increasing the validity of research also supports reliability, so these approaches were complemented by the validity measured, described as follows.

### **Approaches to Validity**

Validity refers the degree to which a research approach can address what it is meant to address. In this case, validity consisted of whether the chosen research approaches could provide insights into how student entrepreneurs learned. First and foremost, how student

entrepreneurs learned was studied in this thesis through how student entrepreneurs acted and interacted in their (social) situations. Thus, the approach in this thesis considered the learning process but could not evaluate the stock of knowledge developed from student entrepreneurs' learning processes, which would require other research approaches. It, therefore, should be kept in mind that this thesis was about learning as a process and not learning (or, more correctly, knowledge) as an outcome. In the empirical work, triangulation was used in Studies 1 and 3 to increase validity and deepen my understanding of the research issue (Flick, 2004). In Study 1, dyads of student coaches and student entrepreneurs were used to establish data triangulation and to better understand the processes of how the student coaches developed and supported the five student ventures. The dyads allowed for a more nuanced understanding of the incidents used to study student entrepreneurs' entrepreneurial learning processes as the data analysis could include viewpoints and stories from both student entrepreneurs and student coaches. This step also enabled dealing with possible retrospective biases (Graebner et al., 2012). In Study 3, data triangulation was accomplished by including both written material from the respondents (their notes from the interactive workshop sessions) along with semi-structured interviews. In addition to data triangulation, the analysis in all the co-authored works in this thesis (Papers I, II and IV) used investigator triangulation (Flick, 2004). Both co-authors were involved in the coding and analysis processes and could discuss and evaluate any disagreements and uncertainties that arose. To ensure validity in Study 3, a two-level research process was followed to facilitate communicative validation (Steinke, 2004). In this process, as further elaborated in the methods section of Paper I, an initial framework of constructs was developed in the first-level analysis and then presented to and discussed with each interviewee. This approach ensured that any misunderstandings could be clarified, and important insights not covered in the proposed framework could be elaborated upon in the second-level analysis.

### **Challenges and Limitations**

A methodological choice in this thesis that should be considered in relation to its strengths and weaknesses is the structured literature searches, which formed the basis for developing the research focus (Section 3.4) and were centred on papers that used the specific term *entrepreneurial learning*. Consequently, the conceptions of learning found,

for example, in the psychology and education literatures likely could have added insights into how student entrepreneurs learned. While the literature on entrepreneurial learning has built on work on learning in several other literature fields (Section 3.1), the choice of literature in this cover paper and the appended research papers limited the construct validity of this thesis. This, to some degree, was addressed through the snowballing performed after the structured literature searches and reading the literature on student entrepreneurs and student entrepreneurship. No other alternative terms found to be used to any significant degree suggested other notions of how student entrepreneurs learned than those discussed in the entrepreneurial learning literature. Despite these measures to ensure that the structured searches were not limited to important contributions on how student entrepreneurs learn, inclusion of different views on learning and elements from the communities of practice concept could have led to different results in this thesis.

With most qualitative research, this thesis shared the challenge of transferring research results to other contexts (Miles et al., 2014). However, the descriptions of the research contexts in this thesis and the four papers allowed the reader to evaluate the similarities and differences in the contexts, which could improve transferability. Two of the three empirical studies in this thesis were performed within the context of a single university (NTNU). However, one empirical study drew on data from other contexts in Europe and North America, allowing a certain degree of transferability of the thesis findings to support initiatives in other contexts. Nevertheless, these challenges and limitations to transferability should be kept in mind. Universities are organised in different ways, and considerable differences between economic and social environments exist at the national level. The thesis research was performed in Norway, an environment characterised by a relatively low unemployment rates and a more opportunity-based than necessity-based view on entrepreneurial activity, among other factors. The specific university and the economic and social environment sets some limitations to this thesis. NTNU is a technology-oriented university, and the student entrepreneurs' ventures studied in this thesis generally involved technology-based business ideas. Among the limitations of mainly operating in the NTNU context, NSE and Spark\* NTNU constituted two specific initiatives at NTNU, and both were established initiatives that had been able to develop structures over time, which more recently established initiatives may not have. Although

I am very confident that they represented NTNU's major initiatives for student entrepreneurship, some student entrepreneurs at NTNU likely were not part of these support initiatives, and the research in this thesis most directly considered how student entrepreneurs learned and how their learning was facilitated specifically by the NSE and Spark\* NTNU. In a distinction, Spark\* NTNU was inclusive to all students, but the NSE had a thorough, selective recruitment process, which could create bias in the results of the studies on the NSE. Different programmes and initiatives could also have been found at other universities and shown different specifics of how student entrepreneurs learned.

## **6. Summary of Appended Research Papers**

The four appended research papers in this thesis address the research questions posed in the introduction and are analysed using the analytical framework from Chapter 4. This chapter summarises the purpose and approach of each of these four papers. Their findings analysed in Chapter 7 are also summarised.

### **6.1 Paper I: ‘An Evidence-Based Research Agenda for Action-Based Entrepreneurship Education’**

The first paper, ‘An Evidence-Based Research Agenda for Action-Based Entrepreneurship Education’, focuses on venture creation programmes as an extreme variant of action-based entrepreneurship education. In this paper, the experiences and reflections of 11 managers of global venture creation programmes are used to understand facilitation of students’ learning in venture creation programmes, the horizontal dimension of the research focus illustrated in Figure 4.

#### **Purpose and Approach**

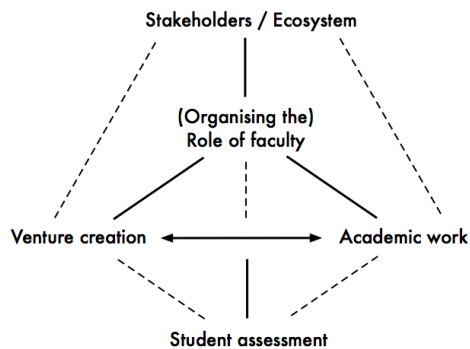
Paper I considers how students’ entrepreneurial learning is facilitated in one type of support initiative for student entrepreneurship studied in this thesis: venture creation programmes. Responding to previous research emphasising that developments in entrepreneurship educators’ facilitation of students’ learning have outpaced research on the topic, the purpose of Paper I is to examine ‘the practice of teaching in venture creation programs in order to identify key challenges and identify a future research agenda for entrepreneurship education’.

Paper I builds on Study 3 in which qualitative research on data from 11 managers of venture creation programmes was applied to address the purpose quoted above. The qualitative research method involved two iterative steps to elicit and understand current practices and key contemporary challenges from the perspective of programme managers. The first-level analysis built on written data from the participants and led to a conceptual model used as a starting point for the second-level analysis. The conceptual model emphasises that venture creation programmes combine two integrated yet fundamentally different processes: a structured academic programme and a dynamic venture creation

process involving uncertainty and real ideas, markets, customers and money. The conceptual model thus represents some intermediary findings by highlighting this tension and the related challenges for programme managers (Figure 7). Then, guided by the conceptual model, the 11 programme managers were asked to elaborate on their challenges in 30–60-minute interviews. They were also requested to share any other viewpoints beyond those in the framework.

## Findings

The findings from the first-level analysis centre on the tension between students’ venture creation and academic work, including challenges related to faculty’s role in handling the tension and how students should be assessed given the tension. The model also emphasises that students’ venture creation triggers involvement of external stakeholders and other ecosystem actors, which can be found challenging to manage. The conceptual model developed in Paper I is presented in Figure 7.



**Figure 7:** Model of important challenges and tensions in venture creation programmes.

The second-level analysis supports the conceptual model in Figure 7 and further emphasises that researchers should explore students’ perspectives on handling new venture creation and academic education simultaneously. Faculty in venture creation programmes face a dilemma: on one hand, they desire that all students should have similar learning outcomes (e.g. skills, knowledge), and on the other hand, they depend on student ventures as a vehicle for learning. Different student ventures develop differently implying that students’ learning may become less similar across a student cohort. Paper I shows

that one way in which faculty can handle this dilemma is to ensure that academic work and students' venture creation processes are relevant to each other, possibly through a flexible programme structure. The second-level analysis also highlights the challenge for students to work and interact with multiple external actors. Students and their ventures develop differently since entrepreneurship is an emergent process, meaning that faculty who, to some degree, facilitate students' networks face challenges when ensuring that students and student ventures can provide value to and incentivise stakeholders.

### **6.2 Paper II: 'Student Venture Incubation as Multi-Actor Organizational Sponsorship'**

Paper II, 'Student Venture Incubation as Multi-Actor Organisational Sponsorship', considers how student ventures are supported by several actors connected to Spark NTNU. Paper II relates the facilitation of student ventures to how student ventures develop and the different ways in which relationships with multiple supporting actors are leveraged to support student ventures.

#### **Purpose and Approach**

Paper II focuses on student entrepreneurship and builds on previous research on ecosystems for student venturing. Instead of regarding such an ecosystem solely from facilitators' perspective, this paper combines facilitators' and entrepreneurs' points of view. Paper II thus addresses how student entrepreneurship is facilitated by managing how multiple actors support student entrepreneurs. Supporting new ventures has commonly been regarded as business incubation, so the paper applies the incubation literature and the concept of organisational sponsorship (Amezcuca et al., 2013; Flynn, 1993) to analyse support of student ventures. Thus, the following research question is asked in Paper II: 'How might the organisational sponsorship from multiple actors support student venture incubation in universities?'

Paper II builds on Study 1 in this thesis. The empirical investigation of Spark NTNU as a student venture incubation initiative drew on a one-year longitudinal study of five student ventures and employed written data from Spark NTNU's intranet system. The research design thus was a qualitative case study with 24 interviews with three student



coaches and five student entrepreneurs in dyadic relationships at three timepoints over one year.

## **Findings**

The findings in Paper II support existing notions that student venture incubation is a process involving multiple actors in the ecosystem and elaborate on the specific actors involved with Spark NTNU. Building on the existing notions, this paper contributes by showing that support for student ventures through extracurricular initiatives largely is provided through informal relationships and interactions. Multiple actors of several types both internal and external to the university are essential to the incubation process, but student coaches manage how these actors support student entrepreneurs. Still, extracurricular entrepreneurship initiatives are also infrastructure that connects student entrepreneurs to university resources. Student entrepreneurs' interactions are triggered by the emerging needs of their student ventures, and such needs are often met as student coaches facilitate student entrepreneurs' interactions with networked actors. Networking, therefore, is found to be the most applied type of organisational sponsorship, in contrast to the direct provision of resources to student ventures, for example.

### **6.3 Paper III: 'Entrepreneurial Learning as an Effectual Process'**

Paper III, 'Entrepreneurial Learning as an Effectual Process', explores the entrepreneurial learning processes of five student venture teams in an extracurricular entrepreneurship initiative, Spark NTNU.

## **Purpose and Approach**

Paper III focuses on how entrepreneurs' entrepreneurial learning occurs. Five student ventures were followed over one year to understand how student entrepreneurs developed their way of acting in the early phases of venture creation processes. Conceptual work building on entrepreneurial effectuation (Sarasvathy, 2001) was performed to complement existing notions of entrepreneurial learning and continuously develop action in the new venture creation process. The conceptual framework developed in the paper was applied as a frame of reference to analyse the five venture creation processes. Entrepreneurial effectuation thus was used as a lens to understand how student entrepreneurs' entrepreneurial action and learning emerged during the venture creation

process. The research question addressed in Paper III is: ‘How may entrepreneurial learning be understood as an effectual process in the early phases of new venture creation?’

The characteristics of effectual processes are first discussed in relation to how entrepreneurial learning processes are characterised, particularly the experiential, situated and social aspects of the learning process. This creates a common ground for an empirical investigation (Study 1) using the same longitudinal data collection process as Paper II. However, while Paper II focuses more on the facilitation of student entrepreneurs’ entrepreneurial learning, Paper III leverages the rich insights into how student entrepreneurs’ entrepreneurial learning occurs offered by the longitudinal data. In Paper III, the longitudinal data were analysed using the critical event approach to identify particular actions taken by student entrepreneurs to further aid understanding of their entrepreneurial learning process.

### **Findings**

The introduction of entrepreneurial effectuation as a theoretical lens complements and extends the ways in which the situated and social aspects of student entrepreneurs’ entrepreneurial learning are considered. The three dimensions used in the paper (activity, multiple actors and context dependent) outline how student entrepreneurs’ entrepreneurial learning is understood in Paper III. ‘Activity’ refers to the entrepreneurial action essential to student entrepreneurs’ entrepreneurial learning processes. The ‘multiple actors’ are the various actors involved in student entrepreneurs’ entrepreneurial learning processes. The findings distinguish between actors central to students’ venture creation (e.g. fellow student entrepreneurs in students’ community) and those who are less central and have more distant roles (e.g. specialised experts available through social networks). ‘Context dependent’ refers to the external factors that influence student entrepreneurs’ venture creation and entrepreneurial learning processes. Paper III highlights the importance and interdependencies of these three dimensions and thus shows how the experiential, situated and social aspects of student entrepreneurs’ entrepreneurial learning are integrated and interdependent in these learning processes.

#### **6.4 Paper IV: ‘Learning from Venture Creation in Higher Education’**

Paper IV, ‘Learning from Venture Creation in Higher Education’, investigates the learning processes of students in a venture creation programme, the NSE.

##### **Purpose and Approach**

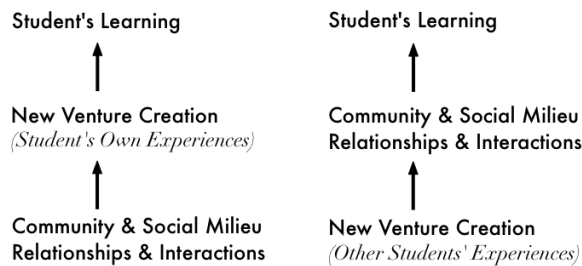
The main issue addressed by the paper—exemplified by two students, Linda and Ted, in the introduction of the paper—is that when student ventures are core components of students’ learning process, these ventures’ processes should be assumed to guide students’ entrepreneurial learning. Ventures often develop in different ways and directions, so students’ entrepreneurial learning processes consequently diverge over time. Perhaps the ultimate difference is between ventures that fail or cease to exist and those that continue and grow. Thus, the research purpose of this fourth paper is: ‘... to investigate differences in students’ learning processes in an action-based entrepreneurship education programme with a holistic view, distinguishing students who pursue venturing throughout their education (like Linda) and those who do not (like Ted)’.

Paper IV is based on Study 2 in this thesis, and to gain a thorough understanding of students’ learning from venture creation in higher education, a qualitative, exploratory, metaphor-based research design was chosen. The ZMET served as a rigorous method to develop individual mental maps showing how different factors in the experience of the venture creation programme related to each other in the students’ perspectives. Given the research purpose of the paper, the 12 NSE students selected for interviews were divided into those who continued their ventures throughout the programme and those who abandoned venture creation during the programme. A frame of reference based on the literature on entrepreneurial learning and communities of practice was used to structure and analyse the rich, diverse empirical data.

##### **Findings**

The findings in Paper IV show that entrepreneurial learning based on the educational approach facilitated by faculty is a core structure in students’ perspective, but an equally important structure emerges from students’ community in and around the programme. The characteristics of this community, as highlighted by the empirical data, are the social

milieu and a culture for sharing. The students in the two groups differ in the relationship of their learning to the community. Students who pursue venturing throughout the entrepreneurship education programme leverage the community to support their new venture creation processes from which they learn. In contrast, students who exit venturing during the programme depend directly on the community in their learning processes, and their entrepreneurial learning, to a certain degree, stems from other students' new venture creation processes. The community thus acts as a vehicle through which other students' experiential learning contributes to entrepreneurial learning by students who no longer have ventures. The differences in the configuration of entrepreneurial learning by the two groups of students are illustrated in Figure 8.



**Figure 8:** Conceptual illustration of the different configurations of students' learning in the venture creation programme depending on whether students continue venturing (left side) or exit venturing during the programme (right side). This illustration corresponds to Figure 6 in Paper IV.

The findings in Paper IV thus illustrate that the role in students' learning played by social relationships and interactions between students in the entrepreneurship education programme may change when students exit their ventures during the programme. Findings from Paper IV indicate that students without ventures shift their learning towards a model that draws on social interactions within the venture creation programme. Hence, the learning process of an individual student entrepreneur in the community is clearly influenced by the learning process of other student entrepreneurs in the community. The community within the venture creation programme thus facilitates students' behaviour and learning.

## **7. Analysis of the Appended Research Papers**

This chapter analyses the findings from the four appended papers introduced in Chapter 6. The analytical framework from Chapter 4 is used to do so, and this chapter is organised around the three main topics of the analytical framework: the fundamental characteristics of communities of practice (domain, community and practice), learning trajectories and the designed–emergent duality.

### ***7.1 Characterising Student Entrepreneurs' Communities of Practice***

The analysis in this section is structured around the three fundamental characteristics of communities of practice: domain, community and practice (Wenger et al., 2002).

#### **Fundamental Characteristic: Domain**

The four papers essentially cover two major contexts of student entrepreneurship: venture creation programmes (Papers I and IV) and extracurricular entrepreneurship initiatives (Papers II and III). This arrangement suggests that two different overall sets of conditions define the domain of student entrepreneurs' communities of practice. However, the two types of contexts have many similarities. In Paper I, programme managers emphasise how students react to and handle the challenge of dual commitment as students commit to both academic courses and new venture creation simultaneously. This challenge was also highlighted by Günzel-Jensen and Robinson (2017) and, to some degree, is further addressed in Paper IV as students in the venture creation programme informally interact and socially organise themselves to support each other's venture creations and learning processes. Paper IV demonstrates how students configure their learning processes based on the status of their respective ventures. Consequently, students' commitment to different aspects of the venture creation programme can be seen to dynamically change throughout the programme as their venture creation processes and informal interactions are dynamic. The student entrepreneurs in Papers II and III are also enrolled in academic programmes, but these programmes are not within entrepreneurship and are not considered in these two papers.

