

NHH

Norwegian School of Economics

Bergen, Spring, 2018



Entrepreneurship Education Beyond University Campuses

*Examining the Results of an Independent Entrepreneurship
Education Programme – and Its Implications for How We
Educate the Future Entrepreneurs We Need*

Jacob Mørch

Supervisor: Tina Saebi, PhD

Master Thesis,

MSc in Economics and Business Administration, Marketing

NORWEGIAN SCHOOL OF ECONOMICS

This thesis was written as a part of the Master of Science in Economics and Business Administration at NHH. Please note that neither the institution nor the examiners are responsible – through the approval of this thesis – for the theories and methods used, or results and conclusions drawn in this work.

Preface

This master thesis is one of a series of papers and reports published by the Centre for Service Innovation (CSI). Centre for Service Innovation (CSI) is a coordinated effort by NHH to focus on the innovation challenges facing the service sector and involves 15 business and academic partners. It aims to increase the quality, efficiency and commercial success of service innovations and to enhance the innovation capabilities of its business and academic partners. CSI is funded through a significant eight-year grant from the Research Council of Norway and has recently obtained status as a Centre for Research-based Innovation (SFI).

This master thesis is also the 2018 sole recipient of the annual Master Thesis Grant from Econa, Norway's leading trade union for economists and business administration professionals who hold a master's degree. The Econa Master Thesis Grant is awarded once per year to a student whose thesis covers a topic with high relevance for Econa's members in an innovative, engaging manner.

Acknowledgements

This thesis may have been written by me, but it was made possible by a group of wonderful people who deserve the utmost thanks and appreciation.

Without a shadow of a doubt, the first person to be acknowledged in this thesis is my excellent supervisor Tina Saebi. Without her strong support, guidance, patience and insistence on the importance of correct referencing, this thesis would never have been completed. Thank you, Tina, you are a star!

The second person who deserves recognition is Christer Dalsbøe, my Early Stage co-founder and dear friend. Thank you for tricking me into something neither of us knew what was back in 2015, for picking up the slack when I spent months on end writing these words out in 2018, and for being an incredibly friend and human being in general. I cannot wait to get back in the trenches with you and focus on building the entrepreneurship education of the future. (And congratulations – you can now technically claim to have your name on a master's thesis from NHH!)

On a similar note, this thesis would not exist without the 45 Early Stage alumni we had the privilege of getting to know over the last two years. You may think you learned the most throughout the programme, but that is false. Christer and I did, and for that opportunity we are grateful. The programme mentors, supporters, guest speakers as well as the financial sponsors from Sparebanken Vest, Bergen Teknologioverføring and Innovation Norway, receive equal amounts of gratefulness for making Early Stage a reality.

I also send my gratitude to Econa, as well as and The NHH Centre for Service Innovation, who both awarded me grants to research and write this thesis. Thank you for taking a chance on supporting a somewhat untraditional thesis topic – I hope you enjoy the result.

Matt Lynch of Østfold University College acted as my sounding board for thesis ideas, being only a text message away for months on end. Federico Lozano of Pracademy inspired me to pursue meaningful work and embrace the role of an educator. Thank you both.

My mum would be sad if she were not mentioned here, so here goes. Thank you for the support, wisdom, input and oatmeal offered over the period of this thesis writing (and in the quarter of a century leading up to it!). In the name of gender equality and equal treatment –

thank you too, dad, for bringing me this far in life with steady guidance and continuous support. As this paper and subsequent diploma probably means even more to you than it does to me, I am happy to let it hang on your wall. I love you both dearly.

I also send my gratitude to the world-class scholars and educators who agreed to meet me and Christer to share their wisdom as we travelled across the United States six months ago to learn from the best of the best in entrepreneurship education – Bill Aulet at the Massachusetts Institute of Technology, Perry Klebahn and Jeremy Utley at the Stanford d.school of design, Karin Forssell at the Stanford School of Education, Peter Marton and Ian Mashiter at Boston University, Heidi Neck and Andrew Corbett at Babson College, Jon Fjeld, Laura Fjeld, Howie Rhee and John Austin at Duke University and the adjacent North Carolina entrepreneurial ecosystem, and last but not least Lillian Kivel (and later, Josh Fost) of Minerva Schools at KGI (Keck Graduate Institute). Yet another set of thanks go out to the world-class entrepreneurs and authors who spoke with us on the same trip – David Heinemeyer Hansson, Jay Samit and Ron Davison, all of whom inspire me greatly.

Finally, thank you, reader, for taking the time to explore this thesis – I hope you find it interesting, relevant, and well-considered. Furthermore, it is my hope that the implications of the findings presented here are considered by policymakers, university staff and other stakeholders with an interest in entrepreneurship education. Together, we can design intentional, experiential and effective entrepreneurship education programmes that lead to better, more relevant and more fulfilling learning outcomes on an individual and societal level.

With the utmost gratitude,


Jacob Mørch

Table of Contents

<i>Preface</i>	2
<i>Acknowledgements</i>	3
<i>List of Figures and Tables</i>	7
Figures	7
Tables	7
<i>Abstract</i>	8
1. Introduction	9
1.1 Context	9
1.2 Defining Entrepreneurship Skills and Entrepreneurship Education	9
1.3 Gaps in Literature	13
1.4 Research Question and Thesis Outline	15
1.5 Contributions of This Study.....	16
1.6 Thesis Boundaries.....	17
2. Background: Explaining the Rapid Rise of Entrepreneurship Education Worldwide ..	19
2.1 Entrepreneurship – an Essential Lever to Cope with a New Competitive Landscape	20
2.2 Decreasing Barriers to Entry in Entrepreneurship	22
2.3 “21 st Century Skills” – Entrepreneurship Skills for Non-Entrepreneurs	28
3. Literature Review – How to Teach Entrepreneurship Effectively	32
3.1 A Nascent Academic Field in Rapid Development	32
3.2 Traits or Training? The Great Debate in Academic Entrepreneurship Research	33
3.3 Effects of Entrepreneurship Education	36
3.4 Types of Entrepreneurship Education – Exploring the “About, For and In Enterprise” Learning Model	40
3.5 The Experiential Consensus Conundrum – We Know How to Learn Entrepreneurship Effectively, but Seldom Act Accordingly	42

4. Case Study: Early Stage – a Learning Arena for Experiential Entrepreneurship Independent of Academic Institutions	46
4.1 Context – From Startup Founder to Accidental Entrepreneurship Educator	46
4.2 Programme Objectives	47
4.3 Programme Overview.....	48
4.4 Principles and Programme Design in Line with the Academic Literature	52
4.5 How and Why Early Stage is Different from Start-Up Incubators and Accelerators.....	62
4.6 How and Why Early Stage is Different from Entrepreneurship Courses in University ...	67
5. Methodology.....	72
5.1 Thesis Progression Steps.....	72
5.2 Evaluation of the Research Method	76
6. Analysis and Findings	83
6.1 General Results of Early Stage’s 2016 and 2017 Programmes	83
6.2 Survey Results and Analysis	84
7. Discussion and Concluding Remarks	91
7.1 Implications for the Academic Literature on Entrepreneurship Education	91
7.2 Practical Implications for Entrepreneurship Education Inside and Outside Academia ..	93
7.3 Final Remarks.....	97
8. Bibliography.....	98
9. Appendix.....	105

List of Figures and Tables

Figures

Figure 1: Google Trends, relative interest over time for "how to become an entrepreneur" (page 24).

Figure 2: The LEAN Startup Cycle (page 60).

Figure 3: Kolb's Experiential Learning Model (page 61).

Figure 4: Aggregate average entrepreneurial intent of ES Alumni (page 85).

Figure 5: Entrepreneurial intent of each individual ES alumnus (page 87).

Figure 6: ES alumni's average entrepreneurial intent by intent type (page 90).

Figure 7: P-values from two-sided, paired T-tests (page 105).

Figure 8: P-values from two-sided, paired T-tests, by entrepreneurial intention type (page 105).

Figure 9: Raw data from survey of 41 ES alumni (page 106)

Figure 10: Legend for Raw Data Table (page 107).

Tables

Table 1: Support systems for various start-up stages (page 65).

Abstract

There has been an enormous growth in the number of entrepreneurship education (EE) programmes offered in universities, colleges and business schools globally over the last five decades, and the trend is accelerating still. This has led researchers to explore how entrepreneurship can be taught most effectively to students, and a general consensus has been reached – experiential learning is the superior method for learning entrepreneurship. Paradoxically, despite this consensus, many entrepreneurship courses in universities do not utilise any experiential learning methods at all.

This has led me to question whether EE ought to be conducted exclusively within academic institutions, or if good results can be achieved by programmes run independently of academia. Many such independent programmes exist, but they are largely overlooked in the academic literature, leaving potential insights and understanding about such programmes untapped.

To contribute to further understanding of this aspect of the field, this thesis shows the results of research on Early Stage, an 8-week, independent experiential EE programme offered to students in Bergen, Norway. By employing the same metric as most academic literature, i.e. students' entrepreneurial intent before and after participation in a programme, I show the quantitative effects of the Early Stage programme on its alumni.

Out of the 41 Early Stage alumni surveyed (out of 45 alumni in total), the mean difference in students' entrepreneurial intent after, as compared to before programme attendance, was +27,6%. These findings indicate that EE programmes can be effective also outside of academic institutions, which is an understanding that has largely been lacking in the literature until now. The thesis results hence contribute to filling the research gap concerning independent EE programmes in the academic literature on entrepreneurship education.

The practical implications of this study and its findings, are a set of recommendations for entrepreneurship educators, policymakers and other stakeholders with an interest in EE, on how to set up, design and run effective EE programmes outside and inside university settings. As such, I aim to indirectly contribute to making high-quality entrepreneurship education even more ubiquitous and available to more entrepreneurially oriented students going forwards.

Keywords: entrepreneurship education, university entrepreneurship, innovation, future of work, intrapreneurship, Early Stage.

1. Introduction

1.1 Context

The main goal of this thesis is to explore what effects entrepreneurship education programmes that are conducted independently of universities can have on participating students' entrepreneurial intent. This is done by examining the results produced by one such programme found in Bergen, Norway.

Understanding the effect such a programme can have on students, helps further develop the research field around entrepreneurship education, which up until this point has largely overlooked programmes and courses that take place outside of universities and colleges.

As entrepreneurship skills are increasingly seen as valuable both for entrepreneurs and intrapreneurs (employees who act entrepreneurially to create value in new ways), knowing how to teach and learn these skills most effectively becomes more and more important. The implications of improving our understanding of how to teach entrepreneurship skills more effectively, include the potential for more entrepreneurial activity in society and subsequent economic growth, and the potential for more empowerment of individuals and subsequent increased economic mobility and personal freedom. As such, getting a better understanding of how best to design, structure and carry out entrepreneurship education programmes effectively, has important positive ripple effects throughout society, which go beyond the educator and the student in question.

1.2 Defining Entrepreneurship Skills and Entrepreneurship Education

The terms “entrepreneurship skills” and “entrepreneurship education”, the former being what one is supposed to learn through the latter, means different things to different people. Therefore, defining the terms as they are used in this thesis is necessary.

1.2.1 Entrepreneurship Skills

I borrow a definition of “entrepreneurship skills” from Hisrich and Peters (2002) as a basis for further discussion:

“The ability to create something new with value by devoting the necessary time and effort, assuming the accompanying financial, psychic and social risks, and receiving the resulting rewards of monetary and personal satisfaction and independence”.

By breaking this down into its constituent parts, we see that entrepreneurship skills are about value creation, resource allocation, and managing risks, rewards and uncertainty while being exposed to both the potential downside of failure and upside of success from one’s entrepreneurial activity. As such, “entrepreneurship skills” in this thesis refers to the set of skills and abilities involved in developing an idea into a concrete value proposition and deliver it to the marketplace, often in the form of a product or service.

Entrepreneurship Sub-Skills and Their Emergent Properties

While I largely agree with Hisrich and Peters’ definition, I believe they overlook an important emphasis on the idea that entrepreneurship skills are a concoction of various sub-skills and the emergent properties that arise between these sub-skills during the entrepreneurial process.

Such sub-skills range from a host of technical (e.g. marketing, sales, computer programming, product development, making financial projections) to non-technical skills (e.g. teamwork, tolerance of risk and ambiguity, ability to think creatively) – all of which can, depending on the type of idea the entrepreneur or intrapreneur pursues, contribute to entrepreneurial success.

Yet, thinking about entrepreneurship skills as merely a collection of individual sub-skills is also too simplistic, because it leaves out an important aspect about emergent properties. Entrepreneurship skills are the sum total of a range of sub-skills, as well as the emergent properties of the interactions between them. To illustrate, note how being a good computer programmer, a good team worker or a great product developer in isolation will seldom make a good entrepreneur, because the act of bringing a product or service to market requires the

confluence of many sub-skills like these coming together. Note also that not all entrepreneurs need to be versed in all the entrepreneurship sub-skills themselves – a great entrepreneurial team typically has people on board whose competencies match each other's.

The term “entrepreneurship skills” in my opinion thus covers a wide range of sub-skills and abilities that make a person capable of thinking and acting entrepreneurially, in order to create value and deliver it to the marketplace.

Non-Technical, Entrepreneurial Sub-skills are Best Learned in the Real World

Most EE programmes are found within universities, colleges and business schools (Kuratko, 2005). While such institutions often teach individual technical sub-skills very well, they often have trouble fostering the environments most conducive to learning the non-technical, “soft” entrepreneurship skills (Gibb, 2002), and the emergent properties found in these skills' interactions with each other.

As further highlighted in the literature review, there is a widespread consensus in the academic literature that learning entrepreneurship – with particular emphasis on the non-technical entrepreneurship sub-skills mentioned above – is best done experientially, in real-world situations, facing ambiguity and risk (Gibb, 2002; Kickul & Fayolle, 2007; Higgins & Elliot, 2011). However, it is very difficult to emulate such ambiguous and risky situations in a classroom, where success criteria are clear, and most answers are found in the back of the textbook. This issue of classrooms being non-conducive to effective simulations of entrepreneurial realities is echoed in the literature as well. For example, Kickul and Fayolle (2007) advocate for new teaching methods “*that allow for learning under conditions of ambiguity and uncertainty*” (p. 2), while Higgins and Elliot (2011) recommend aiming for “*learning outcomes that are specifically derived from the enactment of an activity, rather than from the traditional classroom environment*” (p. 358).

One might think that the non-technical entrepreneurship skills such as ambiguity tolerance, risk management and reduction, teamwork, or understanding consumer psychology, were deliberately left out of university EE programmes' curricula because they were deemed less important than the technical skills that are often involved in entrepreneurship. However, this notion of technical skills as superior for entrepreneurial success is not backed up by the

literature. On the contrary, the non-technical skills are deemed just as important as the technical ones in the world of entrepreneurship (Lackéus, 2014). When these skills are so often left out of, or inadequately emphasised in entrepreneurship education programmes in universities, alternative programmes – based on more experiential learning methods which are more conducive to learning these non-technical entrepreneurship skills – occasionally rise to fill the gap.

1.2.2 Entrepreneurship Education

“Entrepreneurship education”, as used in the rest of this thesis, means any form of education aimed at improving students’ entrepreneurship skills through some form of practice, either inside or outside a university campus. This is in line with Fayolle et al. (2006, p. 702) who widely define an entrepreneurship education programme as *“any pedagogical program or process of education for entrepreneurial attitudes and skills, which involves developing personal qualities”*.

Such pedagogical programs or educational offerings are most often found within universities, colleges and business schools in the form of elective classes or entire degrees in entrepreneurship or adjacent fields. However, as shown in this thesis, entrepreneurship education programmes also exist outside and independent of academic institutions, despite the fact that such independent programmes are largely overlooked and under-researched in the academic literature.

EE Programmes’ Objectives May Alter One’s Understanding of Entrepreneurship Skills

It is worth briefly noting that there are many opinions on what the goal of entrepreneurship education should be (as further discussed in chapter 3.3.1), which may influence how one understands the term. As noted by Lackéus (2015), some people argue that entrepreneurship students should be encouraged to start their own company, and subsequently, that the number of start-ups formed by alumni is a proper measurement of an entrepreneurship education programme’s success. This view derives from a narrow definition of entrepreneurship as the mere act of starting a business. Others believe the number of start-ups resulting from an

entrepreneurship programme is irrelevant, arguing instead that the point of such education is ultimately about “*making students more creative, opportunity oriented, proactive and innovative, adhering to a wide definition of entrepreneurship relevant to all walks in life*” (Lackéus, 2015, p. 6).

This thesis is based on the latter view, and understands entrepreneurship education as a means to teach and inspire students to engage in entrepreneurial value creation in a wide sense of the word. This is in line with the definition of entrepreneurial skills from Hisrich and Peters (2002) presented initially – “*the ability to create something new with value [...]*”. Notably, this definition does not point to company creation as the only potential valuable output of an entrepreneurial endeavour. Instead of considering company creation the sole end goal of entrepreneurship education, new company creation is seen as one of many different ways of creating value.

1.3 Gaps in Literature

As discussed in detail in chapter 3.1, the academic field of entrepreneurship education is still in its nascence, and many scholars (e.g. Alberti et al., 2004; Maritz & Brown, 2013; Lackéus, 2015; and Ardichvili et al., 2003) stress the importance of further research to develop the field towards maturity going forwards. And while academic interest in entrepreneurship education has surged over the last few decades (Kuratko, 2005), the vast majority of the literature on the subject focus solely on EE programmes found inside universities and colleges. In contrast, very few papers examine entrepreneurship education programmes found outside of academic institutions¹ (a notable exception is the paper “*Entrepreneurial Intention of the Participants of the Startup Weekend: Longitudinal Analysis*” published by Silveira et al. in 2017).

Such under-examined, independent programmes and their programme design, structure, curriculum and results, thus represent an untapped research potential for further understanding of entrepreneurship education. These programmes often provide a different way to learn

¹ Some examples of independent EE programmes include Startup Ignition’s NAIL Programme (www.startupignition.com/), Startup Weekend boot camps (www.startupweekend.org/), and European Innovation Academy (www.inacademy.eu/).

entrepreneurship than the traditional “Entrepreneurship 101” course in university – as discussed in the literature review, independent programmes often learn towards a learning methodology rooted “in entrepreneurship”, (i.e. “learning by doing”), as opposed to the traditional university model of learning “about entrepreneurship” (i.e. learning by reading and listening).

Researching and understanding such independent EE programmes is important. If we as a society want more entrepreneurial activity to be taking place, we must strengthen our understanding of how entrepreneurs learn the skillset and mindset that increases entrepreneurial intentions and pursuit of entrepreneurial opportunities. Exploring a wide range of approaches to EE, and the subsequent results of these approaches, is therefore an essential step towards understanding which approaches work best, and thus understand how to design effective EE programmes accordingly. If, as Lackéus (2014, p. 379) writes – “*there is a need for further research in the domain of entrepreneurial education on how, when and why individuals develop entrepreneurial competencies*” – then we ought to research entrepreneurship education in a wider sense than that of entrepreneurship education as something exclusively taking place within universities and colleges.

This thesis argues that, if explored further, the research field can deepen its understanding of the effects produced by a wide variety of approaches to entrepreneurship education. Subsequently, we can gain new perspectives and insights into the question of how to educate future entrepreneurs most effectively.

1.4 Research Question and Thesis Outline

In order to address the gaps in the literature outlined above, this thesis answers the following research question:

“What effect can an entrepreneurship education programme independent of academic institutions have on students’ entrepreneurial intent?”

To address the research question, this thesis starts in chapter 2 by providing context to understand why entrepreneurship, and hence entrepreneurship education, is now deemed more important by scholars, politicians and futurists than in the past. It also explains why entrepreneurship is both more valuable and more accessible now than before, in part due to current trends such as “the fourth industrial revolution” which are re-shaping the future of work, altering marketplace dynamics, and democratising access to means of production.

In chapter 3, I explore the academic literature in the field of entrepreneurship education, in particular the research around entrepreneurs as “born or made”, and whether or not entrepreneurship skills can be taught and learned at all. Given the consensual understanding that such skills can indeed be taught and learned, the next major assumption that is researched and scrutinised is that of *how* entrepreneurship ought to be taught most effectively, again by exploring the academic literature of the field. The problems of measuring entrepreneurship are highlighted, and the practice of using “entrepreneurial intent” as a metric for measuring effectiveness of entrepreneurship education, as seen both in the literature and in this thesis, is discussed. Having discovered the research literature’s established consensus on experiential learning as the most effective way to develop entrepreneurship skills, I call attention to and question the fact that many academic institutions teach entrepreneurship in ways deemed less effective than the experiential methods recommended by leading scholars in the field.

Chapter 4 provides a thorough exploration of Early Stage, in order to showcase how an independent entrepreneurship programme can be built on principles for effective entrepreneurship education found in the academic literature, despite the programme being independent of any academic institutions. I explain why and how the programme was

developed, what its objectives are, how it is structured, what is taught, how it differs from a start-up incubator or accelerator programme, and from a typical entrepreneurship course in a university or business school.

Chapter 5, the method section, presents the research methodology used to gather, process and analyse data in order to provide an answer to the thesis' research question. The chapter presents the online questionnaire that was filled out by alumni of the Early Stage programme, and explains how these data were analysed to uncover useful insights into the programme's effect on students' self-reported entrepreneurial intent. Furthermore, I discuss the degrees of validity, reliability and generalisability of the results that come out of this research method.