Nevertheless, these students probably are required to handle the tension found in Paper I to some degree. Overall, and quite intuitively given the definition of a student

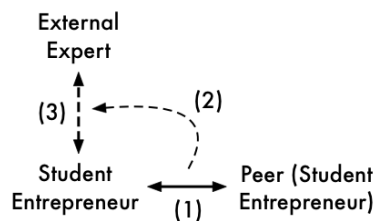
entrepreneur in the thesis introduction, it is evident from all four papers that new venture creation is a domain of mutual engagement among student entrepreneurs: in Paper I, through the main tension between venture creation and academic work; in Paper II, through the activity and the objective of the student venture incubation initiative; in Paper III, through the process of student entrepreneurs' learning; and in Paper IV, through the activity around which revolves the learning approach of the venture creation programme and students' social interactions. The four papers thus provide different perspectives on how new venture creation is a domain of mutual engagement for student entrepreneurs. The domain of mutual engagement in student entrepreneurs' communities of practice, therefore, involves both the academic side of being a student and the entrepreneurial side of managing and developing a new venture. These two aspects are integrated in venture creation programmes but are separated in the extracurricular entrepreneurship initiative. In addition to the knowledge developed through learning in venture creation processes, students' handling of the dynamically developing tension between academic work and venture creation is likely to induce some kind of tacit competence among student entrepreneurs in communities of practice.

### **Fundamental Characteristic: Community**

This second fundamental characteristic is the persons with whom student entrepreneurs establish relationships and the ways in which interactions occur in these relationships. From the facilitation perspective taken in Paper I, students are found to interact with faculty in the venture creation programme and the various types of external stakeholders eventually connected to the programme. Paper IV complements this finding from Paper I from students' perspective by strongly emphasising that students take part in a social milieu termed a culture for sharing as they interact with their peers in the programme. Furthermore, the student entrepreneurs receiving support from the extracurricular entrepreneurship initiative are found to interact with several types of actors, as elaborated in Table 3 in Paper II and through the critical events in Paper III (Table 2). In Papers II and III, the central community relationships are between the student entrepreneurs receiving support and their student coaches who are also students in the venture creation programme. Thus, based on the community characteristic, students in the venture creation programme and the extracurricular entrepreneurship initiative can be argued to take part

in the same community of practice, however being involved in slightly different practices. The four papers highlight that in addition to peer student entrepreneurs and faculty, students interact with a variety of external mentors and stakeholders and university administrative personnel. However, these relationships are mostly related to task-specific interactions, such as seeking advice from lawyers and working with university administration to secure seed funding grants (Papers II and III). Such task-specific interactions represent networked relationships rather than community relationships, whereas community relationships constitute the social fabric of everyday interactions.

In addition to the persons with whom student entrepreneurs establish relationships and frequently interact, the four appended papers provide insights into the nature of the various relationships in which students interact. A core finding in Paper II is that the relationships and interactions between peer students are informal and based on the emerging needs of student entrepreneurs rather than structures formalised or predefined, for example, by the university. Although informal, student-to-student relationships account for a majority of the interactions of student entrepreneurs, formal, task-specific and/or structured interactions are instrumental, especially in the early phases of students' entrepreneurial processes, as shown in Papers I and III. Paper II also demonstrates that support for student ventures is drawn from the available networks facilitated by community interactions. In the simple model in Figure 9, a student entrepreneur shares the need for expert knowledge with a peer (1), which triggers (2) that peer to facilitate a networked relationship with an external expert (3).



**Figure 9:** Illustration of how informal community interactions facilitate the networked relationships of student entrepreneurs. Explanations are provided in the preceding text.

The needs addressed by informal interactions include human resources and solutions to technical challenges and legal issues. As pointed out in Paper I, the facilitated networked

relationships are based on the value they may provide to student entrepreneurs and the potential value from student entrepreneurs perceived by stakeholders. While nonstudent actors ultimately provide the support found through informal relationships, students with whom student entrepreneurs interact frequently—coaches and peers—have central roles in making the interactions happen. Similarly, Paper IV shows that students build as much on informal support for venturing and learning as on support (formally) facilitated by the programme. The findings in Paper III extend this notion as the relationships on which student entrepreneurs draw depend on students' venture creation processes, and student entrepreneurs develop their ways of acting during critical events over time. Thus, the findings from the four papers illustrate that student entrepreneurs' relationships and interactions are often need driven rather than provided through university or faculty facilitation in a structured or predefined way. Nevertheless, the activity of faculty (Papers I and IV) and student coaches (Papers II and III) can be considered to initially facilitate relationships and interactions, but students themselves—and their emergent venture creation processes—guide which relationships they establish after this initial phase.

#### **Fundamental Characteristic: Practice**

The third fundamental characteristic concerns practice: the everyday activity of participants in student entrepreneurs' communities of practice and the shared repertoire of resources that may emerge from this activity. The way this thesis defines student entrepreneurs sets some direction for how practice is understood as student entrepreneurs are university students who perform some activities required by their academic programme. The conceptual model presented in Paper I highlights this academic side of student entrepreneurs' activity. At the other end of this model is venture creation, emphasising that student entrepreneurs in the venture creation programme are also active in new venture creation. Paper IV shows that over time, not all students continue venturing even though they remain students in the venture creation programme until graduation. Additionally, the failure of four of the five ventures studied in Paper III during the study period demonstrates that being a student entrepreneur—as a venturing activity—is a temporary status which may disappear sooner than graduation. Venture creation processes likely facilitate student entrepreneurs' entrepreneurial learning as entrepreneurs learn experientially, and—as elaborated on in Chapter 3—students may



also learn based on others' activity. Thus, some similar—but also quite diverse—knowledge likely is developed among student entrepreneurs. Student entrepreneurs also learn through their academic courses, and students following the same courses likely develop a shared knowledge base from these courses. In addition to being active in venture creation and academic work and accordingly gaining common knowledge, a central activity of student entrepreneurs, particularly in Papers II and IV, is supporting other student entrepreneurs' new venture creation through formalised (coaching) structures and informal interactions. Student entrepreneurs thus also develop a shared repertoire of resources consisting of contextualised stories and documents distributed in such social relationships.

### **Different Ways of Defining Student Entrepreneurs' Communities of Practice**

The analysis of the three dimensions of the fundamental characteristics provides different angles from which to consider how student entrepreneurs' communities of practice may be defined. From a domain perspective, student entrepreneurs' communities of practice are defined by the dual commitment to academic work and new venture creation. The special competence developed is the ability to handle this dual commitment. From a community perspective, informal interactions between students define their communities of practice. From a practice perspective, students' activities are defined by their academic work and new venture creation but also by receiving support from and providing support to other student entrepreneurs. Table 7 summarises the results from this analysis.

Although the analysis findings on the fundamental characteristics are mostly coherent, a slight tension exists in the case of students who exit their ventures. Having students who continue venturing and students who exit venturing in the same programme implies that some variations exist within the domain and the practice characteristic within one programme. However, as shown in Paper IV, students who exit venturing stay as active as the remaining students in relationships and interactions: the community dimension.

**Table 7:** Summarised analysis findings on the three fundamental characteristics.

<b>Fundamental characteristics</b>		<b>Analysis findings</b>
<b><i>Domain</i></b>	<i>Commitment</i>	Dual commitment: Academic work and new venture creation
	<i>Competence</i>	About how to handle the dual commitment
<b><i>Community</i></b>	<i>Relationships</i>	Formal and informal relationships: Peer students/student entrepreneurs, student coaches, university faculty and administration, external experts
	<i>Interactions</i>	Social interactions, mainly between student actors Sharing, for example, stories and documents
<b><i>Practice</i></b>	<i>Activity</i>	Combination of academic work and new venture creation Support for other student entrepreneurs
	<i>Shared repertoire</i>	Contextualised stories and documents

### **7.2 Student Entrepreneurs' Learning Trajectories**

In this thesis, learning trajectories in communities of practice are used as a perspective to understand student entrepreneurs' entrepreneurial learning processes. Among the four appended research papers, Papers III and IV, in particular, address students' learning processes. The findings in Paper III indicate that entrepreneurial learning processes are dynamic and adaptive, which means that the nature of student entrepreneurs' entrepreneurial learning processes changes over venture creation processes. In addition, the findings in Paper IV show that students' entrepreneurial learning processes depend on the status of their venture creation efforts such as when some students eventually exit from venturing. Student entrepreneurs thus may follow different learning trajectories influenced by their ongoing venture creation processes and the status of their venture creation efforts. In this section, examples of how students and other actors possibly change learning trajectories are analysed.

#### **Peripheral Trajectory to Inbound Trajectory**

A basic idea of communities of practice is that newcomers start as peripheral participants and initially follow a peripheral trajectory. Student entrepreneurs interviewed in the

studies in Papers II and III emphasise that they knew little about entrepreneurship early in their venture creation efforts, and their first steps were to understand how to get started in entrepreneurship. Student entrepreneurs in the extracurricular initiative describe their initial dependence on guidance from their coaches, students more experienced in new venture creation. In other words, these student entrepreneurs start as peripherals involved in simpler tasks guided by their coaches (more experienced participants) before engaging in more self-directed venture creation processes. New student entrepreneurs thus may be considered to shift from a peripheral learning trajectory to an inbound learning trajectory after some time. Nevertheless, Paper III (particularly Table 2) shows that some student entrepreneurs may continue on a peripheral learning trajectory longer than others, and students' ventures may eventually fail before student entrepreneurs enter an inbound learning trajectory.

### **Configurations of Internal Trajectories**

In Paper IV, the main issue in the study is illustrated by contrasting students who continue venturing and exit venturing. In the paper, the concept of legitimate peripheral participation in communities of practice is applied, and it is suggested that students who continue venturing persist on an inbound trajectory, while students who exit venturing are left behind in the internal stage at where they exited their ventures. This suggestion builds on the finding that students who exit their ventures continue to contribute through informal interactions, while students who continue venturing also develop their stock of knowledge from venturing. Thus, Figure 8 in Section 6.4 can be considered to illustrate how students who exit their ventures change to another type—another configuration—of internal learning trajectories. In contrast to suggestions above, students who exit their ventures may also be considered to shift to an outbound trajectory relative to those who continue venturing. However, in any case, the analysis of findings from Paper IV shows that students in the same programme follow different types of learning trajectories depending on whether they continue or exit their venture creation processes during the programme. In Paper III, student entrepreneurs followed after closure of their student ventures reflect on their past experiences in the longitudinal study but cease to interact with other student entrepreneurs and become inactive in new venture creation. These student entrepreneurs in the extracurricular initiative are dispersed over many different

academic programmes and thus may not naturally interact with other student entrepreneurs after exiting their ventures. This finding implies that the venture creation programme may be viewed as the ‘glue’ holding together students who exit and students who continue venturing.

### **Brokering from an Internal Trajectory**

Student coaches, as discussed in Papers II and III, are students in a venture creation programme who take on a coaching role in an extracurricular initiative. Although not expert entrepreneurs, student coaches have some personal experience in new venture creation and social relationships developed through that process. Thus, the students who chose to be coaches are already on an inbound or internal trajectory, following the analysis above. Through the activity of coaching, they enable other students to start student ventures and enter a peripheral and, perhaps later, an inbound trajectory. Student coaches initially perform a more formal role to get the new student entrepreneurs going, and in some way, they broker or leverage learning in one community to provide value to new student entrepreneurs who contact the extracurricular entrepreneurship initiative (Papers II and III). The role of student coaches thus can in some ways be seen to perform brokering making knowledge available to new student entrepreneurs trying out new venture creation for the first time.

### **Peripheral Trajectories**

In addition to the different groups of student entrepreneurs mentioned in this section, Papers I and II examine other types of actors who may be participating and have important roles in student entrepreneurs’ communities of practice. For example, faculty inevitably are central in the operations and learning approach (Papers I and IV) of venture creation programmes, and administrators are instrumental to the frameworks that enable student venture support from the university (Paper II). However, actors such as university administrators and external mentors and experts provide quite specific, time-limited tasks, whereas university faculty are more involved in students’ daily learning, as shown in Paper IV. Faculty clearly have different domains, communities and practices than student entrepreneurs, but they have knowledge and resources student entrepreneurs do not. Thus, only some aspects of faculty’s role are within the domain, community and

practice characteristics of student entrepreneurs, suggesting that faculty have a peripheral but still important role in student entrepreneurs' communities of practice. Peripheral participation further suggests that faculty are on a peripheral learning trajectory, as seen in student entrepreneurs' communities of practice. While previous research suggested that specific knowledge may be developed on such peripheral trajectories (Kubberød and Pettersen, 2018; Rae, 2017), this situation can be considered to be somewhat flipped in this thesis: students are on internal trajectories, while faculty are on peripheral trajectories.

### **Student Entrepreneurs' Diverse and Dynamic Learning Trajectories**

While it is challenging and even inappropriate to strictly define the different types of learning trajectories of individuals and groups of individuals found in the four papers, an overall consensus holds that diverse learning trajectories co-exist within student entrepreneurs' communities of practice. This section also discusses how individuals may change learning trajectories based on their roles and situations over time.

### **7.3 Design and Emergence of Student Entrepreneurs' Entrepreneurial Learning**

The design and emergence of students' learning are related to the distinction between the facilitation of students' learning by university faculty or another support system and the occurrence of students' learning within the facilitation and other conditions. Figure 6 in Chapter 4 illustrates this relationship. In addition, Chapter 4 shows that learning is subject to this duality, and although commonly considered to be emergent structures, communities may be also be designed, facilitated and cultivated, for example, by management and faculty. The focus of this section is analysing the degree to which student entrepreneurs' learning and communities of practice are designed and emergent based on findings from the four appended papers.

### **Design of Student Entrepreneurs' Learning**

Papers I, II and IV contribute to illustrating how student entrepreneurs' learning is designed by faculty, university administration and student organisations (the extracurricular entrepreneurship initiative). The design of venture creation programmes that facilitate students' learning by using student ventures as vehicles for learning is elaborated in Paper I and evident in the findings of Paper IV. Combining and integrating

entrepreneurial processes and an academic programme present some challenges to managers, educators and students who ultimately handle the tension on a day-to-day basis. Although neither Paper II nor Paper III focuses on the academic commitments of student entrepreneurs in the extracurricular entrepreneurship initiative, all student entrepreneurs are exposed to the tension between academic work and new venture creation, as elaborated in Section 7.1. Perhaps the main difference in design in venture creation programmes and extracurricular entrepreneurship initiatives is that the former integrate academic work and new venture creation, whereas the latter do not. Paper II nevertheless shows that some resources and instrumental functions are made available through formal university structures to facilitate student entrepreneurs' provision of support to other student entrepreneurs. The analysis of faculty's role in student entrepreneurs' communities of practice (Section 7.2) suggests that faculty have a peripheral role in student entrepreneurs' communities of practice.

### **Learning Emerging from Informal Interactions**

Although facilitation of students' learning is a core focus in Papers I and II and previous research (see Section 3.4), all four papers show that student entrepreneurs' learning occurs is highly emergent. Paper IV addresses the influence of the status of students' venturing efforts on learning, and the finding that students' learning indeed depends on the process of their ventures underpins the issue highlighted by programme managers in Paper I: the emergent nature of new venture creation makes programme design challenging. The interesting aspect of emergent learning is that Paper IV shows that not only do students' views on the programme's learning approach change based on the status of students' ventures; moreover, the configuration of the relationship of the learning approach and students' learning, relationships and interactions alters. In other words, informal interactions between students that support their learning are emergent, indicating that both students' new venture creation processes and the interactions between students are emergent phenomena adding to the complexity of venture creation programmes and student entrepreneurs' entrepreneurial learning processes. Paper III reports a similar result as the entrepreneurial learning processes of student entrepreneurs in an extracurricular entrepreneurship initiative depend on their activity to manage and develop their new ventures and on the context and the social interactions with multiple actors

throughout these processes. Thus, student entrepreneurs' entrepreneurial learning emerges from students' venture creation processes and their informal interactions during and after their venture creation processes, as illustrated by students exiting venture creation in Papers III and IV.

### **Community Design and Community Emergence**

In principle, communities of practice are considered to be emergent structures, but the insights in Papers I and II show that emergent structures does not represent the entire context of student entrepreneurship. Venture creation programmes have developed structures involving some given stakeholders (Paper I), and extracurricular entrepreneurship initiatives facilitate certain relationships, for example, between student entrepreneurs and student coaches and between student entrepreneurs and university central administration (Paper II). A commonality across such pre-organised structures is that these relationships are primarily between students and non-students. In the four papers, there is less evidence of direct facilitation of student-to-student relationships beyond some aspects of coaches' role with new student entrepreneurs. However, the four papers introduce other ways of facilitating student-to-student interactions. For example, in Papers II and IV, the university provides a common physical space for student entrepreneurs. For the group of students in Paper IV who continue venturing, this physical space becomes a means to facilitate social interactions among themselves, implying that social interactions are more likely to occur between those simultaneously present in that physical space. Additionally, the physical space is the arena where many student venture support activities are delivered (Paper II). Given the academic structures of venture creation programmes, groupwork in programme courses can also be regarded as a means for faculty to facilitate student-to-student interactions.

In summary, students and faculty design student entrepreneurs' communities of practice in several ways. However, a core finding in Papers II, III and IV is that similar to students' learning, students' commitment, mutual interactions and everyday activities emerge from venture creation processes and informal interactions. Relationships are established, and interactions occur based on the potential value for stakeholders (Paper I), continuously evolving needs of students' ventures (Paper II), students' entrepreneurial process (Paper

III) and social milieus within venture creation programmes (Paper IV). Thus, the overall picture is that student entrepreneurs' communities of practice are designed to some degree but also develop through an emergent process based on the initial design efforts.

### **Evolving Design, Emergent Learning and Co-Created Learning in Communities**

In this section, the analysis of how student entrepreneurship relates to the designed–emergent duality provides some overarching findings on how students' entrepreneurial learning is facilitated and occurs. The central analysis result is that facilitation and occurrence interrelate and depend on each other. Thus, the university and connected actors may facilitate some aspects of students' entrepreneurial learning, while other aspects emerge over time. Facilitators may directly provide curricular content, guidance and encouragement, as well as physical space for students to get started in venture creation. Other aspects facilitated to some degree may include organising the institutional frames for the extracurricular entrepreneurship initiative. However, student coaches' knowledge and ways of interacting with student entrepreneurs in the community perhaps are more emergent and occur based on coaches' learning processes rather than prescribed facilitation. Finally, students' informal interactions with other students and their uses of the resources provided by the university and external actors occur due to students' venture creation and entrepreneurial learning processes. Thus, student entrepreneurs' entrepreneurial learning in communities may be considered to be co-created through facilitation, design and emerging processes.