In chapter 6, I present the quantitative data and subsequent findings from my study of the Early Stage alumni students. These findings and insights directly answer the research question, by showing the measured effects of participating in Early Stage on the students' degrees of entrepreneurial intent.

Chapter 7 concludes the thesis with a discussion on the results presented in chapter 6. The wider implications of my study and its results are presented, covering both its implications for theory and literature, and its practical implications for initiators, educators and curriculum designers in entrepreneurship education going forwards.

1.5 Contributions of This Study

While the results of this study may not be fully generalisable (as discussed in chapter 5.3), the findings of this thesis have a number of important implications for theory as well as for practice. In the theoretical domain, the findings of the study provide an insight into the effects of one particular EE programme on the measured entrepreneurial intentions of its participating students. This adds a source of proof of the potential effectiveness of such programmes to the literature, as it indicates that EE programmes outside of academic institutions can provide valid results and learning outcome for participating students.

While more research on similar and different approaches to independent EE programme design is required to draw widely generalisable conclusions, showcasing one example of a programme which leads to positive outcomes for students, is a promising starting point for

more research into other independent programmes and their results. I thus hope to pique other scholars' interest in exploring and researching the design, curricula, methods and outcomes of other independent EE programmes further going forwards.

On a more practical note, the exploration of the Early Stage programme, its curriculum, and its pedagogical methods shows practitioners and stakeholders in entrepreneurship education (e.g. teachers, professors, workshop facilitators, policymakers) a set of new ways to go about their mission to educate effective entrepreneurs. Despite the problems of discerning causality between specific curricular inputs and subsequent outcomes (see further discussions on causality in chapter 3.3.1 and 5.2.3), aspects of how the Early Stage programme is designed and facilitated can be further experimented with in other programmes in attempts to reach similar (or better) results for students, teachers and other stakeholders.

As such, the practical goal of this thesis in its entirety, is to provide a set of recommendations for both scholars and practitioners based on the findings presented, and thus enrich the existing literature by filling parts of the literature gap surrounding independent entrepreneurship education programmes. These recommendations are aimed at researchers, policymakers, university staff and other stakeholders in the wider entrepreneurship community who share an interest in improving the effectiveness of entrepreneurship education in some capacity.

1.6 Thesis Boundaries

The scope of this thesis is limited in several ways to make it fit the format of a master's thesis. Firstly, it considers entrepreneurship education at the higher education level only (i.e. bachelor or master's level). It consequently disregards entrepreneurship education initiatives found at the lower levels of education (for example JA Worldwide, an NGO providing entrepreneurship training at the high school level), as well as training programmes found within corporations ("corporate innovation training"), online courses and similar offerings in which one can practice entrepreneurship skills broadly speaking. This choice was made because the Early Stage programme students are all enrolled in higher education studies when they participate in the course. Comparing this programme to entrepreneurship courses found at the same educational level was thus deemed to be the best approach.

Secondly, the thesis only studies one specific entrepreneurship education programme and its results in detail. The reasons for this is two-fold. I had the advantage of ready access to all data about the Early Stage programme and its alumni, which made it natural to use it as my case study. Also, as noted in the literature review, comparing entrepreneurship education programmes to one another is difficult, due to an extensive set of mediating variables that are hard to isolate, measure and compare across programmes. As the literature reveals, this is not a problem specific to this study, but an ongoing challenge in the entire academic research field on entrepreneurship education.

Note that the academic debate and literature on entrepreneurship as a driver of economic growth is deemed to lie beyond the scope of this thesis, and is thus not covered. This topic has been covered extensively in economic literature (see for example Schumpeter, 1934; Wennekers & Turik, 1999; and Wong et al., 2005), and an overarching consensus has been reached – entrepreneurship does play an important role in the growth and advancement of an economy, as more entrepreneurship generally correlates with more economic prosperity.

2. Background: Explaining the Rapid Rise of Entrepreneurship Education Worldwide

The number of entrepreneurship education programmes offered inside and outside universities, colleges and business schools around the world has soared over the last few decades (Kuratko, 2005; Støren, 2014). The first college course in entrepreneurship in the US was started in 1947, but by the year 2003, over 2200 accredited college courses in entrepreneurship were offered to students at American colleges (Kuratko, 2003), and the demand for such courses is rising higher still (Pittaway & Edwards, 2012). This chapter sheds light on why entrepreneurship education has seen such a tremendous growth in popularity in recent years.

Three reasons can help explain this rapid growth in entrepreneurship education offerings. Firstly, at a macro level, entrepreneurship is widely regarded as a key driver of innovation, economic growth and job creation among scholars, economists and policymakers (Alberti et al., 2004). In combination with the belief that entrepreneurship can be learned, as discussed extensively in chapter 3, this has led to a top-down pressure from policymakers to infuse entrepreneurship into a wide range of educational programmes, in the hope of inducing future economic growth (Lackéus, 2016).

Secondly, as discussed below, many experts on technology and societal trends predict that the future of work will be inherently different, more complex and more rapidly changing than the professional world we have seen in the past (Schwab, 2016). Entrepreneurial skills, the ability to create value in new ways, ideally in quick response to changing marketplace dynamics, are seen as a key to professional success in this increasingly dynamic, uncertain and complex future of work scenario. In other words, at a micro level, entrepreneurship is considered a path to professional empowerment and success for the individuals starting their own venture or bringing entrepreneurial proclivity to the workplace

Thirdly, it is becoming easier for individuals to get involved in entrepreneurial activity than in the past. Nowadays, aspiring entrepreneurs have easier access to resources, such as hiring highly skilled employees working remotely from low-cost countries, and access to big markets abroad, both of which have been made possible up by the internet. Furthermore, computational power, server space, all sorts of software for payments processing, team collaboration, accounting, legal work and so on, are available through the internet at a fraction of the cost a

mere decade ago. These developments dramatically reduce the amount of risk an aspiring entrepreneur need to take on in order to execute on his or her ideas to bring them to market.

In short, both the demand for and the supply of entrepreneurship education programmes and courses are fuelled by the increasing belief in entrepreneurship as a means to both economic growth and individual empowerment, combined with the belief that entrepreneurship can be learned through education of some kind, and the falling costs and increasing availability of entrepreneurship resources.

2.1 Entrepreneurship – an Essential Lever to Cope with a New Competitive Landscape

Over the last few decades, an understanding of entrepreneurship skills as useful for non-entrepreneurs and employed professionals who do not necessarily plan to start their own company, has gotten foothold in the literature and in the public discourse (Gibb, 1998; Alberti et al., 2004; Lackéus, 2015; Lackéus, 2016). This can be seen as a corollary to the notion of increasing complexity and uncertainty in the world of work, to which entrepreneurship is often framed as a remedy or a solution, for individuals and companies alike.

Re-visiting the definition of “entrepreneurship skills” from Hisrich and Peters (2002), gives us a hint as to why entrepreneurship skills are deemed important also for people who are not, nor aspire to become, entrepreneurs in the company-creating sense of the word:

“The ability to create something new with value by devoting the necessary time and effort, assuming the accompanying financial, psychic and social risks, and receiving the resulting rewards of monetary and personal satisfaction and independence”.

From the definition, one can logically deduct that the ability to create something new with value is, by definition, inherently valuable – and even more so when the dynamics of both the workplace and the marketplace change fast and frequently. If, for example, an employee is in danger of losing his job due to automation or shifting marketplace preferences, the ability to create something new with value can empower him to take his economic fate in his own hands

as an entrepreneur. The same entrepreneurial abilities also make him more valuable to other potential employers, who must continuously innovate to stay relevant in the ever-changing marketplace. In other words, the faster the nature of work and market demands change, the more valuable entrepreneurship skills become. On the other hand, if the marketplace dynamics seldom change, or technological developments progress slowly, employees do not necessarily need the same degree of entrepreneurship skills. When market dynamics seldom change, simply doing the same thing in the same way repeatedly can be lucrative enough.

The notion of entrepreneurship skills becoming more valuable as marketplace dynamics change faster and faster, is also echoed in the academic literature. Lackéus (2016, p. 1), sums up this line of reasoning as follows – *“the common argument is that citizens must develop their entrepreneurial competencies in order to cope with our increasingly globalized, fast-paced and uncertain world (Gibb, 2002; Jones and Iredale, 2010)”*. Lackéus is not alone in this analysis – Alberti et al. (2004, p. 1) present a similar understanding of the argument – *“although entrepreneurship is not a new concept, it has gained increasing interest and research attention over the past 15 years: today entrepreneurship is considered the essential lever to cope with the new competitive landscape (Hitt and Reed, 2000)”*.

This “new competitive landscape” is often framed as one in which technological advancements affect and change marketplace dynamics – a more regular occurrence now than in the past, because we are currently living through the so-called “fourth industrial revolution”.

The Fourth Industrial Revolution and Shortening of Company Lifespans

The argument for us moving towards an increasingly complex world is often backed up by data on technological advancements and trends in computational power, global interconnectivity, proliferation of technological devices and so on. These trends and developments impact and alter supply chains, value creation methods, and methods of working across practically all industries. In short, as the speed of technological change increases, so too will the speed of changes in how we work professionally increase (Schwab, 2016).

Similar sentiments are found in the colloquial public discourse, with media reports on “disruption” and “robots replacing employees” coming out on a daily basis. On top of this, reports from trade unions, industry and policy think tanks regularly predict how many current types of jobs will be made obsolete within a few years thanks to technological disruption.

While these may seem overly dystopic or exaggerated, there are evidential indicators suggesting that the rate of change in the workplace and the marketplace is indeed accelerating, leaving behind people and organisations unable to innovate and capitalise on said changes.

Another indicator that seem to back up the notion of accelerating rate of change in the marketplace, is the average company life span in the S&P500 index. If the rate of change is indeed increasing, one would expect businesses to rise and fall faster than before, as agile adapters outperform laggards and incumbents unable to respond to said marketplace changes. And that is indeed what has been happening. The innovation research company Innosight examined the average lifespan of a company in the S&P500 index from its start in 1957 all the way through 2012. Innosight concluded that the lifespans of big, successful firms have never been shorter than now, and the falling company lifespan trend is expected to continue in the years ahead (Innosight, 2012). For example, they predicted that 75 percent of the companies found in the S&P 500 index in 2012, will be replaced by the year 2027. Furthermore, the time spent in the index by the average listed firm decreased from 61 years in 1958, to 25 years in 1980, and then to 18 years in 2012.

Economist Joseph Schumpeter (1934) proposed the notion of “creative destruction” to explain how entrepreneurial activity and new innovations disrupted large incumbent industry players and their business models, often leading to the demise of the established firms. The findings by Innosight illustrate what happens when the process of creative destruction speeds up, fuelled in part by advancements in technology – the average lifespan of big, incumbent companies falls, and agile, often smaller companies with innovative, profitable business models take their place on the S&P 500 index, sometimes just a few years after starting up.

2.2 Decreasing Barriers to Entry in Entrepreneurship

Not only has the perceived value of entrepreneurship skills increased in recent years – at the same time, the cost and barriers to entry into entrepreneurship have been dramatically reduced. The advent of the internet has brought down the traditional barriers to entry in entrepreneurship by making it easier, cheaper and faster than ever before to test, launch and scale new business ventures. The result is that entrepreneurship is more accessible to more people than before. The risk of getting started as an entrepreneur has gone down substantially,

enabling people who in the past would have shunned away from entrepreneurship to reconsider and either give it a try directly, or attend an entrepreneurship education programme to learn more about it.

Proliferation of Information Lets Anyone Learn About Entrepreneurship

An obvious benefit of living in the age of the internet for aspiring entrepreneurs, is the ease of access to information and knowledge about entrepreneurship. “How to become an entrepreneur” is no longer an abstract question with few answers available, but rather a valid search string on Google. This search query provides about 1.090.000 results as of this writing, most of which give practical advice to budding entrepreneurs on how to get started with their first venture.

Pre-internet, the barrier to access such information was orders of magnitude higher than today. A number of books were written on the topic, but finding them was time-consuming, paying for them was expensive, and accessing them from anywhere, at any time, was impossible. Back then, one could also ask successful entrepreneurs for advice, but reaching them was substantially more difficult than today, when hundreds of thousands of world-class entrepreneurs are just a tweet or an email away. Furthermore, most of the world’s best entrepreneurs have written blog posts to give away their best advice for free, or they have given hours of interviews which are available for free on YouTube or via podcast players.

There are strong indicators that the ease of access to information about entrepreneurship not only provide people with an opportunity to learn about it on their own, but also that people do indeed take these opportunities. One example comes from Google Trends, Google’s statistics for search terms’ relative historical popularity. Returning to “how to become an entrepreneur”, for example, we see the chart below representing the relative interest in the search query over time (in this case, over the last 10 years). We notice trend of a steadily growing interest in this very topic.

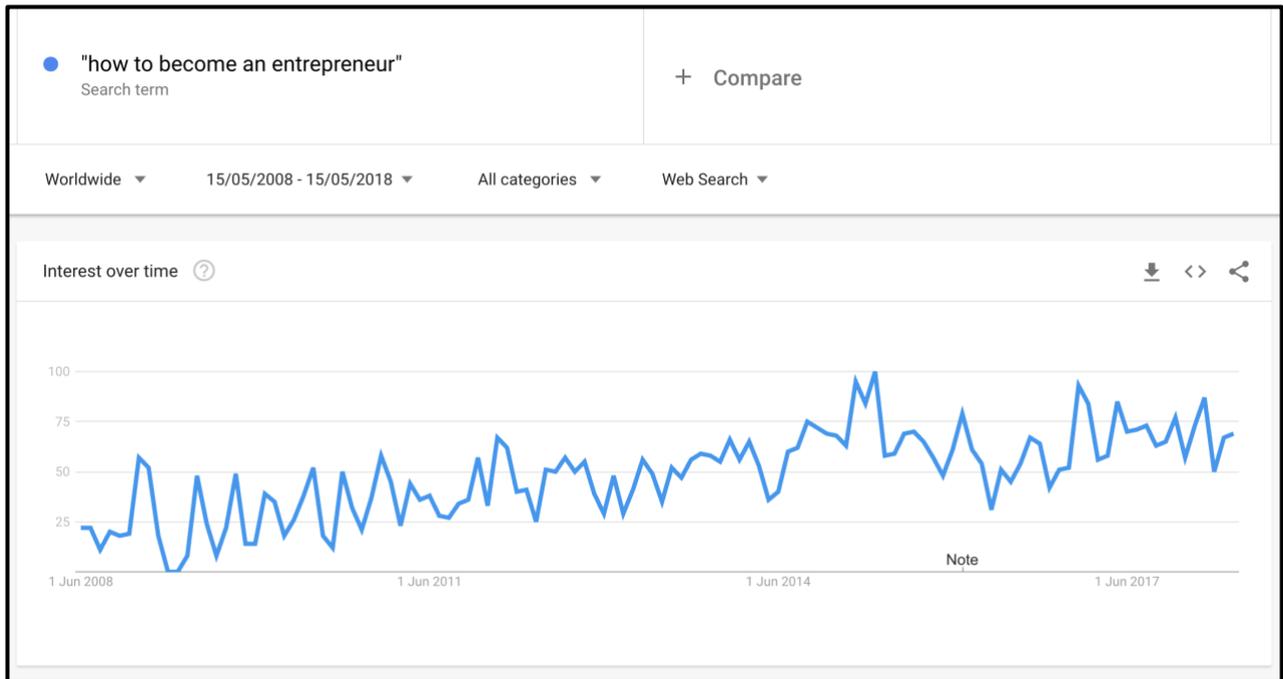


Figure 1: Google Trends, relative interest over time for "how to become an entrepreneur".

2.2.2 Means of Production as a Service

The rise of the internet, abundant computational power and cheap data storage in the cloud, have democratised many means of production that were previously only available to big corporations, high net worth individuals, or start-ups with big budgets.

Software and Cloud Services

An entrepreneur 25 years ago who wanted to use software to support his business operations in some form or another, very likely had to develop the entire software system, or at least parts of it, in-house. This required having complex coding skills, or a big budget to hire expensive software engineers, months or years of development time, expensive hardware to run the software on, and expensive infrastructure to connect various hardware devices to another. Developing such software solutions could take years, and cost millions of dollars.

Today, practically every specific software need an entrepreneur or a start-up might have, can be covered by a software-as-a-service (SaaS) solution, where the software is already developed

and can be accessed for a monthly or yearly fee. This removes the development time in its entirety, and brings the cost down, often by several orders of magnitude. This is true for online collaboration tools, data storage in the cloud, complex project management tools, customer relationship management tools, digital marketing tools – the list goes on and on. There are now even tools to connect the other tools together with each other (e.g. Zapier, IFTTT). Using a plethora of different software solutions in one start-up is now so widespread that the term “software stack” has emerged, referring to the set of various software services used within a single company, to cover different operational needs. The implication of this proliferation of software-as-a-service providers, is that just about anyone can start businesses with technological infrastructure that was previously only available to companies with big budgets, at a fraction of the cost – often only a few dollars a month for excellent software products.

Payment Systems

Another major hurdle for emerging start-ups pre-internet, was getting paid from customers. Cash payments limited a business’ customer base to people in its physical proximity, and credit cards pre-internet were largely bound by the same limitation because customers primarily paid with cards in-store. Cheques and manual bank transfers were available, but involved much friction and were expensive to conduct. With the internet came the opportunity to pay for things online, but in the early days of the web, this option was also reserved for the big corporations who could afford expensive online credit card processing infrastructure.

With the rise of the modern internet and aforementioned software-as-a-service solutions, the access to payments systems and infrastructure was also democratised. Today, thanks to companies such as PayPal, Stripe, Square and Venmo, complex financial infrastructure with global reach is available to all aspiring entrepreneurs, at a mere cost of 1-2% of the financial sums processed through the software. It is effectively payments-as-a-service, and it is no longer reserved for big corporations.

Factories and Production Facilities

During the industrial revolution, factories had to be built before they start producing products that eventually could translate into sales and realised market value. This required enormous

investments up front, and was hence reserved for companies and people with access to such financing.

Today, while factories technically still need to be built before they can start creating products, the factories need not be built from scratch by every company. Start-ups and aspiring entrepreneurs can imagine a new product, sketch it out, and have it made on demand in a factory in Asia within a few weeks. Production capacity has also been democratised, and is now available for hire – we de facto have production-as-a-service available to everyone.

A similar example can be found in the world of 3D printing, or more specifically, the interconnected world of 3D printers. By using a service like “3D Hubs”, colloquially known as “Airbnb for 3D printers”, anyone can print three-dimensional products on nearby printers for a reasonable fee, without ever investing in an expensive 3D printer themselves.

Logistics

While the postal system has existed for centuries, with varying degrees of international coverage, the logistics processing systems available to entrepreneurs today are unprecedented. Shipping products to customers is cheap, and the reach is global. Innovative logistics solutions such as Fulfilment by Amazon (FBA) have made life even easier for product-developing entrepreneurs. With FBA, any start-up can send their products in bulk to Amazon’s warehouses, and Amazon will take care of product shipments for them. When customers buy the start-up’s product, which is listed on the Amazon site, Amazon ships the product from their warehouse directly to the customer, and the start-up does not need be involved in the logistics handling at all.

Furthermore, the rise of digital products has made it even more frictionless to deliver value to customers. When customers buy digital products (e.g. videos, audiobooks, information products, e-books, access to exclusive online communities), they simply get access to the products immediately and automatically, which requires no handling from the selling party at all.

2.2.3 Borderless Business – Online Access to Markets and Employees

The internet connects producers and consumers at a global, unprecedented scale. Any entrepreneur today has access to a global marketplace with the click of a button. This allows, for example, providers of niche products and services to survive and thrive. The demand for their product in their local marketplace may have been insufficient to support their business, but exposed to a global marketplace, they can make it work.

The same thing is true of the marketplace for labour. With the rise of freelancing platforms such as UpWork and Freelancer.com, businesses get access to highly qualified job candidates from a global, rather than a local talent pool. This not only increases the number of available candidates to choose from, but also, in many cases, allow for dramatic reductions in cost. Freelancers can work remotely from low-cost countries, charging lower wages than talent in the local market of the employing business. Furthermore, the often project-based nature of freelance work leaves the employer with high levels of flexibility to terminate contracts after a completed project, or for any other reason.

2.2.4 New, Internet-Enabled Business Models

The internet has also made entrepreneurship more accessible by providing grounds for entirely new business models, which would have been impossible before the rise of the web. One example is being on the other side of the remote work situation mentioned above. Being a freelancer and working remotely is orders of magnitude easier and more viable now than in the pre-internet era.

Monetised personal blogs are another example, in which a personal blog makes money for the writer through affiliated links with purchase kickbacks, advertisements, or sales of products or services. Patreon.com provides content creators and creatives with a somewhat similar model, in which fans can contribute a monthly sum to support the creator whose work they enjoy. Kickstarter and other crowdfunding platforms provide yet another way of testing the waters as an entrepreneur, in which one can validate market demand for a new product before it is finished and mass produced.

2.2.5 No Better Time to be Entrepreneurial

The democratisation of means of production, combined with the ease of access to global markets, indicate that this is the best time in history to be an entrepreneur, or to act entrepreneurially. There is less risk involved because the costs of getting started are orders of magnitude lower than in the past, and there is more upside potential thanks to the ease of reaching billions of customers globally.

Author Taylor Pearson (2015, p. 32) sums it up eloquently – *“Opportunities available only to larger, 500+ person companies just a decade ago are now available to businesses with just one to five employees scattered across continents—the rise of a company structure known as “micro-multinational. [...] The gatekeepers are dying. You, sitting in your apartment, can communicate with everyone on Earth more effectively than any media company twenty years ago”*.

If indeed the barriers to entry have come down, and the value of entrepreneurship skills is going up in the face of a new future of work – what does this mean for the people among us who have no desire to become an entrepreneur in the sense of creating a new company?

2.3 “21st Century Skills” – Entrepreneurship Skills for Non-Entrepreneurs

As briefly mentioned in chapter 2.1, entrepreneurship skills are now widely recognised as useful also for employees who do not necessarily aspire to start their own company. As the trends outlined above change the nature of work, certain skills and competencies are rising in value in the marketplace relative to other skills, for entrepreneurs and employees alike. Being adaptable to changes, and mastering the art of innovation and creative problem solving were mentioned as examples of skills that are on the rise going forwards. It is worth noting what these example skills have in common – they are what have traditionally been considered “soft skills”. The term has traditionally been used to describe somewhat intangible, undefinable competencies such as creativity, empathy, “people skills”, adaptability and so on – or, according to the Collins English Dictionary, *“desirable qualities for certain forms of employment that do not depend on acquired knowledge: they include common sense, the*

ability to deal with people, and a positive flexible attitude (Collins English Dictionary, 2014). The opposite, “hard skills” refers to more concrete, easily definable and testable skills such as mathematics, logic, computer programming and accounting.

In the common vernacular, the term “soft skills” has often had negative or derogatory connotations, as many people have considered them less valuable than the hard skills. Interestingly though, with the advent of modern technology, the relative value of soft skills is skyrocketing. The explanation is simple – it is in the domain of the soft skills that humans have a competitive advantage over machines (Schwab, 2016). With machine learning and AI, computers can now perform just about any task that can be encoded into a logical format. The further into the realm of hard skills we go, the easier it is to make the skills programmatic and solvable by machines. In short, in the age of advanced artificial intelligence, everything we can understand and express in logical terms can, and likely will, be automated.

To understand just how ubiquitous machines are about to become in the workplace, consider this headline from a recent article in Harvard Business Review: “The Future of *Human Work* is Imagination, Creativity, and Strategy” [italicised emphasis added] (Pistrui, 2018). The fact that Joseph Pistrui of Harvard Business Review felt the need to emphasise that he was writing about *human work*, instead of just writing about the future of *work*, is a telling sign of just how digitised and machine-driven the work domain may soon become.

Yet, the machines cannot (at least not yet) be creative, empathic, artistic or innovative like humans can. Note again the words Pistrui use to describe the future of human work – *imagination, creativity and strategy* – skills in which humans have a strong competitive advantage over machines. This is not to say that hard skills are necessarily any less valuable than before in absolute terms, but relatively speaking, soft skills are increasingly taking centre stage in the marketplace.

These developments have led to the emergence of the phrase “21st century skills”, referring to the most valuable skills in the modern, technologically advanced world of work we find ourselves in in the 21st century. There exists no explicit, agreed-upon definition for “21st century skills”, but it is used to describe an eclectic mix of hard skills surrounding digital competencies and basic understandings of logic and reason, and soft skills related to innovation, adaptability in the face of change, tolerance of risk and ambiguity, teamwork and creative problem solving.

By re-visiting the discussion about the definition of entrepreneurial skills from the introduction chapter, it becomes clear that “21st century skills” are strongly overlapping with the “entrepreneurship skills” proposed earlier:

“Entrepreneurship skills” in this thesis refers to the set of skills involved in developing an idea into a concrete value proposition and to deliver it to the marketplace, often in the form of a product or service.

Any successful entrepreneur or innovator can attest to the importance of having a degree of mastery of at least some “21st century skills” in order to perform well at the job of creating value in new, previously unproven ways. Yet, while these skills are clearly important to people founding new companies in the face of risk and uncertainty, the trends driving up their labour market value are affecting every professional, not just the entrepreneurs among us. This thesis author thus argues that “21st century skills” are effectively a proxy for entrepreneurship skills applied to a broader set of the population than just company-founding entrepreneurs.

Similar arguments are found in the academic literature, highlighting the importance of entrepreneurial skills for employees in existing organisations. For example, Alberti et al. (2004, p. 5) notes that *“within large companies there is a need for managers who are oriented to the development of new business initiatives to ensure a continuous renewal (Gibb, 1996)”*.

The term “intrapreneur” is often used to describe a person who acts in entrepreneurial or innovative ways within an established enterprise instead of striking out to start her own company. As explained by Støren (2014, p. 798), *“in the literature the concept of intrapreneurship has emerged, frequently also referred to as “corporate entrepreneurship” [...]. This refers to entrepreneurial activity within existing organizations/firms, and thus not to a (new) business establishment as otherwise is traditionally associated with entrepreneurship. Intrapreneurial employees demonstrate creativity in innovation-processes at the enterprise level, identify new opportunities in the market and are able to see how the firm’s competencies can be used to develop new products or processes.”*

Following the notion of entrepreneurial skills as something important also for employees in existing organisations, the idea that entrepreneurship education is also important for non-

entrepreneurs arises. Again, as pointed out by Støren (2014, p. 798), *“one specific learning outcome of entrepreneurship education is that it promotes entrepreneurial and innovative orientations that go beyond the question of starting up one’s own business”*.

Students themselves also increasingly understand that having a set of entrepreneurial skills is useful even if they do not necessarily plan on starting a new company, which drives up demand for entrepreneurship education. Alberti et al. (2004, p. 5; citing Young, 1997) *“there are two sets of reasons why students may want to study entrepreneurship: first, they may want to start up their own business; second, they may wish to acquire knowledge which will be helpful in their careers in larger organizations”*.

Following the rising importance of entrepreneurship skills for a wide set of people in a wide set of professions and professional domains, the important question about how to teach and learn these entrepreneurship skills arises. Chapter 3 explores the literature on how entrepreneurship skills can and ought to be taught most effectively, so that more people can be empowered to start start-ups and act entrepreneurially within existing organisations.

3. Literature Review – How to Teach Entrepreneurship Effectively

3.1 A Nascent Academic Field in Rapid Development

Any review of the academic literature on entrepreneurship education ought to start by pointing out the fact that the research field is still considered fairly immature, and that few consensuses have been reached at this point. Gibb and Cotton (1998, p. 12) pointed out that, in 1998, there was still “*considerable conceptual confusion regarding what [entrepreneurship] education is and what it aims to accomplish*”. While much progress has been made in the 20 years since 1998, there is still a general lack of definitive clarity in the literature on entrepreneurship education, which can be partly explained by at least two factors.

A New Academic Field Emerging

Firstly, entrepreneurship education as a field of academic study is fairly new. While the study of entrepreneurship as a whole can be traced as far back as to certain economists in the 18th and 19th century (e.g. Richard Cantillon, François Quesnay, Adam Smith), the notion of entrepreneurship as something to be cultivated through education did not emerge until the early to mid 20th century. Shigeru Fijiii, a pioneer in the field, started teaching entrepreneurship at Kobe University in Japan in 1938 (Alberti et al., 2004), and the first entrepreneurship course in the USA started at Harvard Business School in 1947 (Katz, 2003). However, only in the mid to late 20th century did entrepreneurship education gain a more universal recognition as an academic discipline and as a field of research. The interest in the field, and the prevalence of entrepreneurship education courses and programmes, have grown significantly also in even more recent history – according to Alberti et al. (2004, p. 5), “*the past 20 years have witnessed an enormous growth in the number of small business management and entrepreneurship courses at different educational institutions*”.

Metrics, Measurements and Teaching Methods in the Making

The second factor that help explain the immaturity of the field, is the inherently unstructured nature of entrepreneurship, for which good metrics and methods of measurements are still

underdeveloped (Alberti et al., 2004). By definition, entrepreneurship is mired in ambiguity, uncertainty and a lack of linearity, which makes it difficult to research using scientific methods. Indeed, the very act of pursuing an entrepreneurial opportunity by definition entails exploring something of which one cannot predict the outcomes with complete certainty. Consequently, understanding how to teach entrepreneurial methods, processes, skills and mindsets in an effective manner is equally challenging, and the focus of much research (Gibb, 2002; Støren, 2014; Lackéus, 2015). Further adding to the confusion has been a lack of universally accepted criteria and frameworks for comparing entrepreneurship programmes to each other, leading much research on programme design, effectiveness and outcomes to be carried out in an isolated, programme-by-programme fashion, with low degrees of generalisability (Henry et al., 2005, part II).

Progress in the Field – Settling Academic Debates, Measuring Effects, and Categorising Entrepreneurship Education Programmes

That being said, much progress has indeed been made over the last few decades of extensive research into entrepreneurship education. As explored below, the great academic debate over the “born or made entrepreneur” is seemingly settled, the impact of entrepreneurship education on students’ entrepreneurial intentions and skills has been studied extensively (albeit still lacking definitive conclusions), various types of entrepreneurship education have been identified, categorised and described, to mention a few examples that are highlighted in this literature review chapter.

3.2 Traits or Training? The Great Debate in Academic Entrepreneurship Research

When discussing entrepreneurship education, the question of whether entrepreneurs are “born or made” quickly arises, often expressed as “*can entrepreneurship be taught and learned?*” (Henry et al., 2005, part I). This is understandable – after all, if entrepreneurs are “born”, rather than “made” through practice, training and experience, “entrepreneurship education” is an oxymoron and its pursuit is a waste of time and resources.

Historically, this question and the great debate around it has split the research field in two. However, by examining the literature, we find a narrowing of this gap over the last four decades, as the academic field has moved towards an overall consensus on what makes a successful entrepreneur. In short, the question of “traits or training” dichotomy is now considered non-binary among most scholars of the subject. The binary dichotomy has largely been replaced by a consensual understanding more akin to a sliding scale between the two factors, allowing for combinations of both to explain why some people successfully demonstrate entrepreneurial behaviours.

Put simply, according to modern literature, entrepreneurs seem to benefit to varying degrees from having both natural characteristics, as well as going through entrepreneurial training of some kind (Henry et al., 2005, part 1).

3.2.1 Entrepreneurs – to be Recognised, not Manufactured?

Traditionally, many scholars have believed in, and some modern researchers still subscribe to, predominantly trait-based theories about the “born entrepreneur”. These typically understand entrepreneurs as people with a certain genetic makeup (Mount, 2010), personality traits (Brockhaus & Horwitz, 1986; Hills, 1988; Hisrich & Peters, 1998; Scott & Twomey, 1998; Ardichvili et al., 2003), or socio-economic background and upbringing (Anderson & Miller, 2003). A succinct summary of this side of the academic debate comes from Charharbaghi and Willis who believe that “*entrepreneurs cannot be manufactured; only recognized*” (Charharbaghi & Willis; as cited in Solomon, 2007, p. 171).

A popular way to back up this position in the academic debate, is to point to studies that suggest a correlation between certain genetic or biological markers and a person’s propensity to engage in entrepreneurial behaviour. One example is testosterone level, which, according to Taatila (2010, p. 52), “*has been shown to have an effect on entrepreneurial behaviour (White et al., 2006). According to this study, individuals with higher testosterone levels are more likely to act entrepreneurially than their peers because testosterone levels correlate positively with risk-taking behaviour (Fannin and Dabbs, 2003; Gimbel and Booth, 1996), dominance seeking and status seeking (Mazur and Booth, 1998), which are all useful for entrepreneurial behaviour (White et al., 2006). Thus, there is definitely one biological factor that supports entrepreneurial behaviour, and most likely several other ones as well.*”

That being said, in the face of substantial evidence of positive outcomes of entrepreneurship education and training on students' entrepreneurial intent and actions (as discussed later in this paper), one can criticise the purely traits-based notion of a natural born, genetically composed and biologically programmed entrepreneur as too simplistic an explanation for who might become a successful entrepreneurs, or who might demonstrate entrepreneurial behaviour in other roles than as a company founder.

3.2.2 Entrepreneurship Can Be Learned

“It’s not magic, it’s not mysterious, and it has nothing to do with genes.

It’s a discipline, and like any discipline, it can be learned.”

–Author and management thinker Peter Drucker on entrepreneurship

(Drucker, 1985)

As mentioned, while the question of the born or made entrepreneur is still popular in the informal discourse around entrepreneurship, the overall academic debate seems to be fairly settled at this point. Most modern scholars subscribe to the idea that entrepreneurship is a set of skills, mindsets and courses of action that, at least some of which, and to varying degrees, are learnable through practice and education (Vesper, 1982; Clark et al., 1984; Kantor, 1988; Saeed, 1996; Henry et al., 2003. all as cited in Henry et al., 2005, part 1).

Lackeus (2016) sums it up succinctly – *“there is today widespread consensus among scholars that entrepreneurial competencies are not something people are only born with but can be significantly developed over the course of people’s lives (Neck et al., 2014; Ramoglou, 2013; Rae et al., 2012; Hindle, 2007; Fayolle, 2007)”*.

Kuratko (2003), another believer in the teachability of entrepreneurship skills and mindset, is even clearer in his speech – *“The question of whether entrepreneurship can be taught is obsolete!”* (p. 8).

It is important to recognise that genetics, socio-economic upbringing, biological factors and other inherent traits may give some people a competitive edge over others in the realm of entrepreneurship – just as these factors make some people advantaged at certain sports,

cognitive tasks, emotional intelligence or any other ability or skillset influenced by one's inherent traits and circumstances. However, this thesis continues on the premise of entrepreneurship as a set of skills and a type of mindset that can, to various extents, be cultivated through exposure, experience, training and education. As indicated by numerous rigorous academic studies over the last few decades, it seems evident that any dedicated person can improve one's entrepreneurial skills with practice, regardless of one's original starting point, predispositions or lack thereof (Gartner and Vesper, 1994; Gibb, 2002; Katz, 2003, Alberti et al., 2004; Kuratko, 2005; Solomon, 2007; Higgins & Elliott, 2011; Neck & Greene, 2011; Rae et al., 2012; Neck et al., 2014; Støren, 2014).

Perhaps the most vivid summary of the “born or made entrepreneur” debate comes from Alberti et al. (2004, p. 2), borrowing an analogy from fellow scholar Brockhaus – *“Despite these critical voices, we tend to side with Brockhaus (1994) in stating that teaching someone to be an entrepreneur is like teaching someone to be an artist. We cannot make a person another Van Gogh, but he can be taught about colors and composition, and his artistic skills can be improved. Similarly, we cannot make a person another Branson, but the skills and creativity needed for being a successful entrepreneur could nevertheless be anyway enhanced by entrepreneurship education”*.

3.3 Effects of Entrepreneurship Education

3.3.1 The Measurement Problem in Entrepreneurship

While the literature seemingly has reached a consensus on entrepreneurship skills and mindset as something that can, to certain extents, be cultivated and improved with practice and education, the question of how to measure these effects remains open. Across the literature, the problems of measuring “entrepreneurship” and tangential phenomena (e.g. innovation, creativity, ambiguity tolerance) are well known, and different metrics to measure effects of entrepreneurship education programmes have been proposed. Because the degree of effectiveness rests on the metrics used for its measurement, being clear on what's being measured is a necessary starting point for an evaluation of anything, including education programmes.

Some scholars say the ultimate goal of any entrepreneurship education is to create more entrepreneurs – hence we can simply measure the number of new companies established by graduates of a given programme, and rank the programmes accordingly (as pointed out, if not necessarily agreed with, by Antal et al., 2004, and Lackéus, 2016). However, this overly simplistic approach fails to account for other positive outcomes of a student becoming more entrepreneurially oriented and capable of setting his or her ideas out into the world. For example, measuring the number of new firms created by programme alumni entirely misses the value of intrapreneurs, entrepreneurial people doing innovative things within existing organisations. Antal et al. made this point clear in their paper researching various US-based, university-level entrepreneurship education programmes: *“Another critical challenge is measuring the success of university-wide programs. If business start-ups are used as the key metric of success, university-wide programs that encourage other fields to participate are less likely to score well. At a place like Cornell, there may be dozens of start-ups in any given year, but there are thousands of other students touched by entrepreneurship education who will go on to use those skills in the corporate, government or non-profit world or to start businesses in mid- or late- career stages. Therefore, “scoring by start-ups” ignores the major impact that an entrepreneurship program can have on a student body as shown in Streeter, Kher, and Jaquette (2011)”* (2014, p. 235).

Measuring innovation ability, creativity, people skills, ambiguity tolerance and other competencies often associated with entrepreneurship is also difficult. Many researchers have therefore ended up with the best proxy they have found, which is known as *entrepreneurial intent* among graduating students. This seems to be the most wide-spread approach found in research measuring the effects of entrepreneurship education programmes today (Thompson, 2009) – after completing a meta-study of a wide set of studies on the effects of EE programmes, Nabi et al. (2017) wrote that *“the most common indicator [of effectiveness – thesis author’s comment] by far is entrepreneurial intentions”* (p. 281).

In its simplest form, measuring entrepreneurial intent is done by asking students how likely they believe it is that they will either start a company or lead innovation projects within organisations within a certain upcoming time frame (e.g. the next 10 years), as seen for example in studies by Thompson (2009), Autio et al. (2010), and Støren (2014),

However, there are clear problems with using entrepreneurial intent as a proxy for actual entrepreneurial behaviour later in life, or the degree of entrepreneurial learning a student has

acquired. As for future behaviour, humans are notoriously bad at predicting the future, even the future of one's own life, future actions, dreams and overall life situation (see for example Loewenstein & Schkade, 1999). The degree to which a person's entrepreneurial intent translates into entrepreneurial behaviour, will only be revealed by observing the person's behaviour and career choices later in life. Even after such longitudinal observation, drawing definitive causal relationships between the exposure to entrepreneurship education and later observed entrepreneurial behaviour will be difficult, because any number of other factors than exposure to entrepreneurship education can have contributed to the entrepreneurial behaviour in various ways.

Furthermore, when asking a student to evaluate a completed entrepreneurship programme, he may be biased to answer what he thinks the examiner wants to hear, known as the "subject bias", or "participant demand effects" in literature on psychology (Nichols & Maner, 2010). This has been shown to exist even in completely anonymous survey situations.

Finally, the effects of selection bias in entrepreneurship programmes and courses can be significant, as students with a predisposition to or an existing interest in entrepreneurship presumably self-select into the programmes more frequently than students without pre-existing entrepreneurial inclinations. Attempts have been made to correct for this effect, for example in a study of entrepreneurship education programmes' impact, initiated by the European Commission in 2012. Here, the alumni who completed an entrepreneurship course during their university years were compared with a control group based on certain personal characteristics (Støren, 2014). Indications of self-selection bias – pro-entrepreneurial people choosing entrepreneurship classes more frequently than their peers without pre-existing entrepreneurial inclinations – were found in the study. However, it concluded that "*the latitude of the bias seems to be small considering the relatively limited differences in personal characteristics prior to HE* [higher education entrepreneurship classes; thesis author's comment]. *Therefore, possible effects and impact of entrepreneurship education result to a large extent from attending entrepreneurship courses and to a limited extent from the self-selection bias (European Commission, 2012, p. 27)*" (Støren, 2014, p. 800).

Despite all this, entrepreneurial intent seems to be the best proxy we have found to date. Hence this is the most important metric used when, for example, the European Commission initiates

a study of the impact of entrepreneurship education within the European Union. The measurements of programme effectiveness in presented chapter 6 therefore follow the established best practice of using changes in students' entrepreneurial intent before and after the partaking in an EE programme as a metric of its effectiveness.

3.3.2 Demonstrated Effects of Partaking in Entrepreneurship Education on Students' Entrepreneurial Intentions

Many studies have looked at individual entrepreneurship education programmes and measured their outcomes. Furthermore, some meta-studies exist, in which the scholars compare the results of a wide range of studies to draw conclusions at the aggregate level. The results of one such meta-study is presented in Nabi et al.'s 2017 paper "*The Impact of Entrepreneurship Education in Higher Education: A Systematic Review and Research Agenda*". In the paper, they write that "*most of the reviewed articles (61 articles out of 81, 75%) report a positive link between EE and participants' start-up intentions*" (p. 281). While this is the most notable general finding, they also point out that "*nonetheless, several studies report mixed, negative, or nonsignificant/ambiguous results for the link with entrepreneurial intentions (18 articles or 22% [...]). Of these, some articles suggest that EE reduces entrepreneurial intention for certain groups [...]*" (p. 281).

These findings are in line with those presented in similar studies, for example by the European Commission (2012), and by Støren (2014), which examined 2889 and 2827 alumni of EE programmes respectively (albeit not exclusively focused on EE at the higher education level, which this thesis is). Bae et al.'s (2014) meta-study (also not exclusively considering EE at the higher education level) also indicate similar findings – that participating in an EE programme has a statistically significant effect on the average student's entrepreneurial intent, but that the direction and amplitude of the effect varies significantly, often mediated by factors such as cultural background, socio-economic status and level of education received.

Interestingly, I found similar results in this study – on average, the entrepreneurial intent of Early Stage alumni was higher after than before the programme, but for some individual alumni, the effect was reversed, as their intent were lower after programme participation than it had been before. These findings are discussed in more detail in chapter 6.

In short, the findings in the literature indicate that attending an EE programme leads, on average, to an increase in entrepreneurial intent – but mediating factors can influence this effect greatly for each individual student. I therefore agree with the scholars who ask for more research on entrepreneurship education and its inputs, outcomes and the potential mediating factors that may influence said outcomes. In the words of Nabi et al. (2017), our collective understanding of such factors and variables should and “*can be further teased out through single studies/interventions, so we can understand how EE really works in theory and practice*” (p. 293).