#### **7.4 Consolidating the Analysis Results**

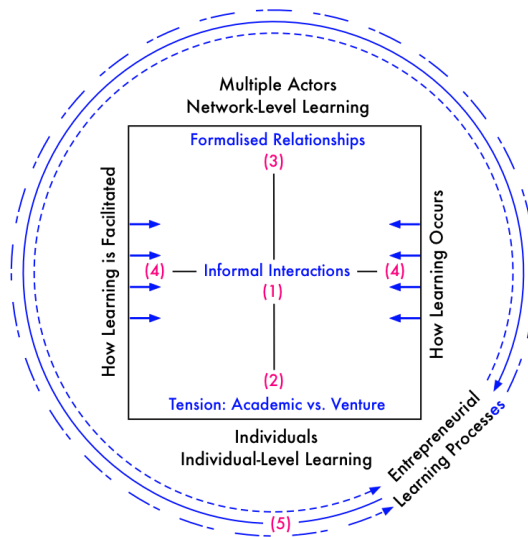
This section addresses how the analysis informs student entrepreneurs' communities of practice across the three main elements of the analytical framework: fundamental characteristics (Section 7.1), learning trajectories (Section 7.2) and designed–emergent duality (Section 7.3). Aspects of student entrepreneurs' entrepreneurial learning processes on which the analysis yields consistent and inconsistent results are clarified, providing a basis for the discussion chapter.

The analysis results in the three sections in this chapter provide understandings of student entrepreneurs' communities of practice from different angles. The core finding regarding



the three fundamental characteristics is that student entrepreneurs' communities of practice are defined by students' informal interactions and provision of support to other student entrepreneurs, in addition to the tension between academic work and venture creation. Interactions with non-students are more formal in nature and are eventually triggered by the informal social interactions. The core finding regarding learning trajectories is that a diverse set of learning trajectories exists and develops dynamically over time. Translated into entrepreneurial learning processes, this finding means that student entrepreneurs follow different entrepreneurial learning processes, which change over time. The core finding regarding the designed–emergent duality is that some aspects of student entrepreneurs' learning can be facilitated, while the emergent nature of how students' venture creation processes and informal interactions occur over time also influences students' learning processes and communities. Thus, student entrepreneurs' learning and communities may be considered to be continuously co-created by facilitators and students. The three elements from the analytical framework then produce five common lines: (1) Student entrepreneurs' communities of practice are centred on informal, student-to-student interactions. (2) Central to understanding students' learning is the tension between academic work and venture creation. (3) Students' relationships with non-student actors involved in students' new venture creation are more formal and are triggered by faculty support and students' social interactions. (4) The facilitation and occurrence of students' learning both show how student entrepreneurs' entrepreneurial learning occurs, and facilitation is both predefined and need driven. (5) Student entrepreneurs follow a diverse set of learning processes depending on the status of their ventures. These five common lines are noted in Figure 10, which illustrates the model of the research focus (Figure 4).

Despite a strong consensus across the analysis results, some contradictions exist in how to specify the community-level entrepreneurial learning of student entrepreneurs. Here, tension emerges between practice, on one hand, and participation, on the other, as being active in new venture creation (2) and participating in informal social interactions (1) do not always co-occur, as elaborated in the following.



**Figure 10:** Analysis results appended to the model of the research focus (Section 3.4). Here, the elements from the analytical framework (Section 4.2) are superseded by the analysis results in this chapter. The red numbers correspond to the explanations in the preceding text. The different pattern styles illustrating entrepreneurial learning processes indicate several different entrepreneurial learning processes.

Previous research has emphasised that practicing new venture creation is instrumental to how students learn in venture creation programmes (cf. Lackeus and Williams Middleton, 2015; Ollila and Williams-Middleton, 2011). The analysis results in this thesis support that students’ venturing is essential to students’ learning but also demonstrate that students without ventures—those who do not practice venturing anymore—may still participate in informal interactions and thus leverage and contribute to a shared resource repertoire (Section 7.3). This result implies that from an interaction perspective, students who have exited their ventures may still be participants and learn in student entrepreneurs’ communities of practice. Uncertainty in understanding the boundaries of communities of practice is not uncommon (van Weele et al., 2018), and tension between practice and participation in the understanding of student entrepreneurs’ communities of practice introduces some ambiguity into how student entrepreneurs’ community-level entrepreneurial learning should be understood. One way of addressing this uncertainty may be to extend the notion of practice from the practice originating from new venture creation to include the practice of interacting, sharing and contributing within student

entrepreneurs' communities of practice. Thus, those who contribute through practice involving new venture creation and contribute to others through sharing in social interactions are internal participants and learners in student entrepreneurs' communities of practice. The analysis results, therefore, argue for a broader view on practice in student entrepreneurs' communities of practice and differentiate the community level from networks or ecosystems by emphasising how students' expectations for (1) other students' practical experience with student venturing and (2) the practice of contributing to other students' new venture creation and/or entrepreneurial learning processes through sharing in social interactions, exists at the community level.

## **8. Discussion: Students' Communities and Learning**

This discussion chapter focuses on how the analysis results in the previous chapter address the research questions and how this thesis contributes to the literature on students' entrepreneurial learning and student entrepreneurship. Section 8.1 addresses how this thesis helps understand entrepreneurial learning in communities of practice. Section 8.2 discusses how this thesis contributes to comprehending student entrepreneurs' entrepreneurial learning processes. Based on that discussion, how faculty and administrators may support student entrepreneurship is discussed in Section 8.3.

### **8.1 Student Entrepreneurs' Communities of Practice**

The analysis chapter (Chapter 7) introduced new insights into student entrepreneurs' communities of practice, and this section discusses how these insights contribute to understanding student entrepreneurs' communities of practice. The analysis results in this thesis suggest that student entrepreneurs' communities of practice may be considered to be continuously co-created by facilitators and students. While students' and teachers' co-creation of knowledge is a known feature of venture creation programmes (cf. Ollila and Williams-Middleton, 2011), this thesis contributes by showing how the environments in which knowledge is developed—student entrepreneurs' communities of practice—are also co-created. This thesis goes further than the division between teachers and students in the co-creation process as some students may have different or multiple roles simultaneously, and these roles develop over time and during students' learning processes. This thesis extends the understanding of practice in communities in which contributing to other students' learning and venture creation processes is an essential practice. Accordingly, this thesis also contributes by showing that students' expectations for other students in these communities are central to how student entrepreneurs' communities of practice develop and thus how students' learning occurs. This contribution expands previous research emphasising faculty's and external stakeholders' expectations for students (Kubberød and Pettersen, 2017). Student entrepreneurs, in this way, develop some conditions for student entrepreneurship, in contrast to previous research that has considered conditions for student entrepreneurship at broader and even national levels (Hunter and Lean, 2018; Summatavet and Raudsaar, 2015).

In summary, this thesis contributes by showing that student entrepreneurs' communities of practice may exist and are fundamental to supporting student entrepreneurs' entrepreneurial learning through informal interactions, in addition to venture creation and academic work, as reported in previous research (Bergmann et al., 2016; Lackéus and Williams Middleton, 2015; Ollila and Williams-Middleton, 2011; Rasmussen and Sørheim, 2006). The next section focuses on how the analysis of student entrepreneurs' entrepreneurial learning through elements of the communities of practice concept contributes to understanding how student entrepreneurs learn.

### **8.2 Understanding Student Entrepreneurs' Entrepreneurial Learning**

This section discusses how this thesis contributes to understanding how student entrepreneurs learn. This section is divided into three parts: a two-part discussion on how this thesis addresses the two research questions and a discussion on how this thesis contributes to the overarching research question.

#### **Integrating How Learning is Facilitated and Occurs (RQ2)**

The second research question (RQ2) in this thesis is: *How does student entrepreneurs' entrepreneurial learning occur in university contexts?* This thesis addresses RQ2 by suggesting that student entrepreneurs' entrepreneurial learning occurs through facilitation by other student entrepreneurs, as well as new venture creation. This thesis thus shows that facilitation of students' entrepreneurial learning should be considered to be more integrated with how student entrepreneurs' entrepreneurial learning occurs. The analysis results (Chapter 7) and the discussion in Section 8.1 demonstrate that student entrepreneurs' communities of practice and learning are co-created by faculty and students. Faculty provide the framework for students to get started in entrepreneurial learning processes, while students leverage their own learning to guide their further learning processes and contribute to other students' entrepreneurial learning processes. Thus, this thesis contributes by emphasising that a facilitator is not necessarily faculty; instead, facilitation of student entrepreneurs' entrepreneurial learning is provided by multiple actors, including those traditionally considered to be learners: student entrepreneurs. In this thesis, student entrepreneurs are essential to how other student entrepreneurs' entrepreneurial learning occurs. Students' facilitation of students is

essential to the understanding of student entrepreneurs' entrepreneurial learning in this thesis, which contributes by contradicting previous research which often makes a sharper division between facilitation and learners (e.g. Shirokova et al., 2017). Student entrepreneurs are learners and facilitators simultaneously, so this thesis suggests that facilitation is more integrated with the occurrence of student entrepreneurs' entrepreneurial learning than suggested in previous research.

### **Student Entrepreneurs' Entrepreneurial Learning at the Community Level (RQ1)**

The first research question in this thesis (RQ1) is: *How can student entrepreneurs' entrepreneurial learning be understood at the community level?* This thesis addresses RQ1 by suggesting that students' individual learning in new venture creation and learning through interactions with others should be considered to be integrated through informal interactions at the community level. This thesis thus contributes by demonstrating that students' individual-level learning and learning from others are not two different ways of learning, as commonly viewed in the research field, but instead are interdependent. Informal interactions among student entrepreneurs at the community level facilitate students' entrepreneurial learning through being active in new venture creation (Pittaway et al., 2017; Rasmussen and Sørheim, 2006) and interacting with other entrepreneurs (Costin et al., 2013; Hyclak and Barakat, 2010; Saukkonen et al., 2016; Secundo, Del Vecchio et al., 2017) and social networks (Lockett et al., 2017; Preedy and Jones, 2017; Shirokova et al., 2017). Informal interactions at the community level enable student entrepreneurs (1) to apply their own individual learning to contribute to other students' entrepreneurial learning and venture creation processes and (2) to apply contributions from multiple actors (e.g. students, faculty and experts) to their own entrepreneurial learning and venture creation processes. Students' individual-level learning and learning from others thus are more interdependent than often suggested in previous research.

### **Community-Centred View on How Student Entrepreneurs Learn**

Based on this thesis, community-level interactions deserve more attention than given in previous research. This is since a community-level focus on student entrepreneurs' entrepreneurial learning has revealed that student entrepreneurs have different, multiple and developing roles (Section 8.1). Students thus are not only learners but also facilitators

of other student entrepreneurs who simultaneously learn through new venture creation and interactions with others. Student entrepreneurs should be considered to have a more central role as they account for many mechanisms connecting individual-level learning and interactions with multiple actors, both of which are essential to students' entrepreneurial learning. This thesis contributes to addressing the overarching research question (*How do student entrepreneurs learn?*) by addressing RQ1 and RQ2 and demonstrating that students have different, more central roles in student entrepreneurs' learning than previously suggested. The next section draws on this thesis' contributions to research on student entrepreneurs and student entrepreneurship to discuss practical implications for how universities may support student entrepreneurship.

### **8.3 Supporting Student Entrepreneurship by Enabling Informal Interactions**

This section discusses how this thesis contributes new insights into the contexts of student entrepreneurship (Chapter 2) in curricular programmes and extracurricular initiatives and support for student entrepreneurship in these support initiatives. In essence, this section suggests that faculty and administrators should enable student entrepreneurs to informally interact with each other by putting students into roles in which they can learn with and facilitate other students. Sections 8.1 and 8.2 shows that students are at the centre of their communities of practice and student entrepreneurs' entrepreneurial learning processes. Nevertheless, faculty, in their roles as facilitators of various programmes and initiatives, provide some arenas where informal interactions can take place. Examples of such arenas mentioned in this thesis are student cohorts in entrepreneurship education programmes, encouragement of social events in extracurricular entrepreneurship initiatives and provision of physical space in student venture incubators. The analysis findings in this thesis suggest why student entrepreneurs' informal interactions with each other are found to be important.

This thesis shows that students who exit venturing reconfigure but continue their entrepreneurial learning processes although they are not directly involved in new venture creation. Thus, both active and inactive student entrepreneurs are learning. However, among the support initiatives considered in this thesis, continued learning is primarily found in the venture creation programme as it enables students' interactions by including

all students in the same programme, courses and incubation space. The extracurricular entrepreneurship initiative does not enable informal interactions for students who exit their ventures in this way.

This thesis also finds that through informal interactions, students have and take on different and more central roles in their own and, more importantly, other student entrepreneurs' entrepreneurial learning. Student entrepreneurs are learners but also facilitators of learning. While not entirely informal, student coaches are perhaps the most prominent example in this thesis of how students may have different, central roles in other student entrepreneurs' entrepreneurial learning. Previous research has studied how university students learn from coaching entrepreneurs but not coaching student entrepreneurs (Costin et al., 2013; Saukkonen et al., 2016), and this thesis thus contributes by presenting a way of learning in facilitation where student entrepreneurs coach other student entrepreneurs. Student coaches may be considered to extend the impacts of the venture creation programme and to show how students may take on roles as knowledge intermediaries to facilitate student entrepreneurship (Hayter, 2016). In summary, enabling informal interactions has potential to (1) let student entrepreneurs integrate learning from and contributing to other student entrepreneurs and learning from new venture creation, (2) facilitate continued entrepreneurial learning for student entrepreneurs who exit their ventures and (3) encourage students to engage in different, more central roles than commonly found in more traditional approaches to student entrepreneurship.



## **9. Conclusions, Implications and Further Research**

This chapter concludes this thesis by pointing to how the research questions are addressed to contribute to research and practice. Based on that, implications for research and practice and suggestions for further research are provided.

### **Addressing the Research Questions**

The overarching research question asked in this thesis is: *How do student entrepreneurs learn?* This question leads to two research questions determining the research focus of this thesis: RQ1: *How can student entrepreneurs' entrepreneurial learning be understood at the community level?* RQ2: *How does student entrepreneurs' entrepreneurial learning occur in university contexts?* This thesis addresses RQ1 by suggesting that students' individual-level learning and learning from others are not two different ways of learning, as commonly held in the research field; instead, they are interdependent and facilitated by informal, community-level interactions among student entrepreneurs. This thesis addresses RQ2 by finding that student entrepreneurs are both learners and facilitators simultaneously. Students leverage their own learning to contribute to other students' entrepreneurial learning processes. This thesis suggests that the facilitation and the occurrence of student entrepreneurs' entrepreneurial learning are integrated. A facilitator, therefore, is not necessarily faculty as facilitation is provided by multiple actors, including those traditionally considered to be learners: student entrepreneurs.

The overarching research question of this thesis (*How do student entrepreneurs learn?*) is addressed by answering RQ1 and RQ2 and determining that student entrepreneurs learn by performing central roles in other student entrepreneurs' learning. Students' facilitation of students, therefore, is essential to how student entrepreneurs' entrepreneurial learning is grasped in this thesis. This understanding adds to notions of how student entrepreneurs learn by combining facilitation of other student entrepreneurs with new venture creation and academic work. The key contributions of this thesis are elaborated in the next section.

### **Contributions of This Thesis**

This thesis extends the literature on student entrepreneurship by demonstrating that multiple actors co-create the environments in which student entrepreneurs'

entrepreneurial learning occurs. Such environments include student entrepreneurs' communities of practice. This thesis highlights students as central actors in this co-creation process, whereas previous research has emphasised university characteristics and university employees (Beyhan and Findik, 2018; Bezerra et al., 2017; Wright et al., 2017). In this thesis, student entrepreneurs' communities of practice are found to facilitate entrepreneurial learning, support student ventures and have potential to be foundational in student entrepreneurs' entrepreneurial learning processes. This thesis thus contributes by uncovering the activities students do to take part in university entrepreneurship (Åstebro et al., 2012; Hayter et al., 2017).

This thesis also broadens the view on the practice of student entrepreneurs and emphasises that contributing to others is an essential practice in addition to students' new venture creation and academic work. This view contrasts with previous research, for example, on how students learn from being supported by entrepreneurs (Hyclak and Barakat, 2010) and from supporting and coaching entrepreneurs (Costin et al., 2013; Saukkonen et al., 2016). This thesis shows that the practice of contributing to others enables both active and inactive student entrepreneurs to learn from and with each other. This thesis demonstrates that how student entrepreneurs' entrepreneurial learning is facilitated is more integrated with how it occurs than suggested by previous research (Neck and Corbett, 2018; Rasmussen and Sørheim, 2006). Moreover, this thesis extends the central notion of learning by doing in entrepreneurial learning (Cope and Watts, 2000; Deakins and Freel, 1998; Minniti and Bygrave, 2001) to include contributing to others as a central element of doing. In this thesis, complementing focuses on how learning occurs and is facilitated is fruitful to gain an in-depth understanding of student entrepreneurs' entrepreneurial learning processes from students' perspective. Overall, this thesis's community-centred view on how student entrepreneurs learn contributes to understanding how student entrepreneurs learn, emphasising the importance of community-level interactions in student entrepreneurs' entrepreneurial learning processes.

### **Implications for Practice**

The implications for practice suggested by this thesis centre on enabling informal interactions relevant to teachers, faculty, university managers and public policy makers.

Teachers and faculty should encourage students to take on central roles and responsibilities to benefit their learning and other students' learning. This encouragement can be done by explaining to students the added value of such learning and making students in courses and programmes use their own learning to support other student entrepreneurs. Take, for instance, students in the venture creation programme who coach new student entrepreneurs. Informal interactions can be a way to enable student entrepreneurs who eventually exit their ventures to reconfigure and continue their entrepreneurial learning process. Enabling informal interactions also requires that curricular and extracurricular courses and programmes be organised in a way that allows students to take on such roles. Teachers and faculty should not be overly tied to plans and curricula but should allow for the emergence of students' informal interactions and communities. Student entrepreneurs' practice and learning extend beyond courses and classrooms, and teachers and faculty should embrace such important aspect of students' learning processes by letting students be central to the development of courses, programmes and initiatives. This approach can ensure that student ventures have their emergent needs met instead heavily depending on predefined support.

University managers can ensure the availability of arenas where informal interactions can take place, such as physical spaces for student venture incubation and networking events. University managers should assign both students and faculty responsibility for filling these arenas with activities. Merely providing a physical space is insufficient; the multiple actors to interact within that space should also be sponsored. Policy makers should acknowledge that multiple actors facilitate student entrepreneurship and that while support mechanisms and initiatives may be designed to some degree, a considerable element of emergence must be accepted. If student entrepreneurship and student entrepreneurs' learning are priorities, multiple actors must be sponsored and given sufficient autonomy and accountability to emerge and develop. Emergent processes are not predicable, and policy makers must allow for occasional unfavourable outcomes. More holistic efforts than stand-alone actors, courses and instruments, therefore, should be made to facilitate student entrepreneurship.

### **Avenues for Further Research**

This thesis encourages studies on student entrepreneurs' communities of practice in contexts beyond the single university considered in this thesis. Further research on communities of practice and the situated and social aspects of entrepreneurial learning is encouraged in contexts where student entrepreneurship occurs. Further research could also complement this thesis's focus on how student entrepreneurs learn with a focus on how student entrepreneurs develop their entrepreneurial identities. Previous research has found that identities are central to how student entrepreneurs develop (Donnellon et al., 2014; Lundqvist et al., 2015; Nielsen and Gartner, 2017), and development of entrepreneurial identities is perhaps as important as development of entrepreneurial knowledge through learning. The communities of practice concept, in particular, emphasises the interrelationship between identity development and learning (Wenger, 1998). Further research on how student entrepreneurs learn and develop entrepreneurial identities could also benefit from the communities of practice concept.

The importance of arenas such as physical space where informal interactions can take place is highlighted as a practical implication in this thesis. Further research could focus on the relationships of different types of arenas with the development of student entrepreneurs' communities of practice. Given the definition of student entrepreneur used in this thesis, the contexts and support initiatives for further research should allow students to create their own ventures. Accordingly, other types of courses, programmes and initiatives in which students interact with other students about entrepreneurship are interesting, such as when new venture simulations are used in entrepreneurship education. This thesis focuses on students' entrepreneurial learning processes, and an interesting avenue for further research is to study student entrepreneurs' post-graduation processes. Further research could for example investigate how student entrepreneurs' communities of practice persist when students graduate and whether those who graduate continue to participate and, if so, through which practices and interactions. Such practices and interactions could involve both how graduates contribute to student entrepreneurs in the programme or initiative and how graduates interact with each other.

Research traditionally has assumed that students most often wait until graduation or even years later before entering entrepreneurship (Bergmann et al., 2016), but this thesis considers students who start and develop new ventures. Further research could explore how the knowledge and networks gained by student entrepreneurs may eventually lead to different outcomes in post-graduation entrepreneurship than for those waiting at least until graduation before entering entrepreneurship. Moreover, previous research has identified initiatives for student entrepreneurship as a means to prepare students for work-life beyond entrepreneurship (Preedy and Jones, 2017). Further research could explore the roles the outcomes of student entrepreneurs' entrepreneurial learning may play in a broad range of contexts, including new venture creation and different types and combinations of employment, self-employment and paid employment.

This thesis generates insights into the multiple roles of student entrepreneurs in their communities of practice and entrepreneurial learning processes. While this thesis emphasises students' perspective, a potential avenue for further research is to focus on the roles of faculty in student entrepreneurs' communities of practice. A focus on the roles of faculty in student entrepreneurs' communities of practice may lead to new notions of what facilitation may involve and could be considered to be studying facilitation as processes instead of describing the courses and resources provided. Previous research has found that students co-create knowledge with their teachers in entrepreneurship education (Ollila and Williams-Middleton, 2011). In this thesis, student entrepreneurs are also found to co-create their communities of practice with their faculty. Further research could extend this finding by asking how courses, programmes and initiatives may co-develop with students and students' communities and further faculty's practices in this process. For example, future research could investigate how faculty may balance the need for specific designs of courses, programmes and initiatives and the emergent process of students' communities and learning. Such further research should carefully take into account specific contexts as faculty's practices likely differ considerably across contexts but can provide an interesting way to understand how courses, programmes and initiatives develop as a combination of designed and emergent processes.

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## **PART II: APPENDED RESEARCH PAPERS**





## **Research Papers**

### **Paper I: An Evidence-Based Research Agenda for Action-Based Entrepreneurship Education**

Dag Håkon Haneberg, Lise Aaboen and Karen Williams Middleton

Status: In review

### **Paper II: Student Venture Incubation as Multi-Actor Organizational Sponsorship**

Dag Håkon Haneberg and Lise Aaboen

Status: Submitted to journal

### **Paper III: Entrepreneurial Learning as an Effectual Process**

Dag Håkon Haneberg

Status: Published

Haneberg, D. H. (2019). Entrepreneurial learning as an effectual process. *The Learning Organization*, (ahead of print).

### **Paper IV: Learning from Venture Creation in Higher Education**

Dag Håkon Haneberg and Torgeir Aadland

Status: Published

Haneberg, D. H. and Aadland, T. (2019) Learning from Venture Creation in Higher Education. *Industry and Higher Education*, (ahead of print).



**Research Paper I:**

**An Evidence-Based Research Agenda for Action-Based  
Entrepreneurship Education**

Dag Håkon Haneberg

Lise Aaboen

Karen Williams Middleton

Status: In review

This paper is awaiting publication and is not included in NTNU Open



**Research Paper II:**

**Student Venture Incubation as Multi-Actor Organizational Sponsorship**

Dag Håkon Haneberg

Lise Aaboen

Status: Submitted to journal

This paper is awaiting publication and is not included in NTNU Open





## **Research Paper III:**

# **Entrepreneurial Learning as an Effectual Process**

Dag Håkon Haneberg

Status: Published

### Reference:

Haneberg, D. H. (2019). Entrepreneurial learning as an effectual process. *The Learning Organization*, (ahead of print).



# Entrepreneurial Learning as an Effectual Process

## Abstract

**Purpose** – The purpose of the present paper is to address how entrepreneurial learning may be understood as an effectual process in the early phase of venture creation.

**Design/methodology/approach** – Previous research is used to develop a conceptual frame of reference, which is further developed through a longitudinal qualitative case-study of five new venture teams. Conceptualising these teams' learning as sequences of events over a one-year period provides rich insight from real-life processes.

**Findings** – A conceptual model of how entrepreneurial learning may be understood as an effectual process is presented. The interactions and interdependencies between nine process characteristics along three main dimensions in the process; Activity, Multiple Actors and Context-dependent, demonstrate how the process tie together as a whole.

**Research limitations/implications** – The present paper argues for further cross-fertilisation of entrepreneurial learning and effectuation research and showcases how studies of entrepreneurial learning may contribute to organisational learning in entrepreneurial ventures. The conceptualisation of characteristics and dimensions aims to support future process studies by suggesting a framework for analysing process events in longitudinal studies.

**Originality/value** – Previous research has already established how activities are central to entrepreneurial learning and emphasised that what constitutes the two dimensions of multiple actors and context-dependence is important. The present paper contributes to entrepreneurial learning with an enhanced understanding of why and how the three dimensions are important as well as interdependent and mutually interactive. The present paper also contributes to organisational learning by extending the understanding of learning in emerging entrepreneurial organisations.

## 1. Introduction

Continuous learning is essential to any organisation's performance (cf. Chou and Ramser, 2019). The concept of *organisational learning* (OL) has been fruitful to understand how organisations in many forms and phases develop (Örtenblad, 2018). OL research often regards established organisations' types and levels of learning (Argote, 1999; Morland *et al.*, 2019). In contrast, the present paper regards the learning processes of emerging organisations where a new venture team *is* the organisation (Kamm *et al.*, 1990; Dutta and Crossan, 2005; Tryba, 2017). The learning of the new venture team may be addressed

as *entrepreneurial learning* (EL), since EL offers a way to understand OL in the context of entrepreneurship (Wang and Chugh, 2014). The present paper takes a process view of EL to increase its utility in understanding entrepreneurship as continuously developing action in the emergence of a new organisation (Brockman, 2013; McMullen and Dimov, 2013; Toutain *et al.*, 2017).

The EL process has been conceptualised as a flow of entrepreneurial action that involves learning during venture creation (Nogueira and Alsos, 2018). Entrepreneurial action has especially been related to taking action under conditions of uncertainty (McMullen and Shepherd, 2006), and previous research on EL has referred to effectuation (Sarasvathy, 2001) as a fruitful perspective for understanding how entrepreneurial action and learning co-develop, especially in the early phases of new venture creation (Politis, 2008; Politis *et al.*, 2012; Fisher, 2012; Wang and Chugh, 2014). Examples from previous research include the use of effectuation to understand sources for EL (Berends *et al.*, 2016), EL through experimentation (Vasconcelos Gomes *et al.*, 2018) and learning under conditions of uncertainty (Morris *et al.*, 2012). The contributions mentioned above have thus demonstrated the potential of effectuation to aid a variety of perspectives on EL, although research has not yet addressed how effectuation may enhance our understanding of EL as a process. A further understanding of how effectuation contributes to EL is important to establish a common ground for future process studies on EL; thus, the present paper asks the following research question: *How may entrepreneurial learning be understood as an effectual process in the early phases of venture creation?* The research question involves how EL as an effectual process may be characterised and which events in the venture creation process correspond to these characteristics.

The present paper contributes to EL research by providing insight into how and why multiple actors and context-dependence are important for the EL process in the early phases of venture creation. Thus, the present paper also contributes to – and extends the applicability of – OL in emerging organisations where actions are taken in uncertainty. In the next section, previous research is used to develop a conceptual frame of reference that informs a longitudinal qualitative study of five new venture teams in the very early phases of venture creation. Studying these teams' learning as sequences of events over a

one-year period provides new insights into EL. The findings propose a structured conceptualisation of the EL process that contributes to EL and OL; this is the focus of the discussion and conclusions sections.

## **2. Frame of reference**

Scholars have viewed the EL process as a series of ‘learning events’ in order to better understand and structure the process (Cope, 2003; Lindh and Thorgren, 2016). Entrepreneurs are exposed to – and act upon – learning events during the venture creation process (Heinrichs, 2016), causing them to engage in reflective processes of perceiving, acting and generating meaning based on their experiences (Cope and Watts, 2000; Rae, 2013). Learning events also trigger learning that informs new actions by the involved actors (Cope, 2003; Taylor and Thorpe, 2004; Pittaway and Thorpe, 2012), suggesting that learning events are essential for how action continuously develops throughout the entrepreneurial process. As a process study, the present paper focuses on the series of events that constitute the EL process, introduces effectuation and examines why it is relevant to understanding the events in the EL process. Then, a review of characteristics used to describe EL and effectual processes in the literature is presented, which informs the empirical process study. The process characteristics are highlighted in italics in order to guide the reader toward the synthesis of characteristics contained in Table 1.

Entrepreneurial effectuation (Sarasvathy, 2001) is seen as a paradigm shift in how scholars understand the entrepreneurial process (Shirokova *et al.*, 2017). Effectuation has been widely applied to entrepreneurial processes (Reymen *et al.*, 2015), and within the scope of the present paper, effectuation provides a way to understand how entrepreneurs act upon process events. At its core, effectuation is a decision-making logic that can be contrasted with causation (Sarasvathy, 2003); it offers an alternative to causal prediction in uncertain situations, such as the abovementioned process events. Effectuation thus provides researchers with an understanding of the decision-making that informs entrepreneurial action. Effectuation addresses uncertainty in several ways. One is controlling the future to the greatest possible extent through considering affordable loss (Wiltbank *et al.*, 2006; Wiltbank and Sarasvathy, 2010). Effectuation is also about making available resources valuable (Wiltbank and Sarasvathy, 2010) instead of just purely

focusing on acquiring valuable resources. Since resources are not necessarily in entrepreneurs' possession but may exist in their networks (Sarasvathy, 2001), it is vital to know where they are and how they can be mobilised – in other words, who has what and who knows how – as well as knowing how to establish relationships to leverage networked resources. Effectual processes are therefore about leveraging entrepreneurs' available means in the venture creation process (Wiltbank *et al.*, 2006; Perry *et al.*, 2012). In short, while both causation and effectuation describe entrepreneurial action, the two represent different types of action in terms of approaches to the uncertainty involved in the events of the entrepreneurial learning process.

## 2.1 Characterising the processes

Entrepreneurial action has been and still is central to studies of the EL process (Toutain *et al.*, 2017). Several scholars have emphasised how a new venture offers a learning situation or context for learning (Deakins and Freel, 1998; Rae, 2000; Pittaway and Cope, 2007). Cope (2005, p. 374) describes EL as 'learning experienced by entrepreneurs during the creation and development of a small enterprise'. EL also impacts the same process since, for example, Rae (2000, p. 151) claims that it 'involves some form of change which causes or enables the individual to do things differently'. Effectuation do also regard how entrepreneurs decide – and implicitly act – in the process. Both EL and effectual processes may thus be characterised as *action-oriented*, as researchers specifically stated in their recent contributions to EL processes (Passaro *et al.*, 2017; Secundo *et al.*, 2017) and effectual processes (Vargo and Lusch, 2014; Daniel *et al.*, 2015). While studies of EL processes emphasise *experiential* learning from action, effectual processes have been characterised by *experimental* action (cf. Yusuf and Sloan, 2015; Deligianni *et al.*, 2017). Although undeniably distinct, *experiential* and *experimental* may also be seen as two sides of the same coin. Effectuation encourages experimentation that may lead to experiential learning, hinting that the two characteristics are nevertheless closely related. In addition, entrepreneurial action has been characterised as *creative* action both in EL processes (Summatavet and Raudsaar, 2015; Passaro *et al.*, 2017; Secundo *et al.*, 2017) and in effectual processes (Daniel *et al.*, 2015; Urban and Heydenrych, 2015). Also common to both processes is that action facilitates *reflections* in both EL processes (Hietanen and Järvi, 2015; Hägg and Kurczewska, 2016; Secundo *et al.*, 2017) and

effectual processes (Chandler *et al.*, 2011). There are further characteristics that have been used solely for EL processes. They resemble the action-oriented characteristic and include *active* (Hietanen and Järvi, 2015) and *proactive*, connected with a notion of ‘learning by doing’ (Karataş-Özkan, 2011). Overall, these characteristics provide different ways to describe the ‘activity’ that is at the core of both EL and effectual processes.

Studies of EL have often focused on individuals’ learning (Wang and Chugh, 2014), but recent contributions emphasise that EL processes extend beyond the single individual to the team and organisational levels (Lans *et al.*, 2008; Karataş-Özkan, 2011; El-Awad *et al.*, 2017) as well as to networks and alliances (Jiang *et al.*, 2016; Cantino *et al.*, 2017; Secundo *et al.*, 2017). Thus, the inclusion of other actors in addition to the individual entrepreneur also characterise the EL process. Scholars have characterised EL processes as transferable through *interactions* and *shared* between individuals or groups (Seuneke *et al.*, 2013), which is the result of *collective* or *social* efforts (Seuneke and Bock, 2015; Secundo *et al.*, 2017). While characteristics regarding different levels are not so articulated in research about effectual processes, effectual processes are nevertheless characterised as extending beyond the individual through *collaborative* action (Vargo and Lusch, 2014), which involves (*social*) *interaction*, for example, in *networks* (Fischer and Reuber, 2011; Nielsen and Lassen, 2012; Song *et al.*, 2017). Although EL and effectual processes differ in some of the characteristics used for how they extend beyond the individual, both processes are characterised as involving ‘multiple actors’ in several ways.

In addition to the activity-related characteristics and the multiple actors involved in both EL and effectual processes, the two processes are also characterised as not isolated from – but rather dependent upon – their surroundings. Scholars have characterised EL processes as *contextual* (Seuneke and Bock, 2015; Summatavet and Raudsaar, 2015; Cantino *et al.*, 2017) and thereby also *dynamic* (El-Awad *et al.*, 2017; Secundo *et al.*, 2017), as the learning process is continuously impacted by its surroundings; the process is also *adaptive* to the context (Cantino *et al.*, 2017). There are also similarities between EL and effectual processes in this regard, as effectual processes emphasise that entrepreneurs



adopt a *flexible* and *adaptive* approach to uncertainty. Furthermore, research on effectual processes characterises entrepreneurial action as *emerging* – rather than deliberate – due to upcoming *situations* and from *context* factors (Karri and Goel, 2008; Chandler *et al.*, 2011; Nielsen and Lassen, 2012; Daniel *et al.*, 2015; Urban and Heydenrych, 2015). Thus, there exists a set of characteristics of EL and effectual processes that can be described as ‘context-dependent’.

## 2.2 Synthesis and structuring of characteristics

The characteristics reviewed above underpin that there exist a multitude of similarities and some differences in how scholars have characterised EL processes on the one hand and effectual processes on the other hand. The synthesis that follows in Table 1 builds on common characteristics of EL and effectual processes. As already summarised at the end of the three preceding paragraphs, the characteristics enable three dimensions to be determined: the activity (what), the multiple actors involved (who) and the dependence on contextual factors (when/where). Table 1 structures the process characteristics found along the three characteristics, and as noted, multiple similar characteristics are merged into one where appropriate.

**Table 1:** Entrepreneurial learning as an effectual process – Synthesis of characteristics.

Process Characteristics	Entr. Learning	Effectuation	Merged Characteristics (see notes for explanations)	Conceptual Framework Characteristics	Dimension
Action-oriented	X	X	→	Action-oriented	<i>Activity (what)</i>
Active	X	X	Active, action and proactive as synonyms for ‘action-oriented’ in the present context		
Action	X	-			
Proactive	X	-			
Learning by doing	X	-	Entrepreneurial learning based on action as ‘doing’ (Karataş-Özkan, 2011; Seunke <i>et al.</i> , 2013).	Experimental– Experiential	
Experiential	X	X	Experiential and experimental are combined as a single construct because experimental action is part of the experiential learning process and because experiential learning (and reflection) form part of active experimentation (cf. Cope, 2003).		
Experimental	-	X			
Creative	X	X	→	Creative	
Reflective	X	X	→	Reflective	

Interactive	X	X	→	Interactive*	Multiple Actors (who)
Collaborative	-	X	Collaborative is an 'exchange' as a form of collective effort (Vargo and Lusch, 2014) in value creation. Collaborative is oriented more toward a common objective and is treated here as a sub-type of collective effort.		
Social interaction	-	X	Social interaction describes the social and interactive characteristics of effectual processes (Fischer and Reuber, 2011).		
Social	X		→		
Shared	X	-	Shared contextual learning processes as a way of learning in social relationships (Seuneke <i>et al.</i> , 2013)	Social*	
Networked	X	-	→	Networked	
Collective	X	-	→	Collective	
Team-level	X	-	Team-level learning as a type of collective learning (Karataş-Özkan, 2011)		
Collaborative	-	X	Collaborative and 'exchange' as forms of collective effort (Vargo and Lusch, 2014) in value creation. Collaborative is oriented more toward a common objective and is treated here as a sub-type of collective effort.		
Contextual	X	-	→	Contextual	
Situated	-	X	'Situated' refers to how a specific situation and environment influence the development of entrepreneurs' decision-making (Song <i>et al.</i> , 2017); this is similar to how other research has used the terms 'contextual' or 'context-dependent'.		
Uncertainty	-	X	Uncertainty as an important (perhaps the most important) contextual characteristic for effectual action (cf. Sarasvathy, 2001)		
Dynamic	X	X	→	Dynamic	
Flexible	-	X	'Flexible' refers to the ability to dynamically adapt to the entrepreneurial context (e.g. 'allow the business to evolve as opportunities emerge'; Chandler <i>et al.</i> , 2011, p. 382).		
Emergent	-	X	'Emergent' refers to the 'non-predictive' nature of effectual processes, yielding a dynamic process based on emerging opportunities (Urban and Heydenrych, 2015; Deligianni <i>et al.</i> , 2017).		
Adaptive	X	X	→	Adaptive	

**Note:** 'X' means that the characteristic is found in previous research on EL and/or effectual processes. '→' means that the specific characteristic is used as is, while the merged characteristic comes with short explanations. Social interaction has been split into two characteristics (\*). Dimensions in the right column are explained in the text above.