3.4 Types of Entrepreneurship Education – Exploring the “About, For and In Enterprise” Learning Model

Following the notion that entrepreneurship skills can indeed be taught and learned to various degrees, the natural subsequent question revolves around how to teach it most effectively to students – in short, how to do entrepreneurship education. In order to judge which approach is most effective, one must have a way to distinguish between various ways and methods of teaching entrepreneurship.

Several frameworks to separate and understand various approaches to entrepreneurship education have been developed over the last few decades, and perhaps the most well-known comes from Jamieson (1984). In his paper “Education for enterprise”, he distinguishes between three overarching categories of entrepreneurship education programs typically found in universities, colleges and business schools. He labels these categories as education *about enterprise*, education *for enterprise*, and education *in enterprise*.

Firstly, education *about enterprise* is mostly concerned with teaching students – as implied – *about* entrepreneurship, venture creation and starting and managing a business. The students are typically expected to hear and read about various forms of entrepreneurship, entrepreneurial theory and frameworks, hear the stories of famous entrepreneurs, and get some exposure to the steps often required to take an idea to market, for example by working through cases. This approach to entrepreneurship education is primarily theoretical, and is often built on traditional pedagogical methods such as reading books and articles, writing assignments and business plans, and memorising information in order to pass an exam to demonstrate one’s

knowledge. In this form of teaching, entrepreneurship is explained in conceptual terms, and examined by the students at a safe distance.

Secondly, education *for* enterprise is more focused on preparing participating students to actually become entrepreneurs and company founders after completing their education or later in life. Students often go through an experiential learning experience aiming to simulate the early stages of a new venture as realistically as possible. Taking an idea to market through a “start your own business” programme inside or outside of a university would be an example of education for enterprise. Such educational programmes often also offer encouragement and mentorship for the students who show a particular propensity for entrepreneurial pursuits. These programmes are often concerned with developing students’ entrepreneurial mindset and attitudes as well as the hard skills needed to get a company off the ground. Jamieson (1984) refers to this type of education as a practical way to teach people how to start and run their own small to medium sized business after graduation.

Finally, education *in* enterprise is primarily concerned with training managers and operators who already own, run or are employed by an existing business how to scale and grow that enterprise further. As such, the ideal student is either already an established entrepreneur, or have concrete plans to become one, or to become an employee in an early phase start-up, or to become an intrapreneur within a bigger organisation.

All of the three types of entrepreneurship education offerings described below share certain characteristics, such as an overarching focus on developing entrepreneurial skills and mindset among students. However, this is done in different ways in the three categories. The categories are not clearly separated from one another, but live on a spectrum ranging from theoretical to experiential, or, colloquially, from classroom-based to real world-based.

Laukkanen’s Simplified, Dualistic Categorisation of Entrepreneurship Education Programmes

While the three-tier classifications from Jamieson are helpful for understanding some of the overarching differences between types of entrepreneurship education offerings, it has been criticised for being too vague and imprecise in its distinction between education for, and education in enterprise. One might argue, for example, that the skillset and mindset required to start and run an early stage company (“for enterprise”) are too similar to those needed to

scale an existing entrepreneurial company (“in enterprise”) to warrant being separated and classified as different categories of entrepreneurship education offerings. For example, Taatila (2010) notes that “*the line between these two classes is thin and often crossed*” (p. 51), referring to the vague distinction between entrepreneurship education programmes based on learning *for* and *in* enterprise.

To get around this potential source of confusion, Laukkanen (2000) simplified the categorisation framework by effectively combining Jamieson’s two latter categories. After combining these, and altering the semantics slightly, Laukkanen ended up distinguishing between only “*education about entrepreneurship*” and “*education for entrepreneurship*”. As two poles of a spectrum of various approaches to entrepreneurship education, the former is theoretically oriented, the latter is experiential and practical in nature.

The rest of this thesis uses Laukkanen’s dualistic distinction between education about and for entrepreneurship going forwards, to avoid the potential confusion that may arise when using Jamieson’s three-tier framework.

3.5 The Experiential Consensus Conundrum – We Know How to Learn Entrepreneurship Effectively, but Seldom Act Accordingly

Having understood the distinctions between education about and education for entrepreneurship, questioning the relative effectiveness of these approaches is a natural next step. The literature shows that countless studies have been done to understand how to most effectively teach entrepreneurship over the last few decades (e.g., Gartner & Vesper, 1994; Katz, 2003; Kuratko, 2005; Solomon, 2007). The results of these studies have varied extensively, due to the many variables that go into an entrepreneurship programme, ranging from how the curriculum is designed, to who the participating students are, the cultural norms of the country in which the programme is offered, the students’ degree of previous exposure to entrepreneurship and so on.

3.5.1 Experiential Entrepreneurship Learning is Most Effective

“It is apparent that learning within a real business environment is the key to success in entrepreneurial education” (Taatila, 2010, p. 54).

Despite the many variables that can contribute to the relative success of an entrepreneurship education programme, one thing most scholars today seem to agree on, with a remarkably high degree of unanimity, is the idea that entrepreneurship is most effectively learned experientially – by doing things in the marketplace of the real world, facing real uncertainty, ambiguity and risk. In other words, education for entrepreneurship is more effective than education about entrepreneurship, to use the distinction by Laukkanen (2002).

Mandel and Noyes, who in 2016 researched 15 of the top entrepreneurship education programmes in the United States², summarise the experiential learning consensus succinctly; *“Few, if any, entrepreneurship researchers and educators dispute the far-reaching value of experiential education”* (2016, p. 173).

This is also echoed by Jones and Matlay (2011), who summarise the literature in writing that *“it tends to be accepted that by and large entrepreneurship education tends to be experiential rather than lecturer-centered [...]”* (p. 698). On a more specific note, Jones and English (2004) argue that *“a different learning environment is required to support the study of entrepreneurship within a university setting [...] Essentially, a teaching style that is action-oriented, encourages experiential learning, problem solving, project-based learning, creativity, and is supportive of peer evaluation”* (p. 416).

Other scholars making similar remarks include Kickul and Fayolle (2007), who suggest an interdisciplinary model of entrepreneurship education using methods of teaching *“that allow*

² According to the following rankings: Fortune Small Business America’s Best Colleges for Entrepreneurs (Top 25), The Princeton Review/Entrepreneur Magazine Top 25 Undergraduate Schools for Entrepreneurship and The US News and World Report Entrepreneurship (top ten). Mandel and Noyes reached out to any school which was either ranked by at least two of the three sources or ranked higher than 20th in any one list, and successfully surveyed 15 of these 27 qualifying schools (Mandel and Noyes, 2015).

for learning under conditions of ambiguity and uncertainty” (p. 2), in an environment which allows students to develop *“immediate and personal experience”* (p. 7) and *“a sense of personal accomplishment or failure for the results obtained”* (p. 7).

Explicit distinctions between real-world, experiential learning as opposed to classroom-based learning is also put forth in the literature, for example by Higgins and Elliott (2011) who argue for entrepreneurship education through facilitating *“learning outcomes that are specifically derived from the enactment of an activity, rather than from the traditional classroom environment”* (p. 358).

Similarly, Herrmann et al. (2008, as cited by Taatila, 2010) believes there should be *“a shift from transmission models of teaching (learning ‘about’) to experiential learning (learning ‘for’)”* (p. 51) in order to *“offer students techniques that can be applied in the real world”* (p. 51).

The list of echoing statements found in the academic literature is substantial, and examples abound. In short, the literature seems pretty clear on the idea that entrepreneurial competencies and mindset are most effectively cultivated via learning by doing, facing ambiguity, uncertainty and risk, including the risk and the experiences of failing to various degrees. Thus, as summarised by Støren (2014), who researched the outcomes of entrepreneurship education in Norwegian universities – *“it is primarily participation in education through (not about) entrepreneurship that increases the outcome in terms of generic entrepreneurial or innovative skills”* (p. 795).

3.5.2 The Map and the Territory – Discrepancies Between Best Practices and What’s Being Done in Universities

Despite this collective understanding of the importance of experiential entrepreneurship learning found in the literature, many universities, colleges and business schools fail to act accordingly (Dhliwayo, 2008). Consequently, many entrepreneurship courses and programmes contain few if any experiential elements at all. Albeit hard to quantify, the number of entrepreneurship education offerings based solely on classroom teaching, rote memorisation of facts, and business plan writing is astoundingly high, given what we know from academic literature about effective entrepreneurship curriculum design.

Dhliwayo (2008) notes that some schools do indeed create truly experiential entrepreneurship education programs, but that these are few and far between. As good examples, he points out a few well-known schools across the world – *“The entrepreneurship curricula of the top schools in business education, such as Babson College, Stanford School of Business, MIT Sloan School of Management, The London Business School, and The National University of Singapore encompass a strong ‘learning-by-doing’ element through outside-the-classroom activities such as internships with start-ups, creating and running small ventures on campus and working on small consulting jobs”* (p. 334).

This thesis author visited three of these schools, Babson, Stanford and MIT (as well as Boston University, Duke University and U.C. Berkeley), and conducted meetings with their respective heads of entrepreneurship teaching staff in December of 2017, to learn from the best in the field of entrepreneurship education. I can thus attest to Dhliwayo’s remarks – these institutions unquestionably provide excellent experiential entrepreneurship education to their students. Yet, unfortunately these are such rare exceptions from the norm that they warrant specific showcasing and praise – for, to be blunt, what is arguably just following the best practices proposed by the literature, which is readily available to all other institutions too.

Having recognised the contrast between how entrepreneurship education often happens in many university settings, and how it ought to be done according to the literature, I return to the literature gap discussed at the start of this thesis. Few studies examine the structure, curricula, impact and results of entrepreneurship programmes that are independent of established academic institutions. This is unfortunate, because, perhaps ironically, many programmes independent of academia are designed more in line with what the academic literature recommends, than are many programmes and courses found inside academia. The subsequent chapter examines one such independent programme to shed light on a different way of thinking about and doing entrepreneurship education.

4. Case Study: Early Stage – a Learning Arena for Experiential Entrepreneurship Independent of Academic Institutions

The entrepreneurship education programme Early Stage³ is chosen as a case study to shed light on the impact a programme entirely independent of academic institutions can have on students' entrepreneurial intent, which is the standard metric used to measure the impact of entrepreneurship education programmes in the academic literature.

This chapter examines and explains what Early Stage is, who it is for, why, how and on which principles it was developed, and how it differs from start-up incubators, accelerators and traditional university-based entrepreneurship courses.

4.1 Context – From Startup Founder to Accidental Entrepreneurship Educator

During the years 2015-2016, this thesis author was exposed to two very different sides of entrepreneurship. On the one hand, I was a student at a leading business school, enrolled in all the entrepreneurship-oriented courses I could find in the course catalogue. On the other hand, and at the same time, I was a co-founder of a fast-growing start-up. These two simultaneous experiences vividly showed me what the difference between Jamieson's/Laukkanen's learning "about" and learning "in" entrepreneurship truly entails.

The business school courses were very much based on learning about entrepreneurship, through lectures, case work, articles to read, exams to pass and grades to acquire. While these courses were well intentioned, and often intellectually interesting, there was a distinct gap between what I learned in the lecture hall, and what skills and knowledge I needed to get our first entrepreneurial venture off the ground. While the case studies in class always had a right answer at the end of the paper, there were seldom any clear directions at all when we were met with daily hurdles of discovering and solving customer problems, creating value in the

³ For more information on the programme, see www.earlystage.no.

marketplace, or managing the expectations of employees, partners, customers, investors and official bureaucracies. On a similar note, the financial projections in the group work at school always pointed steadily upwards, while the real world hit our start-up's operational cost spreadsheets with unknown unknowns on a basis just regular enough to make it a surprise every time. In short, despite often being fairly interesting topic-wise, the lessons learned from the lecture-based courses about entrepreneurship seldom proved particularly useful when faced with the uncertainties of the real world and a demanding marketplace.

Being frustrated by the lack of truly applicable entrepreneurship education programs to be found in my city, and equally excited about the possibilities of bringing ideas to life I discovered in the start-up ecosystem, my co-founder and I decided to create an alternative, experiential programme for other students who were curious about entrepreneurship. By co-founding Early Stage, an eight-week entrepreneurship simulator programme for students, I became an accidental entrepreneurship educator.

4.2 Programme Objectives

As discussed in the literature review, there is an ongoing debate about what the objectives of an entrepreneurship education programme should be, and consequently, what methods and metrics out to be used to measure a programme's success. Put briefly, the overarching objective of Early Stage is to empower and enable students, through new skills, tools, mindset and network, to pursue and market validate entrepreneurial ideas in an effective manner.

This means that we are unconcerned with certain metrics that are often used to evaluate entrepreneurship education programmes. The number of companies that come out at the end of the programme, is a typical example. The goal of Early Stage is explicitly not to create 25 entrepreneurs per programme, who go out and start businesses on the day after the final session. Indeed, the vast majority of our alumni are going into regular jobs when they finish studying, which we applaud. Almost by definition, a recent graduate very seldom has any unfair advantages in solving complex problems – except for, perhaps, a high willingness to work hard and take on big risks. Instead, after working in an industry for a few years, the person may come across a specific problem he or she is particularly qualified to solve. In that situation, we hope, this person will remember the lessons learned throughout the Early Stage

programme, and know what to do, how to think, and who to call in order to validate the idea's market potential effectively.

Furthermore, we are equally concerned with making sure people do not waste time on bad ideas with no potential, as we are with empowering people to pursue the ideas that matter. The ability to avoid spending time, energy and resources on ideas with little to no market potential is an important part of the entrepreneur's toolkit. On a similar note, if Early Stage participants find out that entrepreneurship is not for them during the programme, that is a successful outcome also – having this realisation early in life, may save that person years of wasted entrepreneurial effort in the future.

4.3 Programme Overview

Early Stage is a learning arena for students who are curious about entrepreneurship in some form or another. Note that curiosity and an eagerness to learn are the only application criteria – the students do not need to have or be committed to a pre-existing entrepreneurial idea to participate.

Through eight weeks of experimentation, teamwork and entrepreneurial execution, 25 selected participants go through the experience of bringing an idea for a product or service to the marketplace. The student teams come up with their ideas themselves, and receive coaching and workshops around the necessary skills and tools required to bring their idea to market. They are also introduced to people in the local entrepreneurial and business communities who the students can ask for advice and mentorship.

Furthermore, each student team receives a budget of approximately \$1000 to spend on product development, digital marketing advertisements, or anything else they deem necessary to get their product or service developed and launched. As such, they are uniquely positioned to try out entrepreneurship without having any exposure to the economic risk and downside of their activities – however, if the team gets to revenue, they get to keep it for themselves, and are hence exposed to the potential economic upside of their venture. Six of the ten student teams who have been through the programme so far, have indeed gone all the way to the marketplace

with their product or service – they were able to get to revenue from paying customers before the end of the eight weeks.

The programme has been run twice (in 2016 and 2017), 45 alumni have completed it at the point of this writing, and two new programmes (for a total of 100 additional participants) are planned for the next 12 months, two programmes in Bergen and Oslo respectively.

It is worth noting that, thanks to generous financial support from the bank Sparebanken Vest, the technology transfer office Bergen Teknologioverføring, and the governmental agency Innovation Norway, participating in Early Stage is completely free of charge for the applicants who get selected.

4.3.1 Programme Structure and Content

Time Commitment and Session Structure

The programme consists of approximately 100 hours of structured sessions, made up of five-hour long sessions twice per week over eight weeks, as well as two intensive full-weekend gatherings. In addition to this, the students are given weekly challenges to work on in between the sessions, resulting in a total time commitment of approximately 150-200 hours per student.

Each session runs from 16:30–21:30 in the afternoon, except the weekend sessions which run from 10:00–18:00 on Saturday and Sunday. The sessions typically start with each student team openly sharing their progress on a weekly challenge, and receive feedback from the facilitators and the other teams.

The session then continues with a workshop on a predefined topic. The workshop is often related to the weekly challenge of the previous week. This means the students are asked each week to complete a challenge without any introduction to the skills or tools that are recommended for the challenge's fulfilment. The students then do their best to solve the challenge without any instruction, and report on their experiences on the next session. They are then presented with a workshop explaining the best practices one can use to solve the last week's challenge in an effective manner. By having already attempted the challenge, the students can relate to the workshop topic at a deeper level than if they had not tried to solve the it themselves first. They then complete the same challenge one more time, now using what

they learned in the workshop. In other words, the learning process is structured as try–reflect–learn–reflect–repeat.

Finally, the sessions allow for two hours of work on the teams' ideas. Herein lies a series of continuous coaching from the facilitators, who help the teams progress with their ideas.

Two Phases – Problems First, Solutions Second

The programme can be seen as divided into two overarching phases – the *problem phase* and the *solutions phase*. The problem phase is at the beginning of the programme, and lasts for about three weeks. Here, the focus is on finding and understanding customer problems, needs and desires, that can later be solved in the solutions phase in the last five weeks. In our experience, aspiring entrepreneurs are often too focused on their idea, i.e. their solution, and not focused enough on the problems that solution solves. Neglecting or under-emphasising the problem to be solved, can lead to creating products nobody wants to buy. As such, we believe it is not only important to teach students to discover, evaluate and eventually pursue great entrepreneurial ideas and opportunities. It is equally important to train aspiring entrepreneurs in idea evaluation so that they can avoid spending time and resources on ideas with little to no chance of market success.

Structured Content Delivery Progression, Unstructured Idea Development Progression

The content in the programme is delivered in a predefined order based on what we believe is most necessary at each step of the early phases of an entrepreneurial process. This means teaching problem- and needs finding methods and frameworks first, then ideation to come up with a range of ideas to solve identified problems, then a host of topics around testing the market potential of the idea, marketing the solution, selling it, effective customer service, and so on.

However, while we can structure the order in which we cover certain skills and topics, the entrepreneurial process itself seldom fits into a predefined, step-by-step structure. Therefore, no attempt is made to control the pace of development of the students' ideas. This means that at any point in time, the five student teams can be at five very different points in the process

of getting their idea to the marketplace – for example, one team might already be selling to customers, while another team struggles with a product development issue, and yet another has decided to discontinue their idea and go back to the first phase and look for new customer problems to solve. By being open to deviations from any preconceived idea of how far a team should have come at any particular week, we experience a degree of dynamism seldom found in highly structured classroom courses.

Visiting Guests Share Their Stories and Experiences

We as facilitators are very open about the fact that we do not have all the answers to students' questions, and that we as two people can, by definition, only offer two points of view. To expose students to other people's insights and experiences, we invite guests to share their stories or hold workshops for the students. So far, some of the Early Stage guests have included Sean Percival (previously head of marketing at MySpace, now a start-up investor), Silvija Seres (one of Norway's leading experts on exponential technologies), David Heinemeyer Hansson (author, and founder at Basecamp and 37Signals), and a few dozen others.

Bringing in these guests serves three purposes. First, as mentioned, they share interesting perspectives from having spent many years in the start-up and technology domain. These stories typically work to inspire students to see what is possible in the entrepreneurship domain, by talking to people who have built successful companies in recent years. Second, the guests often provide expert advice on their particular fields of expertise, which explores the topic much deeper than anything someone who is not an expert could have done effectively. A good example is when a professional venture capitalist holds a workshop on how to pitch investors, or explain how they examine potential investment deals. Thirdly, by bringing the people typically seen on the front pages of the newspapers into a room to interact with the students, networks are formed. We hypothesise that some of these links, albeit weak, can be called upon for advice if an alumnus student gets an idea he or she wants to pursue in the future.

4.3.2 Participants and the Application Process

The programme participants are full-time students at various universities and colleges in the city (the programmes have taken place in Bergen, Norway so far), typically aged 18-28, who apply to the programme voluntarily.

As of this writing, the two cohorts have received just short of 600 applications combined, for a total of 45 available spots in the programmes (20 spots in 2016, 25 in 2017). Applicants have come from six different educational institutions in Bergen, but, as to be expected, predominantly from the largest institutions, the University of Bergen (UiB), the Norwegian School of Economics (NHH), and the Western Norway University of Applied Sciences (HVL, previously HiB). The applicant pool is multidisciplinary, with applicants from a wide range of study subjects, from economics to law, engineering, dentistry, teaching, design, architecture, computer science, marketing, and nursing, to mention a few examples.

The applicant pool has consisted of approximately 40% women and 60% men in both the cohorts, which is a significantly more equal gender distribution than what is typically found in the world of entrepreneurship.

4.4 Principles and Programme Design in Line with the Academic Literature

When we were originally designing the programme format, structure and curriculum, we admittedly had limited knowledge of the academic research into entrepreneurship education. Hence the first version of the Early Stage programme was fundamentally built on a set of beliefs and hypothesis we had about how to maximise learning of entrepreneurial skills and mindset. As mentioned, the overarching goal was to provide students with an experience that, as closely as possible, resembled the experience of bringing an idea to market in a short period of time. The six principles we believed would ensure that the programme lived up to that overarching goal, were the following:

1. To allow for and embrace failure, uncertainty and chaos,
2. To create interdisciplinary student teams from various universities/colleges (see chapter 4.6.2 for further discussion),

3. To send the students “out of the building” to interact with customers and other stakeholders in the marketplace from day one,
4. To make students engage in frequent hypothesis testing to de-risk their ventures,
5. To make the students develop networks with aspiring and established entrepreneurs in the student- and local business communities,
6. To ensure students reflect on their experiences both in real-time and in hindsight, with the benefit of more information or knowledge of the outcome of a decision.