The overview in Table 1 represents a synthesis of what previous research has already found, and that the commonalities in characteristics of EL and effectual processes are substantial. However, it is yet to be addressed how these characteristics may correspond to specific events in the entrepreneurial process (McMullen and Dimov, 2013; Wang and Chugh, 2014) and – more specifically to the empirical data analysed here – critical events in real-life early-phase ventures. This will be addressed through the empirical part of the present paper, the methodology of which is presented in the next section.

### **3. Method**

To undertake a process study covering a number of sequential events in the processes, a longitudinal study is needed (cf. McMullen and Dimov, 2013). Also, to reach a deep understanding of the processes and the involved events, a multiple case study methodology was chosen as the best means of gaining insight to develop a conceptualisation in interaction with theory (cf. Eisenhardt, 1989; Yin, 2009). Scholars have recently suggested longitudinal case studies to be advantageous for EL processes (Toutain *et al.*, 2017), and the case study methodology used here follows guidelines provided by Eisenhardt (1989) and Yin (2009), starting from the conceptual frame of reference developed above and following an iterative process of alternation between theory and the analysis of empirical findings.

#### **3.1 Case selection: Venture creation processes**

Empirical data were collected in a longitudinal case study of five early-phase ventures. To enable a cross-case analysis, five similar student-driven projects were selected; that is, the entrepreneurs came from similar backgrounds and experienced the venture creation process in the same environment with access to similar resources, leading to minimal variability between the cases (Eisenhardt, 1989). The selection also required some measurable development of the new ventures (e.g. use of prototypes) to capture the richest possible data. The five ventures were as follows: 1) *StudentMatch*, which is an app-based service that matches students to work together on course assignments; 2) *DilemmaShare*, which is an app-based social platform where users share dilemmas with other users; 3) *PictureDraw*, also an app-based social platform, with which users draw graphics on pictures shared by other users; 4) *MultiGame*, which is a multi-player online computer game; and 5) *StockMaster*, which is a two-sided online sharing platform for stock market analysts. All five ventures were part of an extracurricular entrepreneurship initiative (cf. Pittaway *et al.*, 2015; Ndou *et al.*, 2016) providing support for new ventures at a Norwegian university. This allowed, to a certain degree, the isolation of surrounding factors that could influence the entrepreneurial processes in different ways.

### **3.2 Data collection**

Data were collected using 24 semi-structured interviews with the founders of the five student-driven ventures, and to enable data triangulation, their coaches from the extracurricular initiative. Interviews were conducted with the founders and their coaches at three points in time over a twelve-month period. The three data points addressed the EL process in terms of actions taken up to that point during the venture creation process. The questions asked related to challenging situations, reflections on prior actions, the current status of the new venture and the way forward. In addition, interviews at the first data point captured background information about the new ventures as a baseline for their learning processes. Interviews at data point one lasted for about one hour; they lasted for about half an hour at data points two and three. During the study, four of the five new ventures were discontinued (all except MultiGame). Nevertheless, the entrepreneurs were still asked to reflect on the process to gain more insights about their learning. Thus, the study addressed how learning occurs both in new ventures that grow and become ‘successful’ and in those that ‘fail’. All the interviews were recorded and transcribed by the author.

### **3.3 Data analysis: Critical incident approach**

The EL processes were analysed by referencing process events (as introduced as the learning events in section 2). This enabled the processes to be described by a specific set of events for analysis using the conceptual frame of reference in Table 1. Data from each transcribed interview were coded using NVivo 11 software, with this tool used throughout the analysis divided by the following sequential steps. First, the researcher identified 27 specific events in the venture creation processes that the entrepreneurs either recalled directly or revealed implicitly through descriptions of the processes. These events are presented in Table 2. Second, all the events were coded using the characteristics provided in Table 1 – an event could be coded using one or several characteristics. Third, based on the coded data, the characteristics were represented through a total of 110 coded examples from the five venture creation processes. The results from this analysis are presented in the next section along with the findings based on analysing characteristics within each of the three dimensions.

## **4. Results and analysis**

### **4.1 The processes as sequences of events**

In this sub-section, the five processes are presented through the 27 learning events in Table 2. The table represents the first step in the analysis process; the results are presented in sub-section 4.2.

**Table 2:** Venture creation processes as a series of learning events.

	<b>Event 1</b>	<b>Event 2</b>	<b>Event 3</b>	<b>Event 4</b>	<b>Event 5</b>	<b>Event 6</b>
<b>StudentMatch</b>	Uncertainty about patents and shares. Advised to first develop concept. Team then conducted survey-based market research.	Identified the need for software developer. Attended social matchmaking event. Recruited three team members.	Coach stressed importance of market verification. Built prototype using off-the-shelf solutions.	Team performance deficits. Initiated social evenings with team. Founders shared issues with the team.	Team performance deficits (again). In-team discussions about the issue. Founders stressed the importance of progress.	-
<b>DilemmaShare</b>	Team struggled to program themselves. Own competence overrated. Recruited programmer through network.	Pre-set goals not achieved, leading to lack of motivation. Initiated social team activities on coach's advice.	External factor forced product changes. Entrepreneur had to accept delay and reschedule. Change in plans.	Team invited to pitch for a national politician. Asked coach about pitching experiences and prepared through simulation.	Invitation to collaborate with a large telecom actor. Prepared conceptual illustrations of the app for the telecom actor.	Team performance deficits. Effort to recruit additional team members failed. Project halted.
<b>PictureDraw</b>	Uncertainty about interest in potential app. Advised to conduct market survey. Survey conducted through social media. Started to build app.	Absence of clear product vision prior to presentation. Initiated workshop motivated by coach, but progress ceased.	Design student joined the team. Needed to redo the app. Initiated new workshop. Built first version of app with main functions.	Technical team members ceased to contribute or communicate with the team. Tried unsuccessfully to recruit programmers through networks.	-	-

<b>MultiGame</b>	Lack of experience in presenting for fundraising. Asked coach and networks. Collected presentation experiences.	Lack of knowledge about the development process. Participated in conference to seek recommendations on how to improve the process.	Technical design issues. No knowledge of possible solutions. Searched for start-ups that have resolved the same issues. Used network and discovered its value.	Technical challenges from lack of coordinated development. Conducted market research re. simplifying the game and received a positive response. Identified a need for more coordination.	Received soft funding. Invited to a conference and discovered by networking that the target user was other than expected. Focused efforts on target user via market research.	Uncertainty about how to approach angel investor competition. Founders involved entire team in discussions. Discovered how to conduct problem solving in the team.
<b>StockMaster</b>	Founders scammed by external consultant. Received help from a local lawyer. Read about similar cases. Decided to recruit core competencies to the team.	Identified need for someone to take charge of technical development. Used student network to find relevant groups of software developers.	Lack of experience in attracting investors. Used existing networks to contact industry experts. Brought experts on board, resulting in more structure.	Needed money to pay salaries during summer. Received poor offer from incubator. Sharing re. unattractive offer established contact with other investors. Closed satisfying deal with investor.	Discovered legal challenges close to the planned launch date. Found a solution with support of interest organisation. Identified need to increase size of next investment round.	Investor was expected to professionalise and progress the business. Commenced process of recruiting experienced co-founder. Recruitment process failed. Project was halted.

## 4.2 Analysis and discussion of process characteristics

All five processes involved several characteristics from the conceptual frame of reference in Table 1. None of the three dimensions (activity, multiple actors, context-dependence) appeared to be over-represented in any of the processes; this section concerns the analysis of characteristics along each dimension. The essential findings are presented in Table 3 below.

### 4.2.1 Dimension: Activity

Recalling Table 1, the activity dimension includes the following four process characteristics: action-oriented, experimental–experiential, creative and reflective. In StudentMatch and StockMaster, the action-orientation in the processes was about building (e.g. prototypes) and being proactive in recruitment and market research. For example, StockMaster often recruited and involved external experts to help solve challenges. In contrast, DilemmaShare and MultiGame were more characterised by being experimental and experiential than the previous two ventures; they experimented with

potential users and entrepreneurs in their networks through market studies and actions to improve teamwork. The experimental–experiential processes are more iterative in nature, testing assumptions in the environment by, for example, presenting a draft product. The action-oriented processes represent bigger steps for the ventures, such as involving new actors or building a full version of the product. PictureDraw was characterised by a combination of action-oriented and experimental–experiential characteristics; it combined prototype building with several low-effort market surveys.

Although combined as one characteristic in the conceptual frame of reference, the empirical data illustrate how experimental action and experiential learning do not always occur together in the processes. For example, MultiGame based their experiential learning process on a combination of experiments performed at conferences. While action-oriented and experimental–experiential characteristics are pronounced in the processes, the creative characteristic is less articulated, and where it is found, it always co-occurs with action-orientation: In this case, PictureDraw and StockMaster took creative actions to develop the ventures’ products. Thus, the findings suggest that the creative characteristic merges with the action-oriented characteristic. The reflective characteristic, which occurred in all the cases but StudentMatch, relates to how entrepreneurs reflect on past or current actions; this is line with Lindh and Thorgren (2016). The characteristic is distinct from – but interrelated with – action-orientation and experimentation. Action-orientation often reveals itself through some kind of experimentation: For several events, this resulted in reflections or ‘take-aways’ that influenced subsequent actions (i.e. experiential learning) (Rae, 2000; Politis, 2008).

#### 4.2.2 Dimension: Multiple actors

Recalling Table 1, the multiple actors dimension includes the following four process characteristics: interactive, networked, social and collective. With the exception of StockMaster, all the processes were characterised by collective action involving the entire team. In this sense, the processes were characterised by a collective approach, which tends to co-occur with the interactive characteristic, such as when the team of entrepreneurs in StudentMatch and MultiGame as a collective effort interacted with their coaches or potential users. These interactions also occur in teams’ use of networks for recruitment

or market research (e.g. StockMaster). The team might also interact with potential users and partners such as interest organisations (or, as in the case of StockMaster, a lawyer). Networks were central especially for MultiGame and StockMaster, as knowledge and expertise were almost purely extracted from networked relationships. Furthermore, networked and interactive actions are sometimes performed in social settings, such as when MultiGame's software developers attended social events to learn from others.

#### 4.2.3 Dimension: Context-dependent

Recalling Table 1, the context-dependent dimension includes the following three process characteristics: contextual, dynamic and adaptive. In almost all instances, the five processes were characterised as contextual. Uncertainty or unexpected/unfavourable situations influenced the processes – as expected from prior knowledge. Prominent examples include issues of team performance and uncertainty about the way forward for product or firm development. While the importance of uncertainty and the situation is likely to occur, as the present paper uses critical events for the analysis of processes, the two should, based on the empirical findings, perhaps be highlighted more than just within the conceptual frame of reference in Table 1. The contextual character of the processes indicates that entrepreneurs often develop by being dynamic and flexible due to imposed contextual restrictions (e.g. StockMaster and its legal situation). Another example concerns how team recruitment and motivation proved difficult because of the dependence on students without salaries and the limited access to other resources, such as when StudentMatch built its first version of its app. To lessen these restrictions, the teams had to be flexible in their actions and adapt to the means available to them or to emerging opportunities. The teams also had to adapt to contextual factors through external inputs (e.g. market research) and impacts (e.g. regulations). The empirical data demonstrate how the dynamic and adaptive characteristics differ from each other, where, for example, DilemmaShare was flexible in its software development approach, and StockMaster had to adapt to a financial and legal situation. Moreover, the team was often flexible in their approach even when they had to adapt to specific influencing factors outside their immediate control. This suggests that dynamic and adaptive characteristics may merge into one characteristic.



**Table 3:** Representation of process characteristics as actions in the early-phase venture creation process.

<b>Dimension</b>	<b>Process Characteristic</b>	<b>Action in the Venture Creation Process</b>
<i>Activity</i>	Action-oriented	Taking bigger and more radical steps and decisions in the process: building and prototyping, being proactive in approaching external actors and resources and recruiting people to the venture. Includes creative actions (e.g. design workshops).
	Experimental–Experiential	Taking smaller and iterative steps in the process: testing market response to product ideas and prototypes and performing market surveys.
	Reflective	Interrelated with and builds upon action-oriented and experimental–experiential characteristics.
<i>Multiple Actors</i>	Interactive	Externals interacting in the process (e.g. users, coaches, partners). Actors taking a core part in the process.
	Networked	Interactions that are with actors and resources accessed through networks. Actors taking a more distanced role in the process.
	Social	Informal social interactions that may also be networked.
	Collective	The collective effort of the entrepreneurial team in the venture creation process.
<i>Context-Dependent</i>	Contextual	Uncertainty and unexpected situations in the process, to which the team may adapt.
	Dynamic–Adaptive	Flexibility in the process (e.g. based on available resources, emerging opportunities, inputs from network), which may involve adapting to external impacts (e.g. customer requirements and regulations/law).

### **5. Discussion**

Sections 4.2.1–4.2.3 highlighted how the characteristics along each dimension are manifested in real-life early-stage venture creation processes, with the essential findings presented in Table 3. While the interactions between characteristics within the three dimensions are described above (keeping in mind that there are also interactions between characteristics across the dimensions). For example, the collective team efforts and (social and networked) interactions are often action-oriented or experimental–experiential in the five processes. Furthermore, action and experimentation are part of the dynamic and adaptive process, and multiple actors are involved. In the empirical data,

each characteristic from one dimension interacts with characteristics from the other two dimensions. The dimensions may therefore be regarded as interdependent. The notion that EL is a complex and context-dependent process (cf. Toutain *et al.*, 2017) is supported by the number of interactions and interdependencies between characteristics identified in the present paper. While elements of these findings are also covered by previous research, the interactions and interdependencies between the activity, multiple actors and the context demonstrate how the elements of the process tie together as a whole.

The findings in this paper underpin the significant commonalities between EL and effectual processes and provide support for existing studies that argue for the relevance between EL and effectuation in different ways (e.g. Berends *et al.*, 2016; Vasconcelos Gomes *et al.*, 2018) as well as future studies in the field. The findings further support the notion that EL processes are dynamic and adaptive, extending beyond the individual (El-Awad *et al.*, 2017) and involving reflection together with action and experimentation (Hägg and Kurczewska, 2016). Regarding action in the process, the findings suggest differentiating between radical and more iterative actions in the process events to further understand the action through which learning occurs.

## **6. Conclusions and implications**

This paper explored how entrepreneurial learning may be understood as an effectual process in the early phase of venture creation. The findings suggest that EL may be understood as an effectual process by use of three dimensions; activity, multiple actors and context-dependent. Previous EL research had already established how activity is central to EL and emphasised that what constitutes the two dimensions of multiple actors and context-dependence is important. The present paper contributes to EL with an enhanced understanding of why and how the three dimensions are important as well as interdependent and mutually interactive. Understanding EL as an effectual process has provided insight into how entrepreneurs approach process events through collective actions, social and networked interactions as well as with dynamic and adaptive action depending on the context. The present paper also contributes to OL by extending the understanding of learning in the early phases of venture creation, where the separation between learning levels (cf. Morland *et al.*, 2019) is small and the organisation is very

much dependent on externals for its development. By relating entrepreneurs' actions to process characteristics, the present paper provides insight into practices and mechanisms involved in the learning process in organisations, as requested by recent contributions to the field (Kunttu and Neuvo, 2019).

The present paper argues for further cross-fertilisation of EL and effectuation research and showcases how studies of EL may contribute to OL in entrepreneurial ventures. Specifically, the conceptualisation of characteristics and dimensions aims to facilitate analysis of future process studies by suggesting a framework for analysing process events and thus handle the extensive amount of information available from longitudinal studies. As the empirical study presented here is based on early-phase new-venture teams, the conceptualisation is relevant to early-phase team-learning processes. Regarding limitations, the empirical data build on a limited set of venture creation processes within the same environment. It is probable that the processes studied would be different from venture creation processes in another environment if they were compared. Thus, the findings could have been different if different events and entrepreneurial actions were emphasised. However, aiming to isolate surrounding factors is also a strength of the present paper. The contribution from highlighting multiple actors and context-dependence as important for EL processes would likely have been maintained even in a different environment. Nevertheless, further studies in other environments are highly encouraged.

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## **Research Paper IV:**

# **Learning from Venture Creation in Higher Education**

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# Learning from Venture Creation in Higher Education

## Introduction

This paper aims to enrich and further the understanding of learning through venture creation in higher education by using a novel qualitative method that provides rich empirical data to explore how the existence—or, more accurately, lack of existence—of a student-led venture may influence students' learning process in an entrepreneurship-education programme.

Scholars and practitioners have shifted toward more experiential and action-based entrepreneurship education, offering students the opportunity to experience entrepreneurship by being entrepreneurs, rather than just learning about the topic (Kassean et al., 2015; Neck and Corbett, 2018; Neck and Greene, 2011; Pittaway and Cope, 2007; Rasmussen and Sørheim, 2006). Prior research has identified numerous ways to design such entrepreneurship education (Aadland and Aaboen, 2018; Mwasalwiba, 2010), introducing real venture-creation activities as an approach to facilitate students' learning (Brentnall et al., 2018; Neck and Corbett, 2018; Rasmussen and Sørheim, 2006). In such cases, commonly referred to as 'action-based' entrepreneurship education, student ventures' existence throughout the education programme might be essential for students' learning.