While specific aspects of the programme changes from year to year in accordance with student feedback and observable results, these six core principles on which Early Stage was initially built have stood the test of time to this day. Accidentally, as this thesis led me to research entrepreneurship education extensively, I have found support in the literature for most of these beliefs we built Early Stage around from day one. Examining these six principles in light of academic literature helps clarify why I still believe these are helpful guidelines for designing entrepreneurship education programmes that facilitate and encourage effective learning through real engagement with the entrepreneurial process.

4.4.1 Embracing Failure Without Judgment

Entrepreneurship is seldom a linear process from start to finish, but rather an organic process resembling a cycle of trying things out, gathering feedback, iterating, and repeating the same steps over and over again. Eric Ries’ popular book “The Lean Startup” labels it the *build, measure, learn, repeat cycle* (Ries, 2011). In the processes of idea generation, hypothesis testing, innovation and value creation in the face of uncertainty, experiencing some degree of failure is practically inevitable. Learning to accept and embrace failure as being a natural part of the process of entrepreneurship is therefore important for aspiring entrepreneurs. This point is emphasised by Politis and Gabrielsson (2009), who, as cited in Mandel and Noyes (2016), “*found that experience with and acceptance of entrepreneurial failure is correlated with starting future ventures, thus suggesting experiential entrepreneurship education provides a vital context to experience and process failure*” (p. 166).

Mandel and Noyes (2016) also recognise that the key to developing an acceptance of failure as useful feedback rather than being discouraged by it, is to face failures in an encouraging and non-judgmental environment – *“non-judgment (e.g. by faculty, peers and one’s self) in the face of embracing a creative challenge was commonly cited as a vitally important experience in an experiential entrepreneurship program. Many program leaders spoke of the simple value of having students explore and pursue entrepreneurial opportunities, regardless of outcomes. As one administrator stated, “The most important experience is to learn from trying and succeeding, or failing, but without being judged on the success of starting a company” (p. 170).*

In Early Stage, we stress the notion of failure as inherently useful feedback that fuels an iterative process of value creation, rather than something to be ashamed of or worried about. Thomas Edison’s understanding of setbacks, i.e. “failed experiments”, is a useful summary of our philosophy on entrepreneurial failures – *“I have learned fifty thousand ways it cannot be done and therefore I am fifty thousand times nearer the final successful experiment.”*

In practice, this means pushing the students to the point of failure from the very beginning of the Early Stage programme, as well as encouraging them to talk about and share these experiences with the rest of the group afterwards. For example, on day two of the programme, the students are sent out to talk to strangers on the streets about people’s daily problems and challenges, an exercise inspired by the empathy explorations found in the design thinking methodology. At this point, students have received no training in design thinking or customer interviews at all, so failure and awkwardness are essentially bound to happen, which, as revealed to them afterwards, is the intention of the exercise in the first place.

We as facilitators also share our entrepreneurial mistakes and failures, both from developing Early Stage and from starting or building other companies we have been involved with in the past, in order to demonstrate to the participating students that this environment is safe, supportive and non-judgmental in the face of failure and mistakes. Additional emphasis is placed on the value of being non-judgmental, figuratively and literally. By literally not being judged or evaluated on their performance in order to set a grade or a diploma, the students are able to better open up about what is not working. Sharing your mistakes openly is much easier when there is no ultimate evaluation or grading at the end of the semester, as such evaluations lend themselves to incentivise students’ portrayals of success rather than failure.

4.4.2 Interactions with Real-World Customers

As mentioned above, the Early Stage students are sent out to interact with regular people and strangers on day one, because we believe the answers to most entrepreneurs' pressing questions can be found by talking to and observing potential customers in the marketplace.

Countless start-ups have failed by not understanding customer needs well enough and catering to them accordingly, but seldom does a company spend too much time on customer development and understanding. In fact, when CB Insights did an analysis of 101 “start-up post mortems”, i.e. start-ups that failed, they found that the most common reason for failure was “no market need” for the product or service offered by the company (CB Insights, 2018). 42% of the company founders surveyed said the lack of market need was a leading cause of their company failure, compared with only 29% and 23% for the 2nd and 3rd most cited reasons for failure, “ran out of cash” and “not the right team” respectively.

While the CB Insight report is by no means an academically rigorous and reliable study, the anecdotal evidence seems clear – many founders start companies that do not, to sufficient degrees, serve genuine market needs or customer demands. By spending more time on understanding customers and their problems, needs and desires, aspiring entrepreneurs can mitigate the risks of spending time, money, energy and social capital on creating something that the marketplace ultimately will not support.

4.4.3 Continuous Hypothesis Testing

In Early Stage, we believe that the process of bringing an idea to market is in large part a process of continuous hypothesis testing. In the face of uncertainty and ambiguity, the entrepreneur brings a set of assumptions about the marketplace and its demand for his product or service, about how to best serve those demands, about how to price his product effectively, about who to hire into his team, and so on and so forth. The risks associated with entrepreneurship lie in these untested hypotheses. The role of the entrepreneur is thus to de-risk his venture by testing his hypothesis until they are proven correct or false.

Such testing can take many forms, but ought to be done with real customers, under real circumstances, ideally including real money. The ultimate hypothesis test is when the

entrepreneur asks a potential customer to pay him for his product or service. No amount of verbal positive feedback, press coverage, social media followers or other so-called “vanity metrics” come close to the effects of actual sales as an indicator that the entrepreneur is truly creating something of value to customers.

In the Early Stage, the importance of hypothesis testing is stressed and emphasised throughout the programme. We teach the students ways to test their hypotheses quickly and cheaply, using both qualitative and quantitative methods. Qualitatively, we employ a set of tools from the design thinking methodology, such as empathy interviews and qualitative observation of customer behaviour, to understand the underlying psychological and emotional needs of customers. Quantitatively, we teach students how to measure customer behaviour and purchasing intent online, through websites and digital marketing and analytics tools. For example, each student team creates a landing page (a simple, one-page website) that shows their product or service, explains the problem it solves for customers, and lets customers click a button to purchase the product or service right then and there. The teams then purchase exposure to potential customer groups through digital advertising on Google, Facebook, Instagram and similar platforms, using the budgets of about \$1000 budgets we allot to each team for such experimentation. The ads feature a brief explanation of the team’s product and service, and brings customers who click on it into the landing page. Once on the landing page, the customers’ behaviour (i.e. where they click, how long time they spend on the page, how far down they scroll, et.c.) is measured and analysed in real-time by a set of analytics tools (e.g. MixPanel, Google Analytics or similar).

Using this method, the students get valuable feedback about customer behaviour when exposed to their product or service online. By measuring sales through the website, and a host of customer interest metrics (conversion rates, time spent on site et.c.), they can quickly see if the product or service on display resonates with customers. These tests are quick and easy to do, so multiple variable testing (known as A/B testing) can be done to explore the effect of changing pricing, marketing messages, product images or other variables on the website. Notably, the product or service does not even technically need to exist yet, allowing aspiring entrepreneurs to test the market reactions to a product before even developing it.

The entire concept of crowd-funding platforms such as Kickstarter and IndieGogo is based on this idea – they provide entrepreneurs with enough proof of existing market demand (in the form of pre-sales) to make it worthwhile to actually make the product. If the market demand

is not substantial enough to reach the entrepreneurs' minimum funding requirement, there are no obligations to develop the product or fulfil any of the orders. Outside of crowdfunding platforms, such as on a regular website, one can avoid the legal grey area of selling a product that does not exist by, for example, bringing a customer all the way to the check-out process, and then refuse to accept payment at the last step, after a customer has demonstrated purchase intent by entering his credit card information. In that case, just as with crowdfunding, the entrepreneur gets market validation without any subsequent requirements to fulfil an actual order. Ideally, the potential customer's contact information has been saved in the process, allowing the entrepreneur to contact the customer to conduct qualitative customer interviews, or to sell the product if it is later developed.

The idea of entrepreneurship as a continuous process of testing hypotheses is also backed by the literature to some extent, for example when Mandel and Noyes (2016, p. 170) quotes an entrepreneurship educator who in an interview argued that "*students need to understand that the process of launching a business is really the process of testing assumptions, many of which will be wrong*". Here it is worth noting the link back to the importance of embracing failure in a non-judgmental manner. When testing unknown hypothesis, some form of failure is an inevitable part of the process – thus negative judgment when things do not go according to plan seldom leads a person to want to try again and again in the face of adversity.

4.4.4 Building Networks Within the Entrepreneurial Community

There is often a culture of "pay it forwards" in entrepreneurial communities, manifested as a collective willingness to help other entrepreneurs make progress. Where a "pay it back" culture builds on the expectations that one person's favour to me ought to be reciprocated by a favour from me to him, "pay it forwards" is slightly different. Here, the expectation is that if I help somebody, he or she will pay it forwards by, in turn, helping someone else, an external third party, at a later point in time. Silicon Valley is often anecdotally characterised by a strong culture of paying it forwards, but in my experience, this is a general tendency in entrepreneurship circles in many places across the world. While impossible to know definitively, I believe the "pay it forwards" culture is prevalent in entrepreneurship communities because, by definition, every successful entrepreneur has been a beginner at some point, and has probably gotten help by someone more experienced in that fragile early

phase of a new venture. This, I theorise, leads the successful entrepreneurs to want to give back to the community in the form of favours of various kinds (knowledge sharing, introducing people to one another, and so on).

While many informal entrepreneurship networks are open to newcomers, getting introduced by someone already on the inside is beneficial and reduces the initial barriers to entry. Therefore, we make a point to bring the Early Stage participants into the established entrepreneurship community throughout the programme. This happens by locating the workshops and sessions in various co-working spaces around the city, where entrepreneurs build their companies together. It also happens by us bringing the students to networking events in the community, and by bringing local entrepreneurs and domain experts in as speakers and workshop facilitators for the students to interact with directly.

Measuring the effects of having a network is difficult, but the students report feeling empowered to get in touch with entrepreneurs, mentors or field experts who are, after the programme, considered as acquaintances by the participating students. Knowing who to call, so to speak, we believe can help the students get started with an idea or other forms of entrepreneurial activity later in life if they wish to pursue such opportunities.

The literature offers some support for the notion of networks as valuable for entrepreneurs. For example, Mandel and Noyes (2016, p. 170), who researched the entrepreneurship education offered at 15 of the world's leading entrepreneurship universities, writes that *“One respondent argued, “They need to learn how to find real answers for their questions from real customers and people working in their industry.” Further, several respondents commented on the need for students to learn to network into a problem/opportunity space. One program leader comments, “Students need to be pushed to learn how to develop a real network – not just mindless networking that leads nowhere”.*

We strongly resonate with the belief that students “need to be pushed to learn how to develop a real network”. During the Early Stage programmes, we have been outright stunned by many incredibly intelligent, hard-working, brilliant students' fundamental lack of experience with outreach to strangers that may be able to help them in some way. How to connect with busy professionals in a manner that is value-adding rather than -draining for the recipient, is by no means common knowledge in our experience. This is problematic, because entrepreneurs are very rarely successful alone. Most substantial value creation requires a symbiosis between

different stakeholders ranging from employees to customers, partners, investors, advisers, and so on – all of whom must be found, connected and communicated with in a persuasive manner.

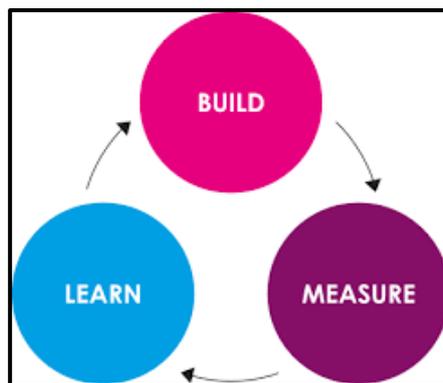
A tangential theme of many entrepreneurship programmes is that of mentorship in some form or another. In Early Stage, we used to provide each student team with a mentor from the local business environment, whose role was to ask tough questions, push the teams when necessary, and provide them with an external source of accountability. Mandel and Noyes (2016, p. 170) continues – *“Further reflecting the value of real world experience, respondents also frequently cited mentorship as a valuable experience in an experiential entrepreneurship program. Mentors can contextualize, guide and validate students’ entrepreneurial actions. Mentors can serve as a bridge and translator between the academic and professional worlds. Moreover, mentors play a vital role in legitimizing the broader entrepreneurship curriculum and can provide contacts and suggestions as students build the networks described above. As one program leader commented, “Engagement with practicing entrepreneurs validates classroom learning and helps students to recognize their own developing business acumen”.*

However, despite good results, in Early Stage we have stopped bringing in mentors to the programme. Instead, we teach the students how to find, approach and persuade a person of their own choosing to be their mentor. This shifts the responsibility over to the students, and one of two things happen. Either, they are able to get a mentor, and reap the benefits of the mentorship and feel a sense of accomplishment at the same time. In our experience, these teams engage much more closely with the mentor they themselves found and approached, than the teams did with mentors that were provided to them at the start of the programme. The other possible outcome is that a team is unable to get a mentor initially. They then see the benefits gained by the other teams who are mentored, and are then often inspired to go out and try again and again.

4.4.5 Continuous Reflection

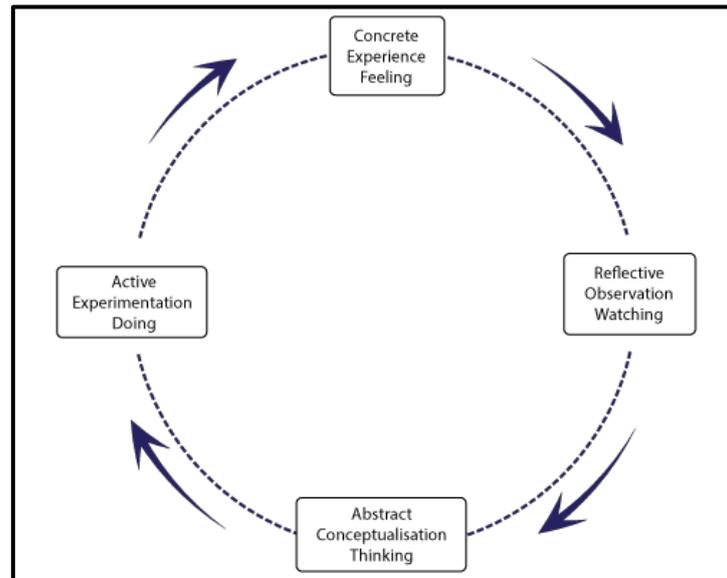
The importance of reflection is a recurring theme in the literature, both on the entrepreneurship process in particular, and on the processes of learning in general. To illustrate how the entrepreneurship domain and the general education domain approach and label the steps in an iterative, experiments-driven learning process, consider these two models known as the LEAN Startup Cycle, and Kolb’s Experiential Learning Cycle.

According to the LEAN Startup Cycle (Ries, 2011), an effective way to do iterative product or service development is to build, measure, learn and repeat the process. In other words, make something, ideally a very simple version of your product (known as an MVP, a “minimum viable product”), show it to customers and measure their responses, then reflect on and learn from that market feedback and build a new version in accordance with what you just learned. Then repeat the cycle.



*Figure 2: The LEAN Startup Cycle (Ries, 2011)
(illustration from Business2Community, 2016).*

Similarly, according to Kolb’s Experiential Learning Model, learning happens by having a concrete experience, and then reflecting upon that experience. Then one should use those reflections and subsequent learning to make an abstract conceptualisation, theory or hypothesis, which is subsequently tested through active experimentation, leading to a new concrete experience, which starts the cycle over again (Kolb, 1984).



*Figure 3: Kolb's Experiential Learning Model (Kolb, 1984)
(Illustration from Seekhley, 2018).*

As we can see in both models, the element of reflection (“learn” in the LEAN model, “reflective observation” according to Kolb) is a critical step in the process of learning and developing one’s understanding of the topic at hand. Without the reflective pause in between experimentation cycles, one is never able to extract the lessons presented by the results of the experiments. Therefore, without reflection, learning points are missed, and the same mistakes can be made over and over again.

In the Early Stage programmes, the importance of reflection is emphasised, and the process of reflection is facilitated frequently. After every session, workshop or challenge, the student teams share what they have learned with each other. By bringing reflection from the level of the individual up to the collective group level, we experience that different teams seldom repeat the mistakes that have already been made by other teams. Through the wisdom of the crowd, each student and each team can learn from each other’s experiences indirectly, as well as from their own directly.

4.5 How and Why Early Stage is Different from Start-Up Incubators and Accelerators

The Early Stage programme is distinctly different from start-up incubator or -accelerator programmes in who it is made for, and which objectives it aims to achieve. Accelerators and incubators take in established teams (or single founders) who already have an idea they are committed to and working on. In contrast, Early Stage is only open to individual applicants, and they do not need to have any ideas at all to apply to the programme. They simply need to demonstrate a curiosity for entrepreneurship and an intrinsic desire to learn more about the entrepreneurial process. In short, accelerators are about accelerating ideas – Early Stage is about accelerating people.

4.5.1 Democratising “Education in Entrepreneurship”

Accelerators and incubators get applicants who are already committed to a specific business idea. These people get experiential learning from the real world, by actually pursuing said idea and starting a company around it. However, to get to this stage, a person must have come fairly far in his or her desire to pursue entrepreneurship. However, if entrepreneurial skills are useful also for non-entrepreneurs in various capacities – where do people without such commitment to an idea, and to the life of an entrepreneur, go to learn these skills?

By bringing in people who are merely curious about entrepreneurship, but who by no means have committed to ideas or entrepreneurial teams yet, Early Stage seeks to democratise access to truly experiential “learning in entrepreneurship” (as per Laukkanen’s EE categorisation framework). These people would never have applied, nor been accepted, to an accelerator programme.

The goal of Early Stage has never been to create 25 entrepreneurs per programme, who go out and start businesses on the day after the final session. Instead, we seek to empower the participants with the tools, skills, mindset and network needed to take future ideas to the marketplace, if they so desire.

4.5.2 Disregarding Idea Quality in the Name of Learning

Accelerators and incubators need to carefully select the ideas and the teams they bring in, in order to maximise the chances of getting successful start-up cases out at the end of the acceleration programme.

Early Stage applicants are not asked to submit any pre-existing start-up ideas in their applications. Instead, we stress that having an idea is absolutely not necessary to participate. Yet, inevitably, some selected participants show up on the first day of the programme with a great idea they have been thinking about for weeks, months or sometimes even years, eager to finally get to work on it. Then, the very first thing the students are asked to do, is to write down all their ideas, good and bad, on yellow post-it notes, without an explanation of why they need to do this. After a few minutes of writing ideas down, we bring out the garbage bin, into which the students have to throw all their existing ideas, one after the other.

This exercise serves two purposes that we find beneficial. First, it demonstrates our belief that ideas are cheap, and effectively worthless without execution. The students see that most people have plenty of ideas, but few do anything substantial with them. Secondly, it shows that during the Early Stage programme, the students are not allowed to work on ideas they had before the programme started. This, too, is for two reasons. We believe the learning process involved in skills, frameworks and methods for finding problems worth solving, and coming up with new ideas from scratch are important to learn for aspiring entrepreneurs. By working with an existing idea, the students can potentially miss out on learning parts of the process of starting from absolute zero. Also, we want to avoid team members who, with their ego entangled with their six-month-old idea, push their teams to work on something they are passionate about and have an informational advantage in.

In addition to this, we have made a curious observation about idea quality and student's learning. In our experience, the worse an idea is, the more its executing team learns, relative to the other teams in a programme cohort. We believe two factors can help explain this.

Firstly, very bad ideas typically do not solve any customer problems, and hence do not result in successful start-ups. When the student teams pursue such ideas, they inevitably have to “pivot”, to change direction and try something new. We have found that going through the process of having to reconsider, or even start all over again with a new idea, is a great source of learning. It typically hurts in the moment, but afterwards, students often express an

understanding of the need to de-couple their egos from their ideas. When ideas fail, they can see it as feedback, not as a personal failure.

Secondly, really fantastic start-up ideas are typically about making something very big, substantial and meaningful in some way. While aiming ambitiously high is admirable, in an allotted timeframe of eight weeks, it is difficult to make much progress on cases solving really complex problems. These cases often need complicated technology development, big teams, and lots of funding or other resources. These cases take a long time to reach any meaningful indicators of market validation or other positive forms of feedback. Therefore, the teams that instead choose easier problems to solve, often with fairly bad solution ideas, tend to learn more, simply because they are able to move longer into the various stages of the entrepreneurial process. In short, we believe there to be more learning derived from bringing a simple, unremarkable, non-innovative idea all the way to sales and delivery, than from theorising for eight weeks about a great idea that might change the world one day.

As an example, a team of students who were initially thinking about making an app to reduce global hunger by allocating first aid food more effectively using artificial intelligence, did, naturally, not get very far towards the idea's realisation. They understood this in week five out of eight, then immediately reconsidered, and decided to pursue a much worse idea by most standards – selling socks with cat images on them via a web-shop. 36 hours after launching the “SockItUp!” store, they had sold socks for over \$2000, and went on to experience and learn about order delivery logistics, import tax regulations, customer support, the need for clear refund policies and so on. Suffice to say, nobody on the team would have learned anything about refund policies if they had kept going with the “better idea” of ending world hunger with technology, because solving any aspect of that problem was so far out of scope of the eight weeks available to them. Instead, a customer complained about the quality of their cat socks, asked for a refund, and gave the team a set of invaluable lesson about customer support and quality assurance in the process – lessons that can be applied to bigger and better ideas they may come up with in the future.