However, while faculty may plan and execute an education programme, the entrepreneurial venture-creation process involves challenges, uncertainty and potential failure for reasons beyond faculty and students' control (Chang and Rieple, 2013; Corbett, 2007; McMullen and Shepherd, 2006; Reymen et al., 2015). Therefore, the process that a realistic venture-creation process follows likely lies beyond what a traditional programme's curriculum and educational design can otherwise predict or control (cf. Lockett et al., 2017; Matricano and Formica, 2017). As a result, using real ventures as an educational approach may lead to different learning experiences between students in the same cohort, as students are part of different venture-creation processes. To illustrate this challenge and this paper's research agenda, a feasible short story about two students is presented below:

*Linda and Ted enrol in an entrepreneurship-education programme. The two-year programme has followed recent developments and employs an action-based approach in which students start their own ventures during the programme (cf. Lackéus and Williams Middleton, 2015; Rasmussen and Sørheim, 2006). Linda and Ted each form a new-venture team to commercialise a business idea they believe in, a process supported by the programme's curriculum, which includes learning about different tools and methods. In addition, their curricular work is supported by their venturing activities as class discussions and course exams encourage students to use their own experience. Linda and Ted's stories are quite similar thus far. However, the two teams encounter different situations as they approach graduation. Linda's venture has reached the market through financial support from a local angel investor. Linda has learned many things in the programme that she will use in her career as an entrepreneur. Meanwhile, Ted and his team experienced serious financial issues. Although they designed equipment that pilot users praised, they have not been able to finance the production of their first batch of ski bags. With only seven months left in the programme, Ted does not see any opportunities to be able to work on his company full-time, and the team stops its venture-creation efforts. Therefore, he applies for and accepts a job as a business developer in a regional bank.*

In prior research on entrepreneurship education, Linda represents the common notion that students following an action-based approach learn through their own experience from venture creation, providing them with the mindset, skillset and practice that enable future venturing (Klapper et al., 2015; Neck and Corbett, 2018; Pittaway and Cope, 2007). Ted represents another path: Although he went through the exact same programme, he exited his venture, effectively removing the 'learning vehicle' from his education process (Lackéus and Williams Middleton, 2015). The venture is expected to provide additional value to the learning process (Pittaway et al., 2017), powerfully transforming students into entrepreneurs (Lackéus and Williams Middleton, 2015). However, little is known about how students who choose to abandon venture creation during an action-based entrepreneurship-education programme perceive their learning process. Therefore, this paper's purpose is to investigate differences in students' learning process in an action-

based entrepreneurship-education programme with a holistic view, thereby distinguishing students who pursue venturing throughout their education – like Linda – and those who do not – like Ted.

The research design applied to address this purpose started with an inductive investigation providing a holistic view of students' perceptions of their entrepreneurship education. The empirical approach – introduced in the methods section – provides extraordinarily rich data. Since the research focus is students' *learning* process in *entrepreneurship* education, a theoretical frame of reference is developed on which to focus the analysis and interpretation of the empirical data. The theoretical frame of reference is introduced in the next section and builds on previous research on entrepreneurial learning.

### **Students' Learning in Action-Based Entrepreneurship Education**

Learning through entrepreneurial action is at the core of action-based entrepreneurship education, and previous research on action-based entrepreneurship education largely has built on Kolb's (1984) model of experiential learning to conceptualise students' learning from action (Hägg and Kurczewska, 2016; Pittaway et al., 2017). Moreover, scholars have adopted Kolb's model to understand what is referred to as *entrepreneurial learning* and how it occurs through new-venture creation in entrepreneurship education (Cooper et al., 2004; Rae, 2013; Williams Middleton and Donnellon, 2014).

### **Entrepreneurial Learning Through New-Venture Creation**

Entrepreneurial learning assumes that learning entrepreneurship occurs through action, experience and reflection in new ventures (Cope and Watts, 2000; Deakins and Freel, 1998; Pittaway et al., 2017; Wang and Chugh, 2014). Pittaway and Cope (2007: 212) define *entrepreneurial learning* as 'learning that occurs during the new-venture creation process', which often is conceptualised as a series of *events* that each facilitate experiential learning (Cope, 2003; Heinrichs, 2016; Johannisson et al., 1998). Combined, all events in the new-venture creation process – and, thus, the entrepreneurial learning process – develop the entrepreneur's 'stock of knowledge' (Politis, 2005; Reuber and Fischer, 1999). In addition to suggesting how students in action-based entrepreneurship education learn experientially through new-venture creation events, extant literature on

entrepreneurial learning also informs on what is actually learned, such as how to identify and act on *opportunities* (Corbett, 2005), as well as how to handle the inherent *uncertainty* in the new-venture creation process (Politis, 2005). Also, entrepreneurial learning is about *identity* development (Fletcher and Watson, 2007), as well as continuously developing one's 'stock of knowledge' to be applied in further situations (Politis, 2005). Along these lines, Cope (2005) emphasises that entrepreneurial learning is also about learning to adapt to all kinds of situations, including how to learn from different events. Therefore, in this view, the way that an individual learns is not static, but develops based on prior experiences.

In other words, extant literature on entrepreneurial learning suggests that a lack of a venture in action-based entrepreneurship education may impede students' learning and that the impeded learning may be – among other things – about opportunities, uncertainty and identity development. For example, if a student – such as Ted in the introductory story – no longer has a new venture, there will be no more events to facilitate learning from the venture. A consequence of this is a significant difference in how learning occurs and what learning entails between individuals involved in new-venture creation and those who are not. However, it also should be noted that while extant literature on entrepreneurial learning suggests that students who cease working on their new ventures may lose some learning aspects, the events that caused their exit or the failure of a new venture may lead to learning processes that continuing student entrepreneurs will not (yet) experience (Cope, 2011; Pittaway et al., 2017).

### **Situated and Social Entrepreneurial Learning**

Although research on entrepreneurial learning often mainly considers the individual learner (Pittaway et al., 2017), entrepreneurial learning through new-venture creation is not a purely individual process, and researchers have emphasised its social and collective aspects (Lockett et al., 2017; Pittaway and Cope, 2007; Pittaway and Thorpe, 2012; Wang and Chugh, 2014). Taylor and Thorpe (2004) complement Kolb's (1984) model of experiential learning by suggesting that relations between individuals also are important to entrepreneurial learning. Karataş-Özkan (2011) further argues that while entrepreneurial learning may be considered at the micro-level (individuals), it also may

be considered at the meso-level, which involves what is referred to as ‘venturing communities’, comprising teams or networks of individuals participating in new-venture creation. This means, for example, that learning about opportunities is a social effort involving several interacting individuals (Corbett, 2005). Also, Harrison and Leitch (2005) emphasise that learning should not be separated from its context since entrepreneurial learning depends on the given situation in addition to specific actions that entrepreneur(s) take.

The concept of *communities of practice* (Lave and Wenger, 1991) is a perspective on how interactive and contextual factors play a role in learning, encompassing both situated and social aspects of learning (Mercieca, 2017) and providing a perspective to complement the commonly action-oriented individual-centred perspective on entrepreneurial learning (Pittaway and Cope, 2007). Essentially, learning in a community of practice means that individuals approaching such a community begin on the ‘periphery’, where they observe the action and get acquainted with the practice at the ‘centre’ of the community before gradually becoming part of the activity at the centre themselves (Handley et al., 2006). Thus, the concept of communities of practice means, in the context of entrepreneurial learning, that not only individuals’ cognition, but also relations and interactions between individuals, shape learning and are dependent on the context within which learning occurs.

Extant literature on entrepreneurial learning has – at least conceptually (Pittaway et al., 2017) – recognised the situated and social nature of learning from new-venture creation. The inclusion of situated-learning theory and the concept of communities of practice inform about the importance of relations and interactions between individuals, e.g., within a venturing community, as well as the socio-cultural milieu around this community (Karataş-Özkan, 2011). For the present paper’s purposes, this implies that students in action-based entrepreneurship education also interact with each other and learn from and with each other when they are part of a venturing community involved in new-venture creation. In addition, the emphasis on context fits well with previous contributions regarding action-based entrepreneurship education that have stressed that it is highly context-dependent (Blenker et al., 2012; Lackéus and Williams Middleton, 2015;



Rasmussen and Sørheim, 2006). However, extant literature on entrepreneurial learning does not provide sufficient insight into how context may play a role in students' learning regarding the present paper's purpose. Thus, what remains to be known is what happens to individuals who, at some point, are no longer involved in venturing activities – a central activity in a 'venturing community'. To sum up, previous research suggests that students' learning in action-based entrepreneurship education depends not only on students' own involvement in new-venture creation, but also on their peers' activities in new-venture creation, as well as other possible factors in social relations, interactions and contexts within which they operate.

### **Frame of Reference**

Based on the insight from extant research on entrepreneurial learning, as well as related concepts – such as experiential learning, situated learning and communities of practice – some points to guide the empirical investigation can be summarised as follows:

- New-venture creation provides an arena for action, experience and reflection through learning events. While absence of a venture is expected to impede learning, other learning events may also emerge from exiting new-venture creation.
- Students' learning through new-venture creation may include learning to identify and act on opportunities, handle uncertainty and develop an entrepreneurial identity.
- Entrepreneurial learning occurs at the individual level, as well as in relations, interactions and networks involving several individuals.
- Individuals involved in new-venture creation may be part of a 'venturing community', and participation in such a community of (entrepreneurial) practice is expected to influence students' learning.

### **Method**

Given the lack of prior research addressing the present paper's objective, the authors found it appropriate to apply an exploratory, inductive and metaphor-based research design. This enables an inclusive and holistic understanding of a new venture's influence on the entire learning process, which may involve many different aspects of the student's life. Furthermore, the theoretical frame of reference is applied to understand and discuss the inductive investigation's results.

To explore and understand students' interest, perceived learning process and possible outcomes from their entrepreneurship education, the Zaltman metaphor elicitation technique (ZMET) was applied (Zaltman and Coulter, 1995). At its core, ZMET is about eliciting and characterising individuals' mental models, with an emphasis on using metaphors to explain interviewees' unconscious processes (Christensen and Olson, 2002). Zaltman and Coulter (1995: 40) describe ZMET as being useful for 'understanding consumers' images of brands, products and companies, brand equity, product concepts and designs, product usage and purchase, experiences, life experiences, consumption context and attitude towards business'. In previous research, ZMET has been adopted in research on services (Lee et al., 2003), tourism (Khoo-Lattimore and Prideaux, 2013) and products (Van Kleef et al., 2005), in which interviewees are asked about their experiences or views about a product, service or brand. The method itself is said to be especially powerful when investigating issues that have not been examined thoroughly (Catchings-Castello, 2000), and as such, investigating a venture's effect in an entrepreneurship-education context could boost the method's reputation. Other methods, such as structured interviews, also could be applied, albeit with the possibility of a reduction in the 'richness of the responses' (Calder and Aitken, 2008). ZMET also has been applied to university students in other contexts to gain an in-depth understanding of students' views on their education (e.g., Voss et al., 2007), as well as in research exploring doctoral students' views on their research training and research culture (Piercy et al., 2005). Thus, as our research is an explorative study on students' experiences with their education, this method is fitting as a study design.

### **The Zaltman Metaphor Elicitation Technique**

Zaltman and Coulter (1995) present a detailed description of the ZMET method, which comprises seven distinct and consecutive parts that end in an overview of the interviewees' mental models or mental maps. The method uses individuals' mental maps to create a consensus map from several participants, and in the following paragraphs, the different methodical steps to reach these maps are explained. However, in the present study, parts six and seven of the ZMET method were excluded. The sixth part explores how many individual participants are needed to reach the same constructs in the map, thereby investigating the consensus among participants. This part was excluded because

Zaltman and Coulter (1995) illustrate, through their work, the number of interviews needed to reach consensus across the relationships of different mental maps and included constructs. The final step visualises the findings with participants to illustrate the different connections and the most important relations and end values. This part of the method is optional and is conducted to illustrate a relationship between different images to be utilised in advertising.

### **Selection of Research Context**

The specific action-based entrepreneurship-education programme selected for this paper is a venture-creation programme (VCP), a type of action-based entrepreneurship-education programme that aims to bridge university student entrepreneurship education and the commercialisation of technology (Lackéus et al., 2016; Lackeus and Williams Middleton, 2015). In particular, Lackéus and Williams Middleton (2015) define VCPs as programmes that use a new venture as a vessel for learning, thereby arming students with the tools and skills needed for the new-venture creation process, such as resources and networks. It can be argued that student ventures are particularly integrated and instrumental to such programmes' course curricula. Thus, with VCPs, entrepreneurship is used as a method for learning (Neck and Greene, 2011; Rasmussen and Sørheim, 2006), and students have the opportunity, and are encouraged, to continue working on their new ventures after graduation (Lackeus and Williams Middleton, 2015).

### **Definition of Interviewee Groups and Selection of Interviewees**

Students in their final semester of a two-year VCP in Scandinavia were recruited for the study. The programme is a full master's degree, and about half the students continue working with their new ventures after graduation. Each class comprises approximately thirty-five students, and both years of the programme share the same new-venture incubation space, which is exclusively for VCP students. At the time of the interviews for this study, students had five months left in the programme.

Previous research has shown that many graduates—and in some studies, most graduates—of entrepreneurship education pursue career paths other than new-venture creation, involving, for example, corporate entrepreneurship and intrapreneurship

(Åstebro et al., 2012; Dahlstrand and Berggren, 2010). To separate students who pursue venturing throughout the programme from those who do not, the authors differentiate between the groups by clarifying that those pursuing venturing plan to continue to do so post-graduation and that the other group has chosen to pursue other options. This avoids possible limitations regarding students who may exit one venture, but later start another during the programme or at the time of graduation. In this paper, the authors ask what an action-based entrepreneurship-education programme means, in terms of thoughts and feelings, for two groups of students as defined below:

*Established-company group:*

- Students who have terminated their ventures midway through the programme, i.e., about one year before graduation.
- They have also accepted a job offer to work at an established company after graduation.
- They have also not had any engagement in a new venture since terminating theirs, nor have they started a second venture after their first try.

*New-venture group:*

- Students who are working on their new ventures.
- They are also planning to continue with their ventures after graduation.

To ensure further that no differences existed between students in the two groups regarding their motivations to enter the programme, the students' admissions applications were read. The authors used faculty and peers to identify students who fulfilled the criteria for the two groups, and the selected participants did not know why they were included other than for 'investigating students' view on the programme'. Therefore, the communicated research topic was the programme itself, rather than this paper's objective. Among the students in the cohort, six fulfilled the criteria for the established-company group and six fulfilled the criteria for the new-venture group. Although this sample of twelve students is somewhat smaller than presented by Zaltman and Coulter (1995), they also illustrate that the method can reach a consensus with an average of six participants. In addition, previous researchers using the method also have limited their samples to more appropriate numbers given their selection criteria (e.g., Lee et al., 2003). Among the students in the

new-venture group, four were working on their first venture, while two had started a second venture. All the students' ventures comprised more than one individual, and two or more of the individuals working in each venture were students at the time of the interviews. Three of the students with new ventures worked in the same venture. All participants were between 24 and 27 years old at the time of the interviews, and of the twelve, five were female and seven were male.

### **Data Collection Process**

Seven days before the interviews, the selected students were asked to choose five pictures that represented their thoughts and feelings about their entrepreneurship-education programme. The use of images is a tool to explore important metaphors about study participants' education and, through them, help interviewees reach deep and rich insights in the interview context (Zaltman and Coulter, 1995). The students could use the pictures to explain one or more important constructs, revealing their mental models (Christensen and Olson, 2002).

The interviews were performed one-on-one with one of the authors and a student, lasted from one- to two-and-a-half hours each and were audio-recorded. The interviewees first were asked to share their thoughts and feelings about their entrepreneurship education and, thus, had the opportunity to speak openly about their education, which is the first step in the ZMET interview process (Zaltman and Coulter, 1995). The students then were asked to present the different pictures that they had brought. Under these two steps, the interviewers noted the constructs that the interviewees presented and, during the next step, the interviewers elicited the different constructs by digging deeper into means-end relationships with the interviewees. This 'laddering technique' has a 'goal of determining sets of linkages between the key perceptual elements across the range of attributes (A), consequences (C) and values (V)' (Reynolds and Gutman, 1988: 12). The technique uses questions such as, 'Is that important to you?' and 'Why is that important to you?' to understand and explore new constructs that are important to the interviewees. At the end of the interviews, the interviewees were asked to position the images in groups to identify whether any overarching metaphors existed in the images about the VCP. Some of the

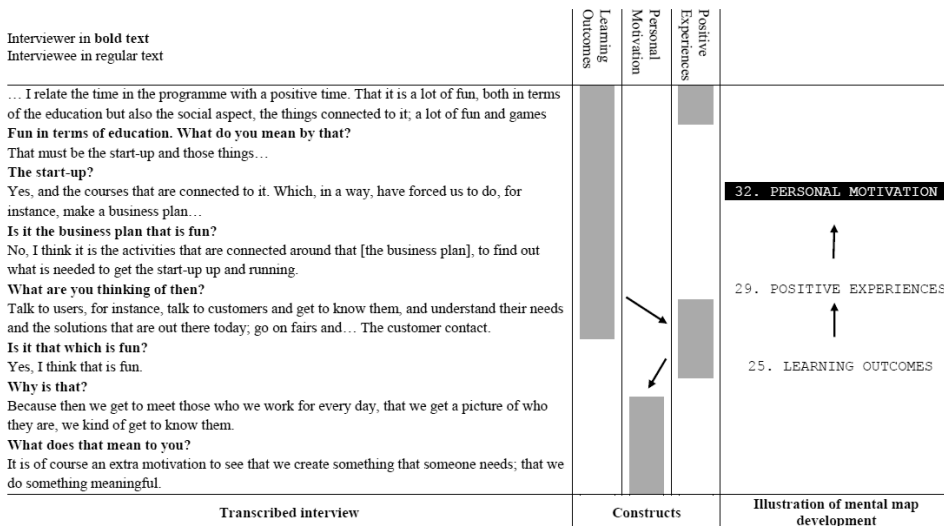
students also talked about what their education was not, or were asked to reflect on what their education was not.

### **Data Analysis Process**

The audio files for the twelve interviews resulted in 228 pages of transcribed data. The transcribed interviews were imported into NVivo 11 software, in which the data were coded using a grounded-theory approach (Corbin and Strauss, 1990). Both authors performed the coding together, thereby agreeing on the different terms and definitions. The coding process consisted of first identifying subcategories in the transcripts through open coding, then the different subcategories were combined into overarching categories through axial coding. The latter procedure focussed on the relationships in the initial categories, combining categories based on similarities in conditions, context, strategies and consequences (Corbin and Strauss, 1990). For example, the category ‘Teamwork’ emerged from combining the subcategories ‘Ambition in the Team’, ‘Demanding Team Situation’, ‘Team as Safety Net’, ‘Teamwork’ and ‘Team Composition in the Education’. The open coding resulted in 294 individual subcategories, and the axial coding resulted in seventy-three categories representing the key constructs among the 294 subcategories.

After identifying the key constructs, the interview transcripts were reread, and the authors then identified relations between the different constructs or ‘paired-construct relationships’. Here, a *paired-construct relationship* is defined as ‘the casual relationship between two constructs’ (Zaltman and Coulter, 1995: 44). This process focussed on identifying which constructs led to or influenced other constructs in what is referred to as the ‘means-end technique’. The means-end theory describes how means are used to reach end-values, or terminal values, among a group of people, and these values are assumed to be created by a person’s environment and through one’s personal beliefs (Gutman, 1982). Thus, the values – or constructs, as Zaltman and Coulter (1995) label them – are organised in a hierarchical order, in which originator constructs influence and lead to connector constructs, *means* and, ultimately, destination constructs, or *ends*. Originator constructs do not lead from other constructs, and destination constructs do not lead to any other constructs. An example of how the coding was conducted is presented in Figure 1 below, in which a student talks about his or her learning outcomes, experiences and

personal motivations. The figure illustrates the student presenting how different ‘learning outcomes’ lead to ‘positive experiences’ (both connector constructs), which again influence his or her ‘personal motivation’ (a destination construct). The far-right column in the figure shows how these paired-construct relationships are represented in the results, and the arrows indicate the ‘paired-construct relationship’, i.e., how two connection constructs lead to the destination construct.



**Figure 1:** Coding example and paired-construct relationship.

When all the means-end relationships were identified, consensus maps for each of the two groups of students were constructed. Zaltman and Coulter (1995) stress that two criteria are used to include different constructs in consensus maps: 1) a certain number of participants must talk about the different constructs, and 2) a certain number of participants connect two constructs together. When building the map, a cut-off level for the constructs to be included was set. This cut-off level needs to be set carefully: If it is too high, the consensus map is reduced to an uninterestingly low number of constructs and connections, while not setting a cut-off level will include all constructs, which might make the consensus map too complex and confusing. Christensen and Olson (2002) recommend that between one-third to a quarter of the number of participants be used as a cut-off level. Thus, in the present study, one-third of the participants was set as the cut-off level, resulting in the requirement that two or more students must have talked about

constructs and paired the same constructs before these were included in the map. A customised computer-based model then was used to calculate which constructs should be included in the model, and from this, consensus maps were created. Through this process, the number of constructs was reduced from seventy-three to twenty-five for the established-company students and to thirty-two for the new-venture students. Tables 1 and 2 illustrate the different frequency of connections between the constructs, in which row elements lead toward column elements. For example, the construct 'PERSONAL DEVELOPMENT' (construct 18) leads to the constructs 'CREATING OPPORTUNITIES', 'FUTURE VISIONS' and 'PERSONAL MOTIVATION' (constructs 17, 21 and 25, respectively) in Table 1. The numbers in the tables represent how many individuals mentioned that specific connection. The tables also identify originator constructs and destination constructs or end-values.

The consensus maps for the two student groups were built based on Tables 1 and 2. When creating the maps, the originator constructs were organised at the bottom of the map, and the destination constructs were placed at the top. The different constructs also were organised hierarchically in the map. In this way, the consensus maps were created so that the constructs lead to the top, and the relationships mostly influence or lead to the constructs above (illustrated with arrows on the maps). In addition, redundant relations were removed; these are direct relationships between two constructs that also are connected through a third construct (for indirect and direct connections, see Reynolds and Gutman, 1988). Finally, the map was organised so that different 'ladders' were placed in lines vertically. In addition, in some cases, some of the constructs are closely interconnected and, in turn, lead to each other. These are labelled 'dyads', and a construct dyad is illustrated in the maps when direct connections exist between two constructs going in both directions. Moreover, when examining the consensus map, an interesting feature is that not all connectors follow the ladders up (solid arrows) toward the destination constructs. Some connectors (dashed arrows) lead back to connector constructs lower in the map, and these connectors often create 'loops' in the consensus maps. A dyad could be regarded as a loop between only two constructs, so the loops elaborated here comprise at least three connector constructs.



**Table 1:** Connection frequency between the constructs for the established-company group.

	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
1 THE STUDENTS		2			1	3		1	1															1
2 UNCERTAINTY													2											2
3 EXPECTATIONS AMONG STUDENTS			2	1		1	1	2			1	1	1						1		1	1	3	
4 CULTURE														1										4
5 CULTURE FOR SHARING					1		1	1								1								5
6 CARING AND SUPPORTING MILIEU		1		2									1		1	2	1					1	6	
7 CHALLENGES													2	2		4	2		1	1	2		2	7
8 SOCIAL MILIEU		1					1	1	1	1		1	1			2	1						1	8
9 EXPECTATIONS TO WORK IN A NEW VENTURE										1			1		1					1				9
10 SHARED MENTALITY										1	1						2	2						10
11 TEAMWORK											1	3			1	1								11
12 NETWORK															2			1						12
13 IMMERSIVE EXPERIENCE																1	1			2				13
14 MAKING CHOICES														2	1				1					14
15 LEARNING APPROACH														5	3		1	1					1	15
16 LEARNING OUTCOMES															2	3	1	2				2		16
17 CREATING OPPORTUNITIES						1						1			1	1		1						17
18 PERSONAL DEVELOPMENT															1			2				2		18
19 COMMUNITY																			1					19
20 POSITIVE EXPERIENCES																			1					20
21 FUTURE VISIONS																				1				21
22 DEMANDING PROGRAMME																								22
23 CULTURE FOR PRIORITISATION																								23
24 DARING TO ACT																								24
25 PERSONAL MOTIVATION																								25

**Table 2:** Connection frequency between the constructs for the new-venture group.

	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	
1 THE STUDENTS		4		1							1	1	1	1		1	3	5	1						2	1	1	
2 IMMERSIVE EXPERIENCE		1	1	2																				1			2	
3 PHYSICAL SPACE		2	1														1							1			3	
4 NETWORK					1						2									1	1	1					4	
5 DESIRE TO CONTRIBUTE											3																5	
6 PERSONAL NEEDS			1	1											1	1		1	2								6	
7 SOCIAL MILIEU		1			1	1										3	1	1	1	1	1	1	1	1	1	1	7	
8 WORK-LIFE BALANCE																	2					1					8	
9 EXPECTATIONS AMONG STUDENTS					1											2											9	
10 CARING AND SUPPORTING MILIEU										2	1					1	3	1							2		10	
11 EXPECTATIONS TO WORK IN A NEW VENTURE						2							1		1	1	1	1	1	1	1	1	1	1	1	1	11	
12 NEW VENTURE CREATION							1								2				1	1	1						12	
13 UNCERTAINTY								2	1				1		1	1	1	1									13	
14 CHALLENGES												1								2			1	1	1	1	14	
15 TEAM SPIRIT											1	1					1										15	
16 CULTURE FOR SHARING			1							1					2		2	1					1	1			16	
17 CREATING OPPORTUNITIES							1	1						1	1	3	1		1	2	1	2	1	2	1	2	1	17
18 TEAMWORK																						2						18
19 SHARED MENTALITY																				1				1	1			19
20 LEARNING APPROACH																					2	2			1	1	1	20
21 CULTURE FOR PRIORITISATION																					1	2		1				21
22 CHOOSING AND PURSUING OPPORTUNITIES			1																		2	1	2	1	1			22
23 SPLIT COMMUNITY				1																				1				23
24 COMMUNITY																									1			24
25 LEARNING OUTCOMES												1													1			25
26 PERSONAL DEVELOPMENT																							1	1	1	1		26
27 FUTURE CAREER																								1				27
28 FUTURE VISIONS																								1		1	2	28
29 POSITIVE EXPERIENCES																										1	2	29
30 INSPIRATION																										1		30
31 INCENTIVE TO BE PRESENT																												31
32 PERSONAL MOTIVATION																												32

## ***Findings***

The method led to a consensus map (Figures 2 and 4 below) for each group. As mentioned, the maps represent ‘ladders’, in which the originator constructs lead toward

the destination constructs. In the following section, each of the consensus maps for the two student groups is explored in detail to provide insight into the learning processes.

### Findings for the Established-Company Group

The consensus map for the established-company group reveals twenty-five constructs, including two originator constructs and two destination constructs. Originator constructs are ‘THE STUDENTS’, which include students’ characteristics and skills, and ‘UNCERTAINTY’, which includes working under uncertainty and finding solutions under uncertainty. The destination constructs are ‘DARING TO ACT’, including the courage to pursue opportunities and make untraditional choices, and ‘PERSONAL MOTIVATION’. In addition, some ‘incomplete destination constructs’ are at the top of the consensus map. These constructs are connected to other constructs that have been removed due to the cut-off set in the method, but are, as such, not destination constructs. The connecting constructs are referred to by their numbering, which is presented in Figures 2 and 4.

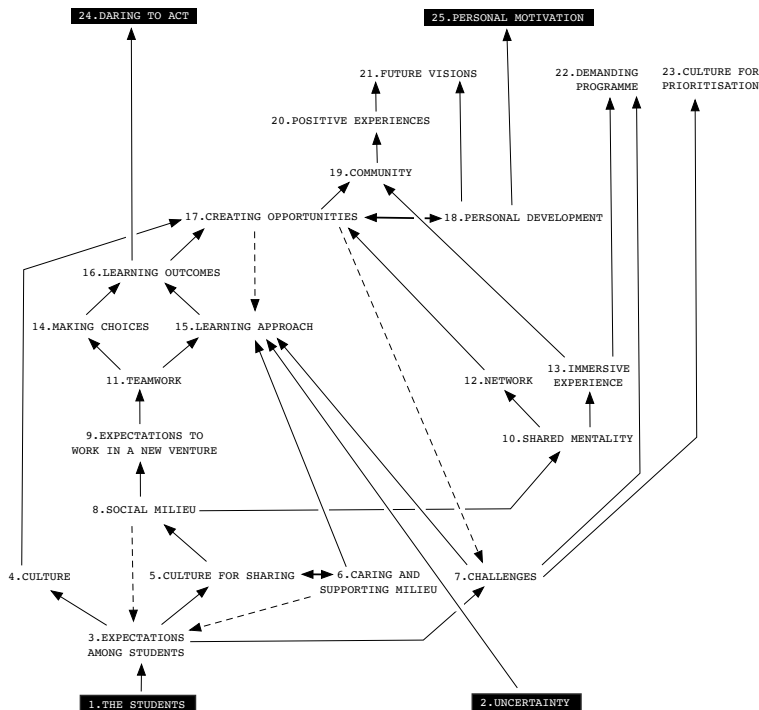


Figure 2: Consensus map for the established-company group.

### Dyads

The consensus map in Figure 2 reveals two construct dyads. The first dyad comprises 'CULTURE FOR SHARING' and 'CARING AND SUPPORTING MILIEU'. The sharing culture includes cooptation at pitch competitions and helping others with their challenging tasks, such as sharing templates for financial reporting. The caring and supporting milieu includes cheering on others' success and having empathy for others in challenging situations. A second dyad comprises 'CREATING OPPORTUNITIES' and 'PERSONAL DEVELOPMENT'. Creating opportunities is about the opportunities that the programme provides for starting ventures, travelling and engaging in activities. Personal development is about students becoming more comfortable, socially proactive and self-conscious.

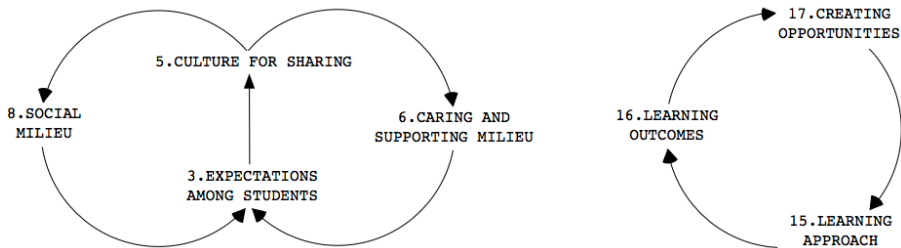
### Ladders

The twenty-one connector constructs' structure reveals four ladders leading from the originator constructs to the destination constructs. The first, and possibly most pronounced, ladder leads from 'THE STUDENTS' to 'DARING TO ACT', including constructs 3, 5, 8, 9, 11, 14, 15 and 16. Generally, this ladder illustrates how students build expectations for each other that drive learning through a social milieu and a sharing culture. In turn, the outcomes from this learning lead to increased courage. A second ladder leads from both 'THE STUDENTS' and 'UNCERTAINTY' to 'LEARNING APPROACH' and includes constructs 3, 5, 6 and 7. This ladder illustrates how students' expectations, on one hand, and uncertainty, on the other, underpin the learning approach. In this ladder, student expectations lead to caretaking, sharing and support, but they also introduce challenges. A third ladder leads from 'SOCIAL MILIEU' to 'COMMUNITY' and includes constructs 10, 12, 13 and 17. This third ladder illustrates how the VCP students' social milieu, by leading to a shared mentality, provides opportunities for new-venture creation, travelling and engaging in activities. Finally, the fourth ladder starts with 'LEARNING OUTCOMES' and leads to 'PERSONAL MOTIVATION' and 'FUTURE VISIONS', including constructs 17, 18, 19 and 20. This fourth ladder illustrates how students' learning outcomes lead to opportunities and personal development, which, in turn, provide personal motivation for the students. In addition, 'CREATING

OPPORTUNITIES’ and ‘PERSONAL DEVELOPMENT’ branch out, eventually leading to students contemplating their future careers and lives.

### Loops

For the established-company group, two loops were identified (Figure 3). The first loop is about culture and milieu. This loop connects the expectations among students and culture for sharing through two sub-loops that include the social milieu and the caring and supporting milieu. Generally, this loop describes how students’ expectations of each other lead to their culture, which again leads to both their social milieu and supportive milieu. ‘SOCIAL MILIEU’ concerns the students’ social engagement with each other and their social way of working, while the ‘CARING AND SUPPORTING MILIEU’ is more about how the students cheer each other’s successes and have empathy when dealing with challenging situations. Both lead back to the students’ expectations for each other. The second loop is about learning, and it connects ‘LEARNING APPROACH’, ‘LEARNING OUTCOMES’ and ‘CREATING OPPORTUNITIES’. The learning approach in the programme leads to learning outcomes, further creating opportunities for the students. In turn, these opportunities contribute to the learning approach in the VCP.

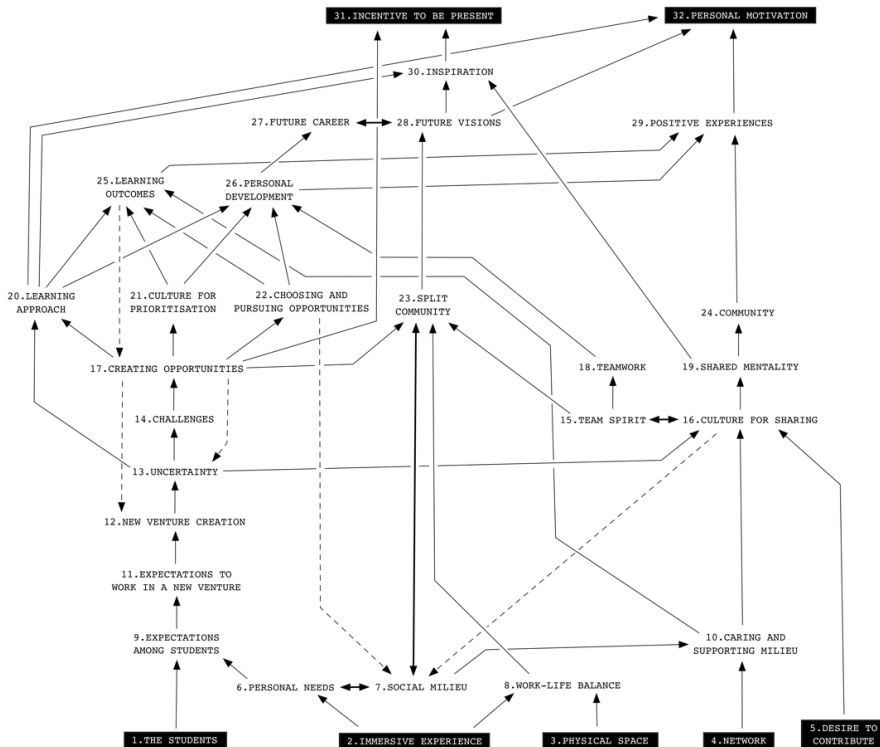


**Figure 3:** The two construct loops identified for the established-company group.

### **Findings for the New-Venture Group**

The consensus map for the new-venture group (Figure 4) reveals thirty-two constructs, including five originator constructs and two destination constructs. Only one originator construct and one destination construct coincide with the established-company group. Originator constructs for the new-venture group are ‘IMMERSIVE EXPERIENCE’, which focuses on how the programme influences all aspects of students’ lives;

‘PHYSICAL SPACE’, i.e., the programme’s physical premises; ‘NETWORK’, which is about the network’s relevance and value (e.g., alumni) that the programme offers; ‘DESIRE TO CONTRIBUTE’, which is about how students wish to contribute to others in the programme; and ‘THE STUDENTS’. Destination constructs are ‘INCENTIVE TO BE PRESENT’, which is about how the students feel at home in the programme and get motivation from this, and ‘PERSONAL MOTIVATION’.