4.5.3 Operating in Different Stages of the Entrepreneurial Journey

The entire entrepreneurial process can be seen as a succession of four phases;

1. **The pre-idea/pre-team stage:** the aspiring entrepreneur has not committed to an idea yet, nor assembled a team. This phase is about finding customer problems to solve, and coming up with ideas – both of which may happen deliberately or accidentally.
2. **Idea validation stage:** an entrepreneur has an idea, and perhaps even a team, but the commercial viability of the idea is not yet validated in the marketplace.
3. **Early revenue stage:** the idea has successfully been turned into a product or service and has received some form of market validation through initial sales. A company has usually been formally formed.
4. **Growth/scale stage:** the product or service sells well, and the entrepreneur's task at hand is to scale up the company further.

At each of these stages, various forms of support systems exist, as shown in Table 1 below. Dark blue cells with three stars indicate that the start-up stage indicated on the X-axis is very well covered by the support system on the Y-axis. Lighter shades of blue and decreasing number of stars means that the support system to decreasing extents support the entrepreneurs in the given start-up stage.

Table 1: Support systems for various start-up stages

<i>Entrepreneurial support system</i>	Start-up stage			
	<u>Pre-idea, pre-team</u>	<u>Idea validation</u>	<u>Early revenue</u>	<u>Growth/scale</u>
<i>Early Stage</i>	***	***	**	
<i>Incubators</i>		***	***	**
<i>Accelerators</i>			***	***
<i>Academic courses "about" entrepreneurship</i>	*	*	*	*

As shown, a start-up incubator typically operates predominantly in the third stage – early revenue. A start-up company joins an incubator to get help with market validation of their idea, or with the frequent challenges of the early revenue phase, such as setting up systems and standard operating procedures, getting more customers, handling accounting and legal issues associated with new company formation, and so on.

Start-up accelerators primarily support entrepreneurs in the early revenue and growth stages, and the transition in between the two. Here, companies come to get help with larger scale logistics, supply chain management, product development, attracting funding from investors and similar growth-stage issues.

Academic courses about entrepreneurship may provide some insight into all of the phases, based on the structure and content of the course. However, in line with previous discussions, such insights and learning are predominantly passive, and largely disconnected from the real-world situations in which actual entrepreneurs operate.

Early Stage was largely developed because no support structures existed for people who were curious about entrepreneurship and eager to learn more, but who did not have a specific idea they were committed to yet. In other words, there were offerings available to people in the pre-idea and pre-team stage – in order to find a form of support structure, one had to be committed to entrepreneurship, not just curious about it.

The performance of these different entrepreneurial support systems is measured against fundamentally different objectives. An accelerator's goal is to bring an idea from early revenue to viable commercialisation, growth and scale, nationally or even internationally. Its success metrics therefore, in large part, revolve around the financial outcomes of the companies that go through the accelerator. In contrast, Early Stage is evaluated on its ability to attract curious students, who are not necessarily committed to a life of entrepreneurship at all, and provide them with the skills, tools, mindset and network necessary to validate their ideas in the future if they so desire.

4.6 How and Why Early Stage is Different from Entrepreneurship Courses in University

Returning to Table 1, we see how university or college courses “about entrepreneurship” (per Laukkanen’s categorisation framework) to some extent cover all the phases of the entrepreneurial journey shown in the table. Early Stage is distinctly different from such courses insofar as it covers different parts of the entrepreneurial journey, but it is also different from academic courses several other ways. Some of these are outlined below.

4.6.1 Absence of Evaluation Ensures the Right Incentives

The Early Stage programme is also different from a traditional academic course in entrepreneurship in several ways. As previously discussed in this thesis, classroom-based entrepreneurship education is often theoretical and non-experiential, despite the academic literature’s consensus of the superior effectiveness of experiential entrepreneurship education. Early Stage is an attempt at making the polar opposite of a classroom-based entrepreneurship course,

Furthermore, participants in Early Stage are not evaluated in any way. This is a key point, because when rewards are introduced into a learning situation, students’ incentives, and thus their actions, tend to change. If a student knows that he will be evaluated and graded at the end of the semester, he will seek to maximise his grades, which often leads to making different choices than he would have without the grading. For example, being open about failures can be difficult if grades are, or are merely perceived to be, based in part on an image of students’ success inside or outside of class.

When there are no final grades, no diplomas, and no winners, there is nothing to skew incentives away from embracing failure, being honest about things that do not go as planned, and optimising one’s efforts for learning as much as possible.

4.6.2 Ease of Creating Interdisciplinary Teams

Being independent of academic institutions, Early Stage is open to any student, regardless of the academic discipline they are enrolled in as their full-time studies. This is often very difficult in academic settings.

Many colleges are exclusively specialised on certain subject areas. The typical example is a business school, but others are also common – engineering focused colleges, schools of architecture and design, schools of medicine and so on. This makes it difficult to create courses that are open to students from across various subject disciplines. Such courses must fit into the schedules and curricula requirements for a wide range of students, which is seldom convenient for the administrators and professors of the schools involved in such arrangements.

In some places, these various, subject-specific schools are independent units with little interaction with institutions with different subject focus areas – for example the Norwegian School of Economics. This makes it practically impossible to allow students to do courses with students within other academic fields. In other places, subject-specific schools are united under the umbrella of one overarching university – for example, Stanford Business School, Stanford School of Education and Stanford School of Medicine are all united under Stanford University. This makes it somewhat easier to create multidisciplinary courses and programmes, which is exactly what the Stanford d.school (i.e. the Hassno Plattner School of Design) aims to do.

The reason Stanford does this is based on a belief that interdisciplinary teams lead to more creative results in entrepreneurial and creative processes. This is a belief we share wholeheartedly, and it lies at the core of the Early Stage programme. Being independent of specific academic institutions, we can create one of very few learning arenas where a dentistry student can work and learn in a team together with a sociology student, a business student, an engineering student, and an architect student – all of whom are only connected by a shared curiosity for entrepreneurship.

4.6.3 Pedagogical and Curricular Flexibility

In Early Stage, we teach students to embrace the LEAN start-up method of iterative idea and product development – build, test, measure, learn, repeat.

On a somewhat meta level, we have used the very same framework to design the programme that teaches students this framework. In other words, the entire Early Stage programme and its curriculum are in constant iterations. We build something, e.g. a workshop of some kind, test it on the students, measure their quantitative and qualitative feedback, learn from it and iterate accordingly, and repeat the process. As such, we have a very flexible curriculum, which is changing on a continuous basis in line with customer feedback from the students.

This is possible because we are exempt from reporting to anyone above us. In academia, this form of iterative curriculum design is seldom possible, because any changes must be approved by a wide variety of stakeholders (e.g. the local rectorate, and often a set of governmental bodies who are in charge of educational quality and funding). Therefore, the iteration cycles are often incredibly slow and long-winded.

Without claiming that any of these models necessarily create better student outcomes than the other, I can safely conclude that they are very different. And in our opinion, an inherently iterative subject like entrepreneurship benefits from being taught an equally iterative, non-rigid manner.

4.6.4 No Discrepancy Between Teachers and Practitioners of Entrepreneurship

Universities are often isolated from the world of commercial and entrepreneurial activity (with some notable exceptions, such as Stanford University, which very actively engages with the local entrepreneurial community). This isolation creates problems which can filter into academic curricula. In the world of entrepreneurship in particular, trends, methods and best practices change incredibly quickly. By not having a finger on the pulse, universities often lag far behind the present realities in such fast-moving fields, and hence are in danger of teaching outdated methodology.

Furthermore, academic professors are very rarely experienced entrepreneurs. Teaching students about the realities of entrepreneurship is therefore a task many professors are woefully unprepared for. This is particularly true, as highlighted by Lack us (2014, 2016), what regards the emotional aspects of entrepreneurship, which one can truly only understand by having been actively engaged in entrepreneurial activity.

One way in which universities can reduce these problems, is by engaging more actively with the executing branches of the entrepreneurial community. By bringing in actual, active entrepreneurs to teach entrepreneurship courses, the strict divide between learners and practitioners can be mitigated.

In Early Stage, we try to remove the gap between practitioners and teachers of entrepreneurship altogether. We as the programme facilitators are active entrepreneurs while running the programmes, and we bring in dozens of guests who are also practising entrepreneurs to help us deliver authentic, relevant and up-to-date material to the students.

4.6.5 Promoting Non-Academic Views on Risk

In a classroom, risk and uncertainty are fundamentally abstract concepts – not so in the real world of entrepreneurship. A university student in a course about entrepreneurship can theorise about aspects of a business plan for an entire academic year without feeling the burden of uncertainty, economic and otherwise, on himself. By lacking skin in the game and exposure to the potential downside of his actions, like an entrepreneur does, entrepreneurial risk in the eyes of the student is nothing more than a theoretical phenomenon or a mathematical consideration in a spreadsheet of financial projections.

The university is generally a shielded and secure place to be, for students and professors alike. The rules, requirements and success metrics are clearly defined with little to no ambiguity. If something goes wrong, one can always re-take the exam next year, and professors with tenured positions are seldom exposed to any professional risk or uncertainty at all.

Such an environment is not conducive to learn about the nature of entrepreneurship, of which a core aspect is the way one deals with and continuously works to mitigate risk and uncertainty.

In the Early Stage programme, students are required to try things out that have no certainty of working at all. They risk failure, embarrassment, making customers angry and disappointing their teammates on a daily basis. Risk and uncertainty therefore is transformed from something abstract into something they can feel directly, and thus learn to handle effectively after a few iteration cycles.

5. Methodology

The purpose of this thesis is to find out whether or not participating in the eight-week long independent entrepreneurship education programme Early Stage had any statistically significant effect on participants' entrepreneurial intent – and if it did, to find out what the extent of this effect was. This chapter explains how I conducted the research to find out if any such pre- and post-programme differences in entrepreneurial intent could be found among the alumni.

5.1 Thesis Progression Steps

The study to answer the research question was made up of three progressive phases, which are explained in the following paragraphs – literature review, data collection, and data analysis.

5.1.1 Step One – Reviewing Literature on Entrepreneurship Education

When exploring the existing literature on entrepreneurship education, I found relevant papers and journals in two different ways. First, I used academic databases such as Emerald Insight, Business Source Complete (and Google Scholar as a search engine) to find the research related to search strings such as “entrepreneurship education”, “teaching entrepreneurship”, “entrepreneurial learning” and so on. Secondly, I reached out to a few renowned scholars on the subject, and asked which papers they considered the most important ones to read in order to understand the academic field and its ongoing and past debates. I then found the papers they recommended in said databases and included them in my literature review.

I do recognise two potential biases that may have influenced my choice of literature to research. By asking esteemed academics within the field, I may have received papers in return which are biased towards presenting the field in a positive light in some capacity, or papers that otherwise promote views held by the person who made the recommendation to me. Also, due to my own intrinsic interest in the field of entrepreneurship education, I may subconsciously have chosen papers with titles or abstracts that, again, show the field in an

overly positive light. Such tendencies for researchers to search for information that confirms their existing beliefs is known as confirmation bias, and is further discussed in chapter 5.2.3 on generalisability below.

However, as I recognised these potential biases and the role they might play in skewing my literature review to an overly positive point of view, I attempted to counterbalance any such effects by consciously seeking out literature from scholars with viewpoints that seemed to contradict my own, as well as viewpoints from scholars who are generally sceptical of entrepreneurship education's ability to foster more entrepreneurial activity in any meaningful capacity.

5.1.2 Step Two – Data Collection

To measure if any effect on the students' entrepreneurial intent had taken place, use a single-case study to I compare the students' self-reported intent as it stood before, as well as after attending the programme. I chose students' entrepreneurial intent as the metric by which I judge the programme's effectiveness, because this metric is the standard measure used in the academic literature (as discussed in chapter 3.3).

Another important aspect that contributed to my choice of data collection, i.e. to rely solely on quantitative rather than qualitative data inputs, was a desire to minimise biased responses from the Early Stage alumni. As I know most of these alumni personally, I theorised that if I had used qualitative, interview-based data in this thesis, some of the alumni might have been inclined to alter their answers in light of our pre-existing personal connection. Such alterations could have been made consciously or unconsciously, for example by a student answering in a way he or she believed that I wanted a particular question to be answered (also known as the "subject bias"), as I further discuss in the evaluation of the research method in chapter 5.3 below.

A single-case study, as opposed to a multiple case study, was chosen due to the problems of comparing programmes with different structures, objectives, curricula and participant types to each other, as further discussed in chapter 5.2.3 on generalisability. Furthermore, I did not have access to the same quality of data from any other EE programmes to which I could compare the Early Stage findings, which also contributed to the choice of a single-case study.

Online Survey Design

To collect quantitative data from the Early Stage alumni, they were presented with a set of statements and questions in an online survey, or more specifically, in the words of Saunders et al. (2015, p. 363) “*a self-administered, internet-mediated questionnaire*”.

These statements and questions were designed to elicit indications of the entrepreneurial intent of each student. The text box below shows the study design in its entirety. The italicised text is the questions, and the non-italicised is contextual explanations provided to the survey respondents.

As seen in the statements and questions below, the survey was formed to highlight the students’ entrepreneurial intent in a broader sense of the word than just the intent to start a business, following the discussions in chapter 1.2.2 and 2.3. While starting businesses is certainly one form of entrepreneurial activity, it is not the only one – so the survey also explores students’ intent to join an early phase start-up company, or to initiate an entrepreneurial project as part of a regular job.

Early Stage Alumni Survey 2018

Dear Early Stage Alumni. Thank you in advance for participating in this anonymous study – I ask you to complete this questionnaire with honesty.

You will now be presented with three statements about entrepreneurial intent, meaning your intentions (or lack thereof) of acting in entrepreneurial ways now or in the future.

Please rate the likelihood that these statements will be true for you, on a scale from 1-10, where 1 is highly unlikely ("not at all"), and 10 is highly likely ("absolutely!").

- *At some point in my life, I start my own company.*
[Thesis author's remark: Participant clicks a scale from 1-10, and is subsequently sent to the next statement.]
- *At some point in my life, I join an early phase start-up company.*
- *At some point in my life, I initiate or lead an entrepreneurial project as part of my job in a big company.*

You will now be presented with the same three statements about entrepreneurial intent again. This time, please rate them like you would have done if you got this task on the day before applying to the Early Stage programme. How was your entrepreneurial intent back then?

- *At some point in my life, I start my own company.*
- *At some point in my life, I join an early phase start-up company.*
- *At some point in my life, I initiate or lead an entrepreneurial project as part of my job in a big company.*

Thank you! Now follows two final questions (answer "as of today", not as at the time of your ES application).

- *How old are you?*
- *How many years ago did you attend the Early Stage programme?*

Your response has been collected. Thank you for your participation!

5.1.3 Step Three – Data Analysis

After collecting responses from 41 out of a total of 45 Early Stage alumni, the raw data was analysed extensively. The goal of this analysis was to find out whether or not there was a significant difference between the entrepreneurial intent of the average alumnus before and after attending the Early Stage programme.

To do this, each respondents' answer to the three forms of entrepreneurial intent (intent to start a company, to join a start-up, or to initiate an entrepreneurial project at work) was averaged out to make one "average entrepreneurial intent" score before and after programme attendance for each respondent. I could then see that there were differences in the alumni's entrepreneurial intent before and after the programme, but I could not yet know if these differences were statistically significant or not. Therefore, I then ran a two-sided, paired T-test in order to see if these average entrepreneurial intent scores from before and after the programme were different from each other with statistical significance. This statistical test was chosen in line with the recommendations in Saunders et al.'s (2009) book, *Research Methods for Business School Students*, in which they advocate using the paired T-test when testing for changes in a variable at two different points in time. The results of these calculations and tests are presented in chapter 6.

5.2 Evaluation of the Research Method

In the following paragraphs, I evaluate my study method, discuss its limitations, and consider and the validity, reliability and generalisability of its findings.

5.2.1 Validity

The validity of a study is a judgment of how well the study is able to gather the correct type of data and findings in relation to what one seeks to find out – or, in the words of Saunders et al. (2009, p. 167), *"validity is concerned with whether the findings are really about what they appear to be about"*. I do believe my survey provides responses that accurately measure a student's entrepreneurial intent, as he or she self-reports it.

However, whether or not that intent actually translates to entrepreneurial actions and behaviours later on, is a different question, as is well recognised in the literature (and is extensively discussed in chapter 3.3.1 on “the measurement problem in entrepreneurship”). Measuring the impact Early Stage has on its alumni in terms of the stated programme objectives – *empowering students to be able to bring future ideas to the marketplace in an effective way* – is very difficult. A concoction of interconnected variables contributes to a students’ ability to bring an idea to market, so studying the programme results using such metrics is practically impossible.

This is why, as mentioned, I instead use the metric that has been adopted as the standard practice of measuring impact of entrepreneurship education programmes in the academic literature – namely, the entrepreneurial intent of students before and after attending such a programme. For that metric of intent, I do believe my survey responses have a high degree of validity.

5.2.2 Reliability

A study’s degree of reliability is about “*the extent to which your data collection techniques or analysis procedures will yield consistent findings*” (Saunders et al., 2009, p. 156).

In this respect, it is worth noting that I could only run the study on two cohorts of Early Stage alumni, as only two programmes have been run at the time of this writing. I did find significant increases in average entrepreneurial intent for the students of both the first and the second programme cohort, which is an indication of satisfactory reliability of findings. However, further studies of future alumni can come to strengthen or weaken this degree of reliability over time. As I will presumably have access to the data on upcoming Early Stage alumni as well, I look forwards to see how the reliability of my study’s findings stands the test of time in the face of more incoming data.

5.2.3 Generalisability

Generalisability, or external validity, is about the extent to which the findings from a study can be generalised beyond the scope of the sample that was studied – in other words, if the findings are applicable to other settings (Saunders et al., 2009).

As is often also the case in academic literature around entrepreneurship education, the level of generalisability from research studies is often low, or at least questionable. This is admittedly also the case in my study. Several reasons can limit the generalisability of my findings, some of which are arguably due to inherent characteristics entrepreneurship as a topic of academic research (problems with factor isolation and determining causal relationships between inputs and outcomes), and some of which are specific to my study (e.g. limited sample size, potential biases in collected responses). All of these factors that may limit the generalisability of my study's findings are presented below.

Factor Isolation Problems

While the students go through the Early Stage programme, other things happen in their lives as well. Any number of events can play a role in changing the student's entrepreneurial intent in this period, which may have no direct relation to the programme at all.

Even if strong correlations are found between programme attendance and changed entrepreneurial intent, concluding that there is a causal effect stemming from the programme (only) is problematic for the reasons explain above. Similarly, on a more granular level, if a correlation is found between programme attendance and subsequent entrepreneurial intent, it is still practically impossible to know which elements of the programme potentially contributed (the most) to this observed change.

Small Sample Size

If the population studied in my study is defined as all Early Stage alumni, the entire population size is a group 45 people, and my sample size of 41 respondents is more than sufficient to predict the average entrepreneurial intent in the entire population, before and after programme attendance, with statistical significance. In other words, the findings of my study are

presumably highly generalisable to other Early Stage alumni (i.e. those that go through the programme in the future).

However, a more interesting question is whether such programme participation can have the desired effect on any student. When this is the question at hand, the total population size increases to include practically all students, perhaps limited to a certain age range, location or some other demographic factor. In this case, 41 survey respondents are arguably too few to get results with strong generalisability. In other words, it is hard to say with certainty that similar programmes as Early Stage will produce similar results with other students elsewhere.

Acknowledging the Possible Role of Confirmation Bias

In a study like this one, in which the researcher studies a phenomenon into which he is personally invested in some capacity, the possible role of confirmation bias must be addressed.

I am acutely aware of my inherent incentive, as one of the original founders of Early Stage, to make that specific EE programme seem valuable, useful and effective. However, having acknowledged this possible pitfall, I have gone to great lengths to keep this study and its findings as objective as possible. These include seeking out literature that disagrees with my own beliefs about entrepreneurship education, making sure the survey was completed by the Early Stage alumni in complete anonymity to avoid the possible respondent biases discussed below, and generally doing my very best to consider the data and the findings as impartially as possible.

Thus, I believe that the raw data of the study would have been equal if somebody else did this study. However, one might argue that the interpretations and analysis of the data would be different if conducted by somebody further removed from Early Stage than I am. Against that argument, I cannot do anything else than to underline that I acknowledge that confirmation bias might play a role in this study, but also emphasise that I have done my utmost to avoid it.

Potential Cognitive Biases Among Respondents

As is well-known in academic research, respondents in a study can have biases that may skew the survey results in one way or another. This may also be the case in my study, and some of

the most plausible biases that may be found in my sample are presented below. Note that selection bias, the possible tendency for students with pre-existing entrepreneurial tendencies to self-select into EE programmes at higher rates than others, was covered in the literature review and is thus not covered here.

Hindsight Bias

In my opinion, the most problematic aspect of this survey is that it relies in part on self-reporting of entrepreneurial intent as it were one or two years ago. Because we did not gather data on entrepreneurial intent in the initial programme application process, the survey had to ask students to self-report how they remembered their entrepreneurial intent to be before they applied to the programme.

This is problematic because people generally have trouble imagining themselves and their emotional states, skills and intentions at points in time in the past. This cognitive fallacy is known as “hindsight bias”. In surveys like this one, I theorise that the hindsight bias can potentially swing the self-reported past entrepreneurial intent both ways, both up and down. For example, a student who has gone through an entrepreneurial programme such as Early Stage has experienced the simulated life of an entrepreneur, practised his or her entrepreneurial skillset, gotten a network of other entrepreneurs and so on. It may be difficult then, to remember a time before he had all of these reference experiences, and report his past intent in an accurate manner. Or, on the other hand, a student may think in similar ways, but conclude that everything she knows and feels about entrepreneurship must come from the one experiential entrepreneurship programme she has been through, and thus underestimate her entrepreneurial intent as it stood pre-programme.

To avoid the problems of hindsight bias in the future, and hence improve the generalisability of future similar studies, we will make sure to ask future applicants about their entrepreneurial intent before they go through the programme.

Subject Bias

Subject bias, when a survey respondent alters his answers to fit whatever answer he hopes the surveyor wants to hear, is widely known in the domains of qualitative research and the social

sciences (Saunders et al., 2009). One could speculate that this can have taken place in this survey also.

As a programme facilitator, I get to interact closely with the participating students over a period of eight weeks, and as a result, get to know many of them well. While this is great from an interpersonal perspective, and arguably makes me more capable in the role of facilitator and teacher, it can be problematic from a survey-based research point of view, because the alumni may be tempted to provide the answers they believe I am looking for.

The participants' complete anonymity in the survey was consciously put in place to mitigate the risks of subject bias, following the advice from Saunders et al. (2009), who write about anonymous, self-administered questionnaires, to which respondents typically "*are relatively unlikely to answer to please you or because they believe certain responses are more socially desirable (Dillman 2007)*" (p. 363-365). Yet, alas, as in most social science research, I will never know if this anonymity measure truly worked as intended to discourage any form of subject bias in the responses.

Social Desirability Bias

Social desirability bias may lead a student to self-report higher entrepreneurial intent than what is true, because many aspects of being entrepreneurial is considered socially desirable in Western cultures, or perhaps in the students' peer group. Furthermore, he has spent eight weeks of his life learning entrepreneurship, and may want to justify this effort to himself by reporting a higher entrepreneurial intent than what is the truth. Again, complete anonymity was deliberately used as an attempt to counter any potential social desirability motivations to alter one's survey responses.

As is practically always the case with cognitive biases, they are difficult to prevent and impossible to measure. To conclude this section on generalisability, I thus acknowledge that potential biases that may have skewed the results one way or another, but I am unable to predict to what extent, or in what direction, these factors may have affected my results. However, I also acknowledge that many of these potential issues are not exclusive to my study, but well-known phenomena in most research fields concerned with the social sciences.

5.2.4 Ethical Considerations

The survey respondents remained completely anonymous before, during and after completing the survey, and no personal data (except age) was collected. As such, I believe the survey avoided any ethical issues that may arise when personal or otherwise sensitive information about the respondents is collected, stored and analysed.

6. Analysis and Findings

In the following, I present some general outcomes of the Early Stage programmes of 2016 and 2017, and present my analysis of the data collected through the methodical process described above.

6.1 General Results of Early Stage's 2016 and 2017 Programmes

Over the two initial 8-week programmes, which were run in the autumn of 2016 and 2017 respectively, 45 students have been accepted into, and subsequently completed the programme. These were grouped in teams of five, for a total of nine student teams.

Out of these nine teams, six got to the point of getting revenue from selling their product or service in the marketplace, which we consider an important milestone during the programme. The students' product or service ideas have ranged from technological wristbands used to pay for things at concerts, to a bicycle-based delivery service that can deliver things to your door ("Foodora for everything"), to e-commerce webstores selling everything from socks and sweaters with cat photos on them, to monthly a subscription service for tampons and chocolate (for which the primary customer group, and the recipient of extensive, highly-targeted advertising, were single dads with teenage daughters).

After each and every session of the programme, we gathered anonymous feedback from the students, asking them to rate the session quantitatively from 1-10, and to provide one piece positive and one piece of negative qualitative feedback. At the end of each programme, we ask for more extensive feedback from the students. Among other things, they rate the overall quality of the programme using the well-known Net Promoter Score (NPS) metric – "*on a scale from 1-10, how likely are you to recommend Early Stage to a friend (where 1 means extremely unlikely, and 10 means extremely likely)?*". At this point, the NPS score of the programme is at 9,72 from 45 responding alumni.

Thanks to these regular feedback deliveries after each and every session, we have extensive data sets with information that help us improve the programme structure, content and curriculum design – but not as much data on entrepreneurial intent as is often collected in

studies found in the literature. Therefore, the impact of the programme has been difficult to figure out, and therefore, the following study was done as part of this thesis.

6.2 Survey Results and Analysis

6.2.1 Completion Rate and Age of Participants

41 out of the 45 alumni completed the form, which equals a completion rate of 91% of the students who have been through Early Stage.

The average age of the students was just under 24 years at the time of completing the survey, and 22.5 at the time of participation in the programme.

6.2.2 Aggregate Average Entrepreneurial Intent Among Early Stage Alumni

As discussed above, the students were asked about their entrepreneurial intent in three different ways – their intent to start one's own business, their intent to join a start-up as an early employee, and their intent to initiate or lead an entrepreneurial project at work in a larger organisation at some point in their lives. Unless specified otherwise, "entrepreneurial intent" thus refers to the average of the three scores from 1-10 reported by the students in response to these three question variations.

At the aggregate level, when averaging out the replies from all the respondents, and averaging out the replies to the three variations of entrepreneurial intent questions, we get the results shown in figure 4 below.

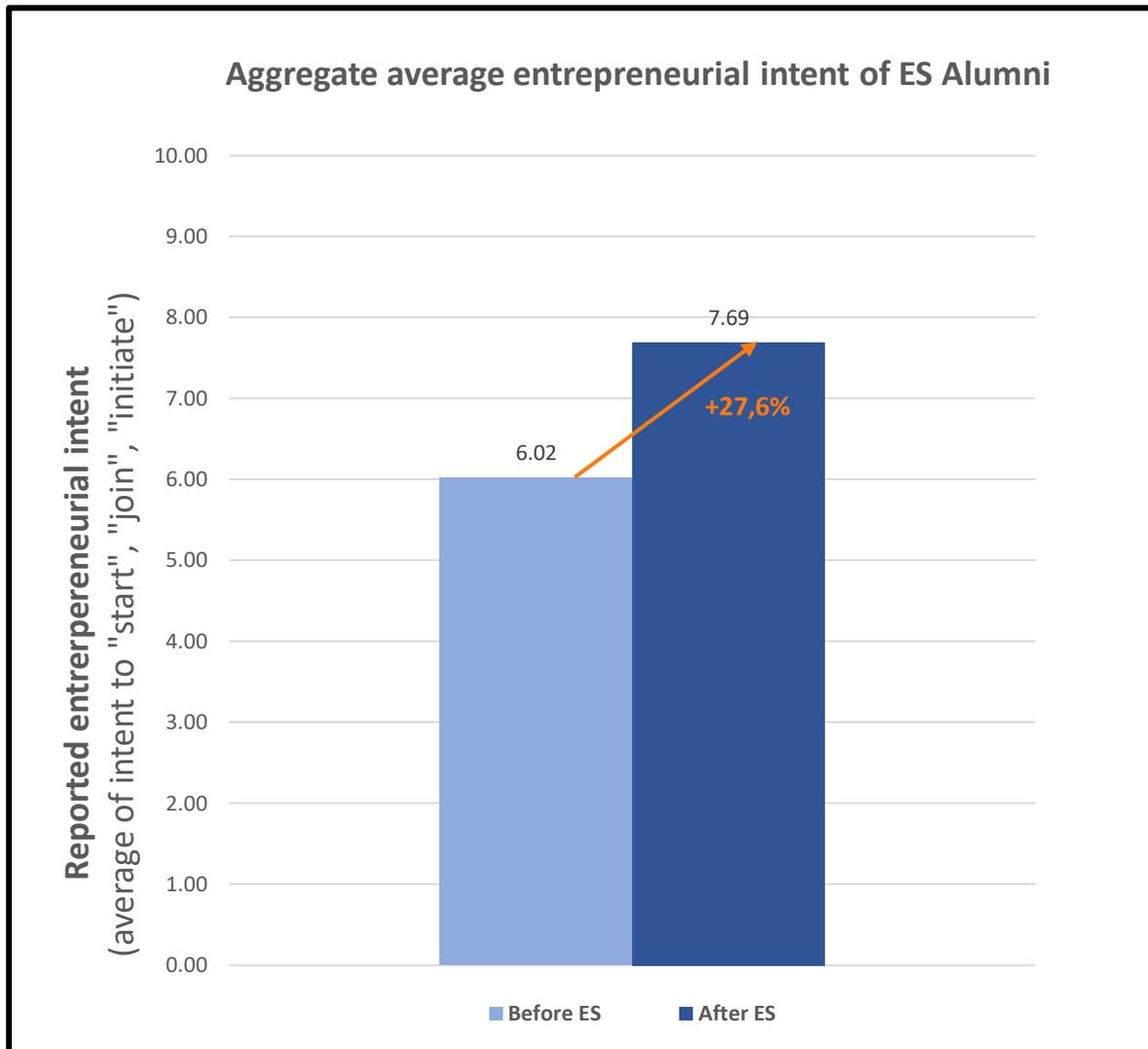


Figure 4: Aggregate average entrepreneurial intent of ES Alumni.

These results indicate a significant increase (+27.6% in this case) in students' entrepreneurial intent in the period between applying for and graduating from the Early Stage programme.

Assuming the entrepreneurial intent of the students to be normally distributed, a two-sided, paired T-test was used to compare the students' average entrepreneurial intent pre and post programme attendance. The null hypothesis is that there is no significant difference between students' average entrepreneurial intent after attending Early Stage compared to before taking part in the it. After running the test, I get a p-value of 0,000002, or 0,0002%, which lets me reject the null hypothesis by a solid margin when using a 5% significance level (see appendix for detailed results of the T-tests).

I conclude that there is a statistically significant difference in the entrepreneurial intent of the average Early Stage alumni compared to their self-reported intent as it were before attending the programme.

While still keeping in mind the problems of determining causality discussed in chapter 5.2.3 (on generalisability of findings), I conclude that these results at least show a correlation between attending Early Stage and changing one's entrepreneurial intent. This correlation is positive on average, but as seen below, some people also experience a reduction in entrepreneurial intent after partaking in the programme.

6.2.3 Changes in Entrepreneurial Intent per Individual Student

A more granular way to look at the same data, is to consider each individual alumni's self-reported entrepreneurial intent before and after participating in Early Stage. This is shown below.

Again, the bright blue columns represent the individual alumnus' reported pre-programme entrepreneurial intent, while the dark blue columns are the post-programme intent measurement for the same student. The orange line shows the net difference between post- and pre-programme measurements for each student. As such, when the orange line lies above zero, it indicates a positive entrepreneurial intent effect of attending Early Stage. In contrast, the orange line below zero indicate a negative effect on the same metric.

Overall, we observe that the orange line generally lies above zero, indicating that, for the average participant, attending Early Stage generally increases his or her entrepreneurial intent. However, this is not always the case, as we see when looking at each alumnus individually instead of as part of an aggregated group average. This is further discussed below.

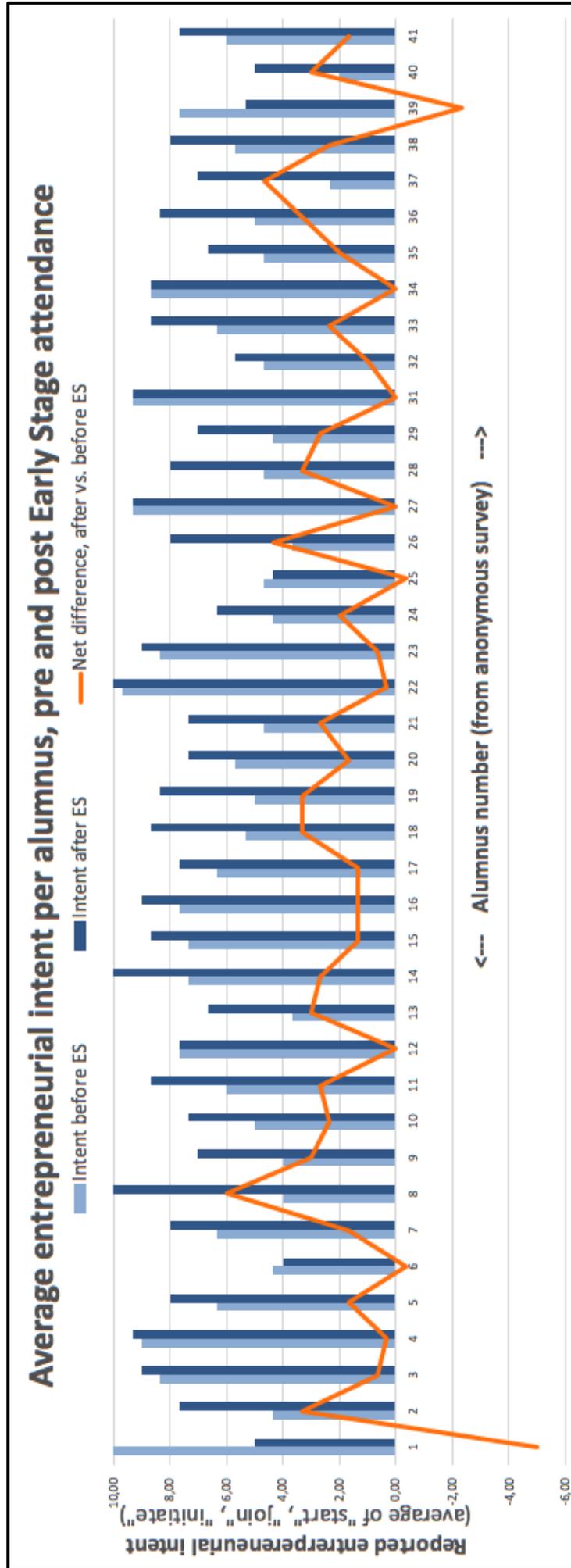


Figure 5: Entrepreneurial intent of each individual ES alumnus.

Entrepreneurship is Not for Everyone

Notably, we see that some of the students (#1, #6, #25 and #39) have a negative net difference between their post and pre-programme measurements of entrepreneurial intent. This suggests that attending the Early Stage programme can make a person's entrepreneurial intent go down as well as up. This is also in line with findings in the literature – for example, Nabi et al. (2017), who did a meta-study of a wide set of studies on the effects of entrepreneurship education, noted that “*some articles suggest that EE reduces entrepreneurial intention for certain groups*” (p. 281).

That fact that some participants experience a reduction in their entrepreneurial intent as a result of parting in Early Stage, is also natural seen in the light of the objectives of the programme – as I wrote in chapter 4.2, “*we are equally concerned with making sure people do not waste time on bad ideas with no potential*”. Another way to say this, is that entrepreneurship is not for everyone. By living through a simulation of the entrepreneurial experience, with its ups and downs, some students will naturally realise that the entrepreneur's way of life is not exactly how they want to live.

This, in my opinion, is part of what makes programmes like Early Stage important – they provide people a chance to experience entrepreneurship without committing years of time, energy and capital before they truly know if entrepreneurship is right for them.

This, I argue, is a realisation that is difficult to get in a classroom-based course about entrepreneurship (as opposed to an experiential learning programme “in entrepreneurship”, per Laukkanen's categorisation model). In line with Lackéus (2016), I argue that the emotional realities found in real-world entrepreneurship situations is what drives realisations such as the one outlined above, and those emotional realities are hard to reconstruct in isolation in a classroom.

Consider, for example, alumni #1 from the survey, whose entrepreneurial intent fell from 10 before the programme to 5 after graduating from it (in more granular terms, for this student intent fell from level 10 to 6 for starting a business, from 10 to 6 for joining a start-up, and from 10 to 3 for initiating entrepreneurial projects as part of a job). This person may possibly have saved years of wasted, future entrepreneurial effort by being exposed to a real-world simulation of the entrepreneurial experience early in life, and understanding what entrepreneurship truly entails on a practical, emotional and psychological level.

6.2.4 Differences According to Intention Type

Another interesting aspect to consider, is the difference between the three types of entrepreneurial intent outlined in the survey – intent to start a company, join a start-up, and initiate entrepreneurial projects at work. The average student response to these three intent variations are shown below, before and after attending the programme.

Here we see how starting a business is the type of intent on which the students rate themselves highest, both before and after the programme. There may be many reasons for this – in line with the discussion of self-selection bias in chapter 3.3.1, one may argue that the people who most eagerly want to become entrepreneurs in the traditional, company-creating sense of the word are most drawn to entrepreneurship education programmes such as Early Stage.

Yet, we note that as the average student goes through the programme, his or her intent to join a start-up, or to initiate entrepreneurial projects as part of a regular job, are growing marginally more than the intent to start a company. These differences, however, are not statistically significant using a 5% significance level (see these two-sided, paired T-test calculations in Figure 8 in the appendix), and are hence not discussed further.

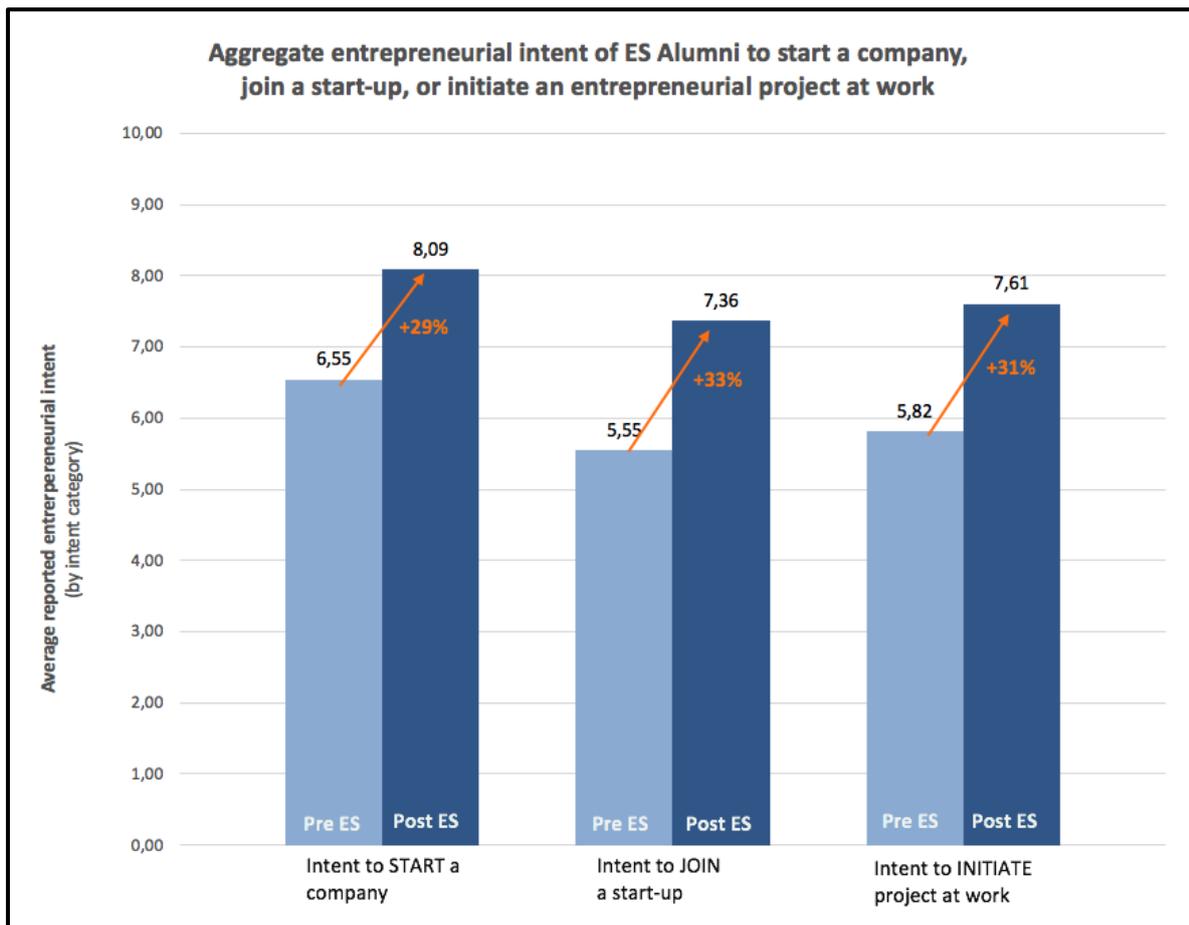


Figure 6: ES alumni's average entrepreneurial intent by intent type.

6.2.5 Variables without Statistical Significance on Mean Entrepreneurial Intent

Two other variables which could plausibly affect the entrepreneurial intents of an alumni were tested – age, and time since programme participation. One could hypothesise that younger or older students would get more or less out of the programme, or to various degrees be receptive to new learning and ideas, but the data showed no significant impact of a student's age on his or her entrepreneurial intent.

Similarly, one could hypothesise that the amount of time passed since graduation from the programme could influence an alumni's self-reported entrepreneurial intent, but no such link with statistical significance was found.

7. Discussion and Concluding Remarks

7.1 Implications for the Academic Literature on Entrepreneurship Education

The research question presented in chapter 1.4 asked “*What effect can an entrepreneurship education programme independent of academic institutions have on students’ entrepreneurial intent?*”. This question was chosen based on the gap found academic literature around independent EE programmes which, up until now, have rarely been researched thoroughly. This thesis has shed light on one such programme, and has shown that the participating students’ entrepreneurial intent were significantly higher after, as compared to before, taking part in it.