**Figure 4:** Consensus map for the new-venture group.

### Dyads

The consensus map in the new-venture group reveals four construct dyads. The first comprises ‘PERSONAL NEEDS’ and ‘SOCIAL MILIEU’. The students’ personal needs, such as social needs and preferred working habits, are highly interconnected with the social milieu that the students are part of, including social engagement with each other and their social way of working. A second dyad pairs ‘SOCIAL MILIEU’ with ‘SPLIT

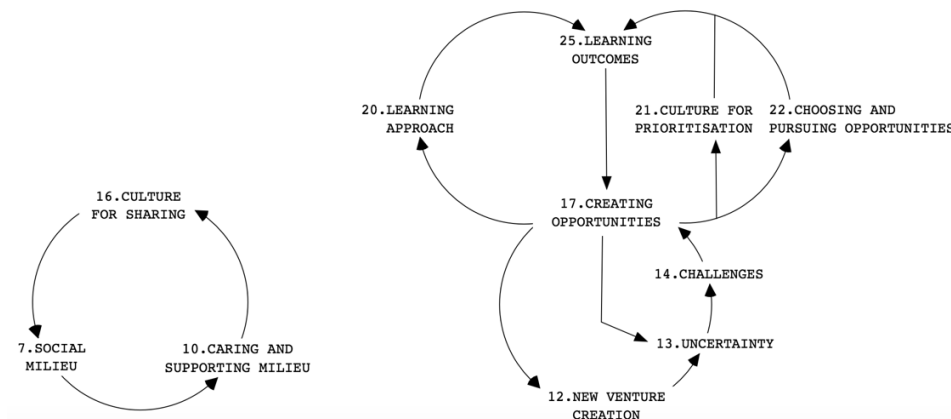
COMMUNITY'. Therefore, the social milieu is also highly interconnected because the community in which it exists is split between different groups of students. The third dyad includes 'TEAM SPIRIT' and 'CULTURE FOR SHARING'. Students' collective goals and responsibilities in their communities are highly interconnected with the sharing culture. The fourth dyad comprises the constructs 'FUTURE CAREER' and 'FUTURE VISION'. Although the two constructs are similar and may be connected naturally, they differ in that the future vision regards students' thoughts for their future lives beyond their professional careers.

### Ladders

The structure of the twenty-five connector constructs in Figure 4 reveals three ladders going from the originator constructs to the destination constructs. The first ladder leads from 'THE STUDENTS' to 'LEARNING OUTCOMES' and 'PERSONAL DEVELOPMENT', including constructs 9, 11, 12, 13, 14, 17, 20, 21 and 22. This ladder leads from the students, including their expectations of each other, toward working in a new venture and in new-venture creation, then further to challenges and uncertainty, which are part of the new-venture creation process. Furthermore, experiencing this process leads to learning approach, opportunities and the need for the students to prioritise. At the end of the ladder, the three constructs result in learning outcomes and personal development for the students. A second ladder leads from 'NETWORK' and 'DESIRE TO CONTRIBUTE' to 'PERSONAL MOTIVATION', including constructs 10, 16, 19, 24 and 29. Starting with the two originator constructs, this ladder leads through the caring and supporting milieu within the VCP, moving toward a sharing culture, and the community toward positive experiences and personal motivation. The third ladder does not resemble a straight ladder, but rather a tripod, starting with the constructs 'SHARED MENTALITY', 'LEARNING APPROACH' and 'SPLIT COMMUNITY'; this goes through students' thoughts about the future and their inspiration, leading to 'INCENTIVE TO BE PRESENT'. In other words, a broad range of constructs leads to one of the two originator constructs.

## Loops

For the new-venture group, two construct loops were identified by examining the consensus map (Figure 5). The first loop is about the culture and milieu and includes constructs 7, 10 and 16. This loop connects the students' social milieu with a caring and supporting milieu, which again supports a sharing culture in the VCP. In turn, this sharing culture further contributes to the social milieu. The second loop is built of three interconnected loops related to new-venture creation, opportunities and learning, and includes constructs 12, 13, 14, 17, 20, 21, 22 and 25. The lower sub-loop connects students' new-venture creation with uncertainty and challenges, leading to opportunities for the students. These opportunities, in turn, contribute to the students' new-venture creation efforts. The left sub-loop connects students' learning with the creation of opportunities. The right sub-loop connects students' prioritisation, choosing and pursuit of opportunities to learning outcomes. Overall, the three sub-loops together describe how new-venture creation, creation and selection of opportunities, and learning are interconnected for the new-venture group.



**Figure 5:** The two construct loops identified for the new-venture group.

## **Comparing the Two Groups' Consensus Maps**

Similarities and differences can be found in the two consensus maps, with some overlapping constructs and others exclusive to one group. The consensus map for the established-company group includes four exclusive constructs, of which one is a

destination construct, and three are about students being in challenging situations. 'DEMANDING PROGRAMME' shows that the VCP is time-consuming and requires sacrificing other aspects of life, 'MAKING CHOICES' is about students needing to make choices for their personal lives and for their new-venture project in the VCP and 'DARING TO ACT' concerns the courage to pursue opportunities and make 217on-traditional choices. The latter implies that the students do not feel comfortable pursuing opportunities and making 217on-traditional choices in the first place. For the new-venture group, exclusive constructs involve those specifically relevant to the new-venture creation process in the VCP, such as 'NEW-VENTURE CREATION', 'PHYSICAL SPACE' and 'TEAM SPIRIT'. In addition, other constructs exclusive to this group relate to personal preferences, such as 'PERSONAL NEEDS' and 'WORK-LIFE BALANCE', as well as constructs relating to the students' presence in the community, such as 'SPLIT COMMUNITY' and 'INCENTIVE TO BE PRESENT'.

### **Discussion**

As expected, the ZMET method provided very rich results. Consequently, the data offer insights on a broad spectrum of constructs and connections relevant to action-based entrepreneurship education. However, to be able to process the results, this section discusses them with guidance from the theoretical frame of reference to focus on the present paper's objective.

For both groups interviewed, students' learning and social milieu and culture are the most central aspects of the action-based entrepreneurship-education programme. These two themes generally are prominent in several dyads, ladders and loops found in the consensus maps, as well as through comparisons of the two groups. Referring to the frame of reference, this finding is in line with previous conceptions of the central position of learning from new-venture creation in action-based entrepreneurship education (Cooper et al., 2004; Rae, 2013; Williams Middleton and Donnellon, 2014), and this type of learning also is situated and social (Lockett et al., 2017; Pittaway and Cope, 2007). Common to both groups is also that learning outcomes and personal development are sources of personal motivation, making personal motivation via personal development

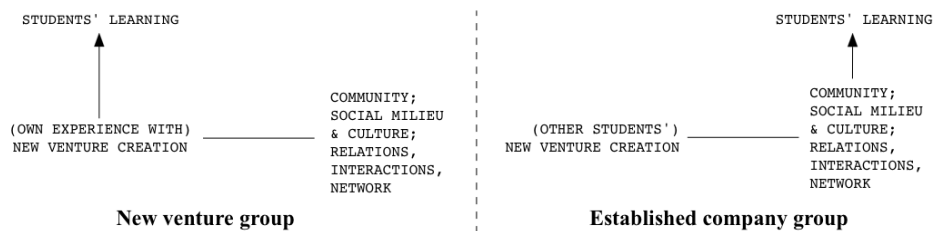


and learning stand out as a common value for students in the programme, regardless of whether they are working in a new venture. Thus, the results here support the idea that outcomes from entrepreneurship are broader than merely producing new ventures (Neck and Corbett, 2018) and also entail personal development. Moreover, for the group of students who accepted a job offer to work at an established company, the findings underpin this point, as these students focus on their future careers and lives, rather than immediate challenges and situations, which, in general, likely would be related to new-venture creation efforts. This is illustrated by the destination constructs (including the 'incomplete' destination constructs) from the two consensus maps, in which the established-company group focuses on more future-oriented constructs, while the new-venture group focuses on constructs that are of a more contemporary relevance. This further supports the methodological assumptions and selection criteria of the two groups of participants and, as such, the study's objective.

Comparing the two loops regarding learning (right sides of Figures 3 and 5), the new-venture group emphasises new-venture creation, as well as opportunities and uncertainty in how they perceive their learning process. This is very much in line with previous research on entrepreneurial learning (e.g., Cope, 2003; Corbett, 2005; Politis, 2005). Interestingly, the learning loop for the established-company group is far less sophisticated. New-venture creation and uncertainty are no longer present, hinting that the learning process is different for students who choose not to pursue venturing during their education. It is not surprising that the students in the established-company group focus less on new-venture creation when it comes to their learning process, and up to this point, the results are aligned with what research on entrepreneurial learning suggests regarding learning from new-venture creation events. However, while uncertainty is not present as a construct on the established-company group's learning loop, it is still not out of the equation altogether. In the consensus map in Figure 2, uncertainty is shown to lead to the programme's learning approach. Considering that a notion of opportunity creation is part of both groups' learning loops, central elements of entrepreneurial learning are, thus, present for both groups, however differently they are configured.

One example of the configuration difference is how the network that the programme offers (construct 12 in Figure 2) led to creation of opportunities for the established-company group, while the creation of opportunities for the new-venture group more expectedly build on new-venture creation and uncertainty. Thus, the available networks may provide opportunities in the absence of what a new venture can offer. As the network builds on social milieu and culture in the programme, the findings emphasise the relevance of relations, (social) interactions and networks for entrepreneurial learning in the case of the established-company group (Karataş-Özkan, 2011; Lockett et al., 2017; Taylor and Thorpe, 2004). The finding of opportunities for learning in the established-company group is also interesting, as the students obviously are attentive to opportunities, but not in the view of pursuing them in terms of new ventures. It is also interesting that these opportunities *are* necessary for personal development and further motivation. This could be a result of students' prior activity with opportunities in terms of new ventures, and that their 'stock of knowledge' and personal identity development have made them more observant, watching for opportunities to further their personal development. For example, this can be travelling abroad as part of a research-collaboration project to gather data for that research, while simultaneously experiencing the culture and being part of and working with a research team.

However, even clearer distinctions between the two groups are evident when comparing the construct of *ladders*, leading to the constructs that are part of the learning loops. Where the students' learning in the new-venture group again builds on new-venture creation, opportunities and uncertainty, students' learning in the established-company group is not only related to – but actually builds from – the social milieu and culture (e.g., constructs 5, 6 and 8 in Figure 2). While this supports the existing notion of situated and social entrepreneurial learning (Corbett, 2005; Pittaway et al., 2017), the findings extend common conceptions by showing that learning also *originates from* the social milieu and culture that define the environment – or rather context – in the action-based entrepreneurship-education programme. On one side, the established-company group learns from the context, which is facilitated by the new ventures, while the new-venture group learns from its venturing activities, which the context facilitates. These differences between the learning ladders are illustrated conceptually in Figure 6 below.



**Figure 6:** Conceptual illustration of differences in learning ladders between the new-venture group (left), which aligns with the frame of reference, and the established-company group.

Thus, the findings suggest that the social milieu and culture are not only relevant for – and contribute to – students’ learning, but also are a rather fundamental factor in students’ learning in the established-company group. For students who pursue venturing throughout the programme, social milieu and culture may be considered to be running alongside their learning process, while for the established-company group, social milieu and culture play an integrated role in students’ learning (illustrated by the first ladder in Figure 2). This suggests that the absence of a venture may either amplify the role of the social milieu and culture, or make the social milieu and culture more pronounced and perhaps important in the absence of a new venture. Constructs regarding social milieu and culture in the consensus maps broadly correspond to relationships, interactions and networks from the frame of reference. The frame of reference suggests the existence of a ‘venturing community’ (cf. Karataş-Özkan, 2011), in which students participate due to their new-venture creation, and findings support this assumption by showing that students’ expectations of each other are fundamental to their learning in both groups. Specifically, it is construct 3 in Figure 2 and construct 9 in Figure 4 that connect the characteristics of the students in the programme with students’ learning.

From the perspective of communities of practice (Lave and Wenger, 1991), the findings indicate that students in the established-company group are more peripheral than students in the new-venture group when discussing new-venture activities. Since Lave and Wenger (1991) suggest that individuals move closer to the centre of the community as they learn, it is perhaps more likely that the new-venture group has moved even further

toward the 'centre', leaving the established-company group behind, rather than students in the established-company group moving back to the periphery while lacking a new venture. Building on Pittaway and Cope's (2007) suggestion of using 'communities of practice' to understand the social aspects of action-based entrepreneurship education, this paper elaborates that learning in a community of (entrepreneurial) practice may be particularly impactful for students who are within a 'venturing community', but are not involved directly in entrepreneurial action themselves.

As illustrated in the established-company group's consensus map, and through the aforementioned ladder leading to personal motivation and future vision, the social milieu and network examples show how these could influence students through being peripheral in the 'venturing community'. In other words, findings from the present paper illustrate how the 'venturing community' in the programme may develop a larger role for students' learning when they exit their ventures during the programme. It is important to keep in mind that students in both groups have venture-creation experience from their programme, but the extent of their experience differs between the two groups, as indicated by the interviewee-selection criteria. Therefore, the findings generally suggest that the learning and venture-creation processes of others in the programme directly impact the learning process. This means that students' activities as a whole play an important role in the learning that the programme can offer. For action-based entrepreneurship-education programmes, this implies that in addition to experiential learning from new-venture creation, relations and interactions among students are very important for learning. Therefore, programme curricula and overall organisation should ensure that students interact on a regular basis, e.g., by being co-located and not distributed around the university.

### **Conclusions, Implications and Further Research**

The present paper is the first to pinpoint, specifically, the learning impact from venture creation in action-based entrepreneurship education in higher education by empirically studying students who did and did not pursue venturing throughout their education. While the learning by students who pursue venturing is in line with previous research, the present paper reveals how students who choose to exit their new ventures learn based on

their community of practice and how the social milieu and culture in that community impact their learning.

Students' learning and social milieu and culture are interlinked and configured differently for those who have terminated their ventures during the programme, compared with those still working on their ventures. This indicates that students without ventures shift their learning toward a model that builds on the community of practice within the entrepreneurship-education programme. Students without ventures in particular utilise the context to explore opportunities (not necessarily in terms of venturing ideas), which is a facilitator for their personal development and motivation in the programme. This might be a result of their prior work with opportunities in general and in new ventures, and as such, is imparted in their identity, building from their 'stock of knowledge'. Therefore, the existence of such a community enables a learning process with elements similar to those found in entrepreneurial learning for students without ventures. However, this learning is dependent on at least some students continuing to pursue venture creation in the programme, in addition to being in a strong community.

This means that students' learning in action-based entrepreneurship education should be understood as being influenced not only by students' own venturing, but also by other students' venturing activities. The present paper demonstrates empirically what previous conceptual contributions (Karataş-Özkan, 2011; Pittaway et al., 2017; Pittaway and Cope, 2007; Politis, 2005) have suggested: that researchers should view situated and social learning as an integral element in how students learn from venture creation. For practice, the present paper's findings imply that entrepreneurship-education programmes, in which students learn through venture creation, should be organised in a way that makes students establish relationships and interact with each other on a regular basis.

The research design applied in the present paper involved an inductive investigation that elicited students' thoughts and feelings about their entrepreneurship-education programme. Therefore, the results offered an understanding of students' learning process, as well as a broad spectrum of topics related to the programme. The analysis, guided by the frame of reference, showed that much of the insights gained could be understood

through common conceptions of entrepreneurial learning. However, interesting results emerged as the open and inductive approach in the research design enabled insight into the programme's social milieu and culture. This insight could have been impeded if a 'narrower' research focus had been applied in the empirical part of the study. Although the present paper examines only one specific education programme, it offers new understanding in terms of the learning impact from venture creation in higher education. The authors encourage similar studies of other programmes in other contexts.

Based on the importance of social milieu and culture in the learning process, the authors also suggest that future studies on action-based entrepreneurship education focus on these aspects to better understand the factors that influence students' learning beyond entrepreneurial action, experience and reflection. Furthermore, although the current paper provides insights into how the learning process may differ depending on the existence of a student venture, the question could be reversed, asking how the students and their choices may influence the programme itself.

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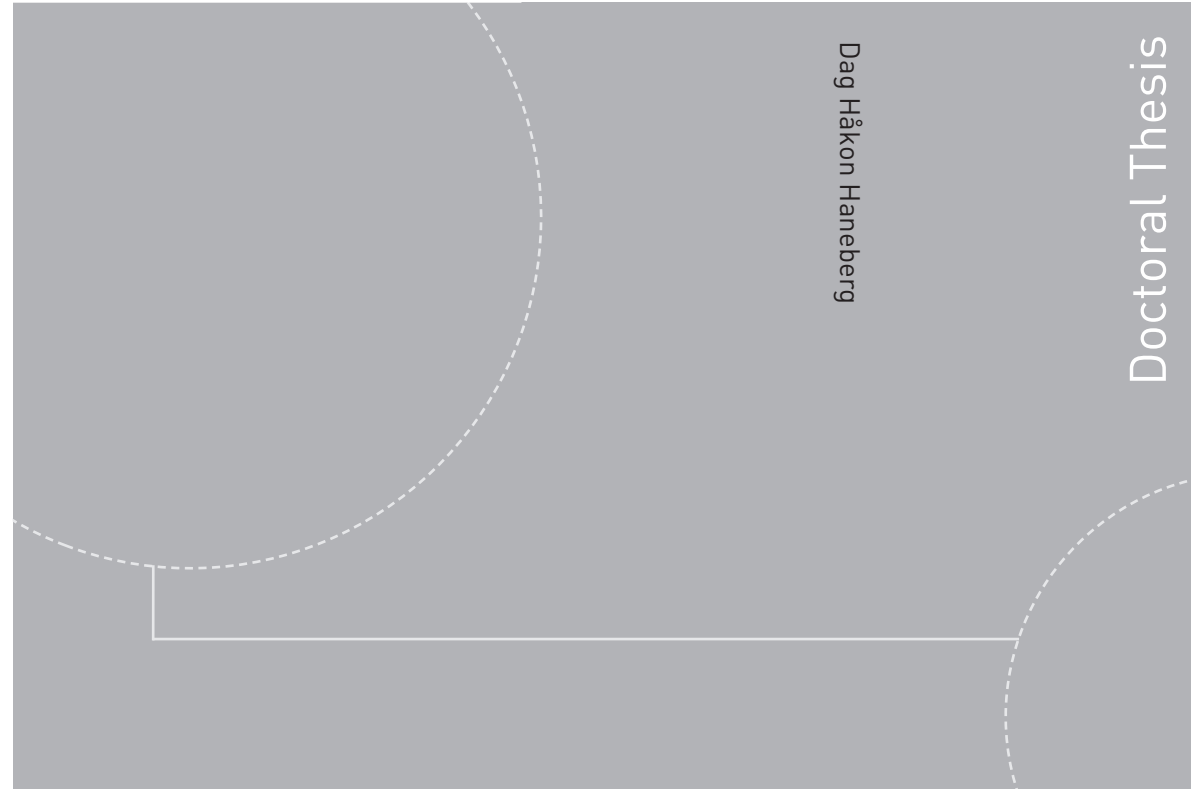


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