The implications of this study on the academic field around entrepreneurship education, is thus that it strongly suggests that EE programmes outside of academic institutions can be effective arenas to develop students’ entrepreneurial skills and strengthen their entrepreneurial intent. This is a signal to the academic research field that such programmes ought to be studied more closely in the future, thus further narrowing the research gap discussed in the introduction, and providing practitioners with more insight and best practices to design more effective EE programmes in the future.

7.1.1 Bring Independent EE Programmes Into Comparative Studies

Independent EE programmes ought to be further researched and studied by scholars going forwards, to better understand their effects on students’ entrepreneurial intent and other relevant metrics. The way forwards for the academic field of entrepreneurship education research is thus to embrace independent EE programmes as part of the research domain, and shine more light on these programmes that have mostly lived in the shadows up until this point. Further research on programmes both inside and outside academic institutions will allow for comparisons between such programmes, which could lead to conclusions about where EE should be taught in an ideal world scenario – inside or outside the university campus.

By bringing more research to independent programmes and their structure, content, pedagogical methods and curricular design, the collective understanding of how, why and for

whom such programmes are effective arenas to learn entrepreneurship skills. Further studies, ideally comparative ones, may also help increase the understanding of and confidence in causal relationships between inputs and outputs of EE programmes. As discussed in this thesis, determining causality between specific input variables and specific outcomes is difficult, because of the inherently ambiguous nature of entrepreneurship, of education, and indeed of the confluence of these two fields. Many different factors make up a learning environment, a curriculum and a pedagogical experience, many of which are impossible to track definitively, so linking these to outcomes with strong certainty is difficult. However, with comparative, more rigorous studies, correlative links can be discovered, and consequently, some degree of causality between input variables and outcomes may be assumed.

7.1.2 Alumni Must Be Tracked Beyond Graduation from EE Programmes

From the discussion on metrics and ways to measure entrepreneurship in chapter 3.3.1, we recall that entrepreneurial intent was deemed the most practical metric by which we can judge an EE programme's effectiveness. While measuring entrepreneurial intent is certainly useful, it does not necessarily predict the actual entrepreneurial activity in which students engage later in life with high accuracy.

To know how self-reported entrepreneurial intent translates into actual entrepreneurial activity, researchers must follow alumni of EE programmes in longitudinal studies over many years, ideally compared with a control group of peers with similar starting points, who were not exposed to entrepreneurship education. Thus, tracking graduates of various EE programmes (inside or outside of academic institutions) over longer time spans is an important task for researchers who study the outcomes and effects of engaging in entrepreneurship education. The need for more longitudinal studies to see what EE graduates actually do with their knowledge and skills later in life, is also echoed in the literature, for example by Nabi et al. (2017), who "*repeat the calls of previous reviews for more research on entrepreneurial behavior*" (p. 288).

This is exactly what we aim to do with the 45 alumni who have graduated from Early Stage to date, and with the 500 students expected complete the programme over the next 4 years. Bi-annual surveys will go out to all students to track their career choices and entrepreneurial

tendencies over the next years and decades, and we are excited to see what the results will show and tell us going forwards.

7.2 Practical Implications for Entrepreneurship Education Inside and Outside Academia

7.2.1 Need for More Independent EE Programmes

Having seen the Early Stage results presented in chapter 5 and 6, I am inclined to emphasise the need for more independent EE programmes going forwards. The existence of a wide variety of such programmes which differ in content, pedagogical philosophy, duration, structure and other variables, will allow both educators, students and scholars to explore the field of EE more broadly. Educators will gather reference experiences and improve their understanding of what works in entrepreneurship education, while students will be able to pick and choose the programmes which most closely fit what they are looking for in terms of learning methods and objectives.

7.2.2 Need for Democratisation of Arenas for Learning “in Entrepreneurship”

Regardless of whether future EE programmes take place inside or outside of the realm of universities, they ought to be experiential in nature, aligned with the best practices and the experiential learning consensus found in the academic literature, as discussed in chapter 3.4 and 3.5.

Arenas for learning experientially “in entrepreneurship”, as opposed to theoretically “about entrepreneurship” must be expanded, and access to them must be democratised. Such arenas must be available to people who are not yet convinced to pursue the life of an entrepreneur, nor is committed to an idea or a team yet. As highlighted in chapter 4.5, the entrepreneurially committed people among us already have a host of support systems readily available to help and teach them what they need to know to get their venture to the next level – start-up incubators and accelerators, most notably. Such acceleration programmes offer “learning in

entrepreneurship” in the truest sense of the word – learning by actually starting a venture, with all the risks, uncertainty and excitement that comes along with new venture creation. However, not all people are ready for such a commitment to entrepreneurship. But most people, entrepreneurs and employees alike, can find entrepreneurial skills useful, valuable and desirable, particularly as market dynamics, technological realities and the nature of work continuously change at an accelerating speed.

We must therefore expand access to learning “in entrepreneurship” to those people with a mere curiosity for the subject. Today, such non-committed, yet curious people are often only offered courses “about entrepreneurship” in university settings, which, as we saw in the literature review, is not deemed the most effective way to learn entrepreneurship skills and mindset. Since entrepreneurship skills – “*the ability to create something new with value*” – are deemed important also for non-entrepreneurs, access to the best pedagogical approaches for such skills must be made readily available to more people with curiosity and an eagerness to learn.

In short, while start-up accelerators do a great job of accelerating entrepreneurial ideas, we need more arenas to accelerate entrepreneurial people, in which the focus is on general skill development, not only on the realisation of a specific idea’s economic potential.

7.2.3 Entrepreneurship is Not for Everyone – but Entrepreneurship Skills are Useful to Most People

As shown in chapter 6.2.3, not everyone comes out of an entrepreneurship education programme with increased entrepreneurial intent and an eagerness to start new ventures. However, this does not mean that learning the skillset associated with entrepreneurship is a waste of time for these people whose intentions go down as a result of having a simulation of an entrepreneurship experience. Quite the opposite, following the discussion on entrepreneurship skills as “*the essential lever to cope with the new competitive landscape (Hitt and Reed, 2000)*” (Alberti et. al, 2004, p.1).

If one buys into the idea that these skills are inherently valuable also for regular employees, as claimed by a growing number of academic scholars, corporate executives and hiring managers, policymakers and politicians, then one way to empower students, employees and

aspiring entrepreneurs alike to become more capable value-creators, is to make effective entrepreneurship education more readily available for people.

To use analogous terms – in children’s football teams, everyone gets to participate, regardless of skill and ambition level. Nobody expects all the players in a junior team to become elite professional players, yet everyone recognises the value of merely practising the skillset, having fun and being socially engaged in the process. Similarly, entrepreneurship education should be available to all, with no expectations that everyone who go through an EE programme should immediately become entrepreneurs in the narrow sense of being a company founder.

7.2.4 Learning Can and Should be Experiential Also Inside Universities

This thesis, with its emphasis on the independent EE programme studied, may give a sense that experiential entrepreneurship learning may only occur outside the realm of the university. This is not the case. Universities have been excellent providers of experiential learning for millennia, but this pedagogical approach has been used to different degrees in different academic fields. For example, the field of medicine typically embraces experiential learning as critically important, often from day one, while the field of business studies is less inclined to do so, generally speaking. This is to say that experiential learning is most certainly possible within a university setting if there is a will to do so from academic staff and leadership.

Learning by doing is often framed as more expensive, time-consuming and demanding for the teaching staff – all of which may be true. However, looking at the upside of learning entrepreneurship experientially as compared to theoretically, the advantages of learning “in entrepreneurship” overwhelmingly surpass the costs in my opinion.

As such, universities that teach entrepreneurship ought to develop their programmes in line with the recommendations found in the academic literature, and increase the degree of experiential learning that takes place. To do this, they may look to independent programmes for inspiration on curriculum design, workshop facilitation methods and content structure, for example – following the “pay it forwards” culture of the start-up world, they would most likely be happy to help and offer advice.

The unstructured and ambiguous nature of entrepreneurship is not conducive to the overly rigid structures in which a typical university course often exists. Therefore, independent EE programmes have the advantage of being more flexible than most programmes found within universities and colleges. The latter should learn from the former and embrace the idea of less structured, more flexible programmes and curricula within the domain of entrepreneurship, which is in line with the entrepreneurial process itself – and, according to the literature, leads to better learning outcomes.

7.2.5 “Iterative Curriculum Development” – Entrepreneurship Educators Should Follow Their Own Advice

As shown in chapter 4.4, the academic literature on entrepreneurship education offers plenty of advice on how to design effective EE programmes. Most of this advice is well-intended and sound, but because of the difficulties of determining causality between what goes into an EE programme and what comes out, providing definitive proof of what works in all circumstances is nearly impossible.

Entrepreneurship educators should thus take an ambidextrous approach to developing programmes, courses and their curricula. They should familiarise themselves with the best practices found in the literature, and use these as a starting point for their programme design. However, they ought to also recognise that the generalisability of findings from other programmes may be limited. As such, they ought to be willing to experiment with different approaches and practices in order to increase the chance of finding something that works particularly well in their particular circumstance. A general piece of advice would be for entrepreneurship educators to practice what they preach – most modern entrepreneurship frameworks and theory recommend iterative processes and continuous hypothesis testing as ideal ways to do product and service development in order to meet customer needs. Similarly, entrepreneurship educators ought to embrace the notion of iterative curriculum development, so that their programmes may continuously improve and become increasingly effective, relevant and engaging for their students over time.

7.3 Final Remarks

This thesis has shown that an entrepreneurship education programme conducted independent of any academic institutions had a strong and statistically significant effect on the entrepreneurial intent of the average participating student. While the issues of generalisability, using a single case study, possible biases among survey respondents and myself, and the problems of determining causality in entrepreneurial processes must all be taken into account, the results of the programme do nevertheless largely speak for themselves. They suggest that EE programmes outside of academia can be effective and valuable arenas for students to develop entrepreneurship competencies and mindset (at least to the extent that entrepreneurial intent is an accurate proxy metric for one's entrepreneurship skills, mindset and future behaviour – as discussed in chapter 3.3).

Keeping in mind that the Early Stage programme was developed by accidental entrepreneurship educators with little teaching experience, limited understanding of best practices found in entrepreneurship education literature, and few financial resources available, yet still produced promising results – how transformative might EE programmes be if they are designed by experienced individuals, with a proper understanding of best pedagogical practices, with sufficient financial funding? It is my belief that sustained efforts in experiential entrepreneurship education – that is, “learning *in* entrepreneurship” – can have transformative effects on students at the individual level, and, aggregately, on a society as a whole, by its citizens becoming more entrepreneurial.

If attending an EE programme can empower or inspire just a tiny fraction of the participants to turn their increased entrepreneurial intentions into actual entrepreneurial activity – e.g. a successful new company, an innovative new product, service or non-profit initiative, or a successful intrapreneurial project at work – the net positive economic impact and subsequent ripple effects of the programme will be highly positive. Therefore, just as the barriers to entry into entrepreneurship are coming down, so should the barriers to entry into experiential entrepreneurship education programmes.

When the nature of work, technology and marketplace dynamics change ever more rapidly, we as a society ought to give citizens the skills, mindset, tools and framework to thrive and be hopeful rather than fearful in the face of changes – and effective, accessible, experiential entrepreneurship education can help us do just that.

8. Bibliography

- Alberti, F., Sciascia, S., & Poli, A. (2004). Entrepreneurship Education: Notes on an Ongoing Debate. *14th Annual IntEnt Conference*. Napoli: University of Napoli Federico II.
- Anderson, A., & Miller, C. (2003). "Class matters": human and social capital in the entrepreneurial process. *The Journal of Socio-Economics*, 17-36.
- Antal, N., Kingma, B., Moore, D., & Streeter, D. (2014). University-Wide Entrepreneurship Education. *Innovative Pathways for University Entrepreneurship in the 21st Century*, 227-254.
- Ardichvili, A., Cardozo, R., & Ray, S. (2003). A theory of entrepreneurial opportunity identification and development. *Journal of Business Venturing*, 18, 105-123.
- Autio, E., Keeley, R., Klofsten, M., Parker, G., & Hey, M. (2010). Entrepreneurial Intent among Students in Scandinavia and in the USA. *Enterprise and Innovation Management Studies*, 145-160.
- Bae, T., Qian, S., Miao, C., & Fiet, J. (2014). The relationship between entrepreneurship education and entrepreneurial intentions: A meta-analytic review. *Entrepreneurship Theory and Practice*, 217-254.
- Brockhaus, R., & Horwitz, P. (1986). The Psychology of the Entrepreneur. *The Art & Science of Entrepreneurship*, 25-48.
- Business2Community. (2016, September 6). *What is Lean Startup?* Retrieved May 2018, from Business2Community: <https://www.business2community.com/startups/what-is-lean-startup-01648688>
- CB Insights. (2018). *Report: The Top 20 Reasons Startups Fail*. Retrieved April 2018, from CB Insights: <https://www.cbinsights.com/research/startup-failure-reasons-top/>
- Collins English Dictionary. (2014). *Collins English Dictionary – Complete and Unabridged, 12th Edition*. HarperCollins Publishers. Retrieved March 2018, from Soft Skills: <https://www.thefreedictionary.com/soft+skills>

-
- Dhliwayo, S. (2008). Experiential learning in entrepreneurship education: a prospective model for South African tertiary institutions. *Education + Training*, 50(4), 329-340.
- Drucker, P. F. (1985). *The Changing World Of The Executive*. New York: New York Times Books.
- European Commission. (2012). *Effects and impact of entrepreneurship programmes in higher education*.
- Fayolle, A., Gailly, B., & Lassas-Clerc, N. (2006). Assessing the Impact of Entrepreneurship Education Programmes: A New Methodology. *Journal of European Industrial Training*, 30(9), 701-720.
- Gartner, W., & Vesper, K. (1994). Executive forum: experiments in entrepreneurship education: successes and failures. *Journal of Business Venturing*, 179-187.
- Gibb, A. (2002). In pursuit of a new 'enterprise' and 'entrepreneurship' paradigm for learning: creative destruction, new values, new ways of doing things and new combinations of knowledge. *International Journal of Management Reviews*, 4(3), 233-269.
- Gibb, A., & Cotton, J. (1998). Entrepreneurship in schools and college education – creating the leading edge. *Work Futures and the Role of Entrepreneurship and Enterprise in Schools and Further Education*. London.
- Henry, C., Hill, F. M., & Leitch, C. (2005). Entrepreneurship education and training: can entrepreneurship be taught? Part I. *Journal of Education and Training*, 47(2), 98-111.
- Henry, C., Hill, F. M., & Leitch, C. (2005). Entrepreneurship education and training: can entrepreneurship be taught? Part II. *Journal of Education and Training*, 47(3), 158-169.
- Higgins, D., & Elliot, C. (2011). Learning to make sense: what works in entrepreneurial education. *Journal of European Industrial Training*, 35(4), 345-367.
- Hills, G. (1988). Variations in university entrepreneurship education: an empirical study of an evolving field. *Journal of Business Venturing*, 3, 109-22.
- Hisrich, R. D., & Peters, M. P. (2002). *Entrepreneurship*. Boston: McGraw-Hill/Irwin.

- Hood, J., & Young, J. (1993). Entrepreneurship's requisite areas of development: a survey of top executives in successful entrepreneurial firms. *Journal of Business Venturing*, 18(2), 283-300.
- Innosight. (2012). *Creative Destruction Whips through Corporate America*. Lexington, MA: Innosight.
- Isenberg, D. (2012, February 1). *Entrepreneurship Outperforms Innovation*. Retrieved April 2018, from Babson Entrepreneurship Ecosystem Project: <http://entrepreneurial-revolution.com/2012/02/01/entrepreneurship-outperforms-innovation/>
- Jamieson, I. (1984). Education for enterprise. *Jamieson, I. (1984), "Education for enterprise", in Watts, A.G. and Moran, P. (Eds), CRAC, Ballinger, Cambridge, 19-27.*
- Jones, B., & Iredale, N. (2010). Enterprise education as pedagogy. *Education+ Training*, 51(1), 7-19.
- Jones, C., & English, J. (2004). A contemporary approach to entrepreneurship education. *Education + Training*, 46(8/9), 416-423.
- Jones, C., & Matlay, H. (2011). Understanding the heterogeneity of entrepreneurship education: going beyond gartner. *Education + Training*, 53(8/9), 692-703.
- Katz, J. (2003). The Chronology and Intellectual Trajectory of American Entrepreneurship Education – 1876-1999. *Journal of Business Venturing*, 18, 282-300.
- Kickul, J., & Fayolle, A. (2007). Cornerstones of Change: Revisiting and Challenging New Perspectives on Research in Entrepreneurship Education. In *Handbook of Research in Entrepreneurship Education* (Vol. 1, pp. 1-16). Cheltenham: Edward Elgar.
- Kolb, D. A. (1984). *Experiential learning: experience as the source of learning and development*. Englewood Cliffs, NJ.
- Kuratko, D. (2003). Coleman white paper: entrepreneurship education – emerging trends and challenges for the 21st century. *Proceedings of the 17th United States Association of Small Business & Entrepreneurship Conference*, (pp. 3-20).

-
- Kuratko, D. F. (2005). The Emergence of Entrepreneurship Education: Development, Trends, and Challenges. *Entrepreneurship Theory and Practice*.
- Lackéus, M. (2014). An emotion based approach to assessing entrepreneurial education. *The International Journal of Management Education*, 12, 374-396.
- Lackéus, M. (2015). *Entrepreneurship in Education - What, Why, When, How*. Paris: OECD Centre for Entrepreneurship, SMEs, Tourism and Local Development.
- Lackéus, M. (2016). Value Creation as Educational Practice - Towards a new Educational Philosophy grounded in Entrepreneurship? *Doktorsavhandlingar vid Chalmers Tekniska Högskola*.
- Laukkanen, M. (2000). Exploring alternative approaches in high-level entrepreneurship education: creating micromechanisms for endogenous regional growth. *ENTREPRENEURSHIP & REGIONAL DEVELOPMENT*(12), 25-47.
- Loewenstein, G., & Schkade, D. (1999). Wouldn't It Be Nice? Predicting Future Feelings. In *Well-Being: Foundations of Hedonic Psychology* (pp. 85-105).
- Mandel, R., & Noyes, E. (2016). Survey of experiential entrepreneurship education offerings among top undergraduate entrepreneurship programs. *Education + Training*, 164-178.
- Maritz, A., & Brown, C. (2013). Illuminating the black box of entrepreneurship education programs. *Education + Training*, 55(3), 234-252.
- Moore, G. E. (1965). Cramming more components onto integrated circuits. *Electronics Magazine*.
- Mount, I. (2010, December 2009 - January 2010). Nature vs. Nurture: Are Great Entrepreneurs Born . . . Or Made? *Fortune Small Business*, pp. 25-26.
- Nabi, G., Liñán, F., Fayolle, A., Krueger, N., & Walmsley, A. (2017). The Impact of Entrepreneurship Education in Higher Education: A Systematic Review and Research Agenda. *Academy of Management Learning & Education*, 277-299.
- Neck, H., & Greene, P. (2011). Entrepreneurship Education: Known Worlds and New Frontiers. *Journal of Small Business Management*, 49(1), 55-70.

- Neck, H., Greene, P., & Brush, C. (2014). *Teaching Entrepreneurship: A Practice-Based Approach*. Northampton, MA: Edward Elgar.
- Nevin, S. (2013). Richard Cantillon – The Father of Economics. *History Ireland*, 21(2), 20-23.
- Nichols, A., & Maner, J. (2010). The Good-Subject Effect: Investigating Participant Demand Characteristics. *The Journal of General Psychology*.
- Oxford English Living Dictionary. (2018, April 2). *Definition of entrepreneurship*. Retrieved April 2018, from Oxford English Dictionaries: <https://en.oxforddictionaries.com/definition/entrepreneurship>
- Pearson, T. (2015). *The End of Jobs – Money, Meaning and Freedom Without the 9-5*. Amazon Publishing.
- Pistrui, J. (2018, January 18). *The Future of Human Work is Imagination, Creativity, and Strategy*. Retrieved April 2018, from Harvard Business Review: <https://hbr.org/2018/01/the-future-of-human-work-is-imagination-creativity-and-strategy>
- Pittaway, L., & Edwards, C. (2012). Assessment: examining practice in entrepreneurship education. *Education + Training*, 54(8), 778-800.
- Rae, D., Martin, L., Antcliff, V., & Hannon, P. (2012). Enterprise and entrepreneurship in English higher education: 2010 and beyond. *Journal of Small Business and Enterprise Development*, 19(3), 380-401.
- Regjeringen Solberg ved Høyre, Fremskrittspartiet & Venstre. (2018). *Politisk Platform*. Jeløya.
- Ries, E. (2011). *The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses*. Crown Publishing Group.
- Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research Methods for Business Students, 5th Edition*. Essex: Pearson Education Ltd.

-
- Schumpeter, J. A. (1934). *The Theory of Economic Development*. Cambridge, MA: Harvard University Press.
- Schumpeter, J. A. (1942). *Capitalism, Socialism and Democracy*. Harper & Brother.
- Schumpeter, J. A. (1947). The Creative Response in Economic History. *Journal of Economic History*.
- Schwab, K. (2016, January 14). *The Fourth Industrial Revolution: what it means, how to respond*. Retrieved March 2018, from World Economic Forum: <https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond>
- Scott, M.-G., & Twomey, D. (1998). The long term supply of entrepreneurs: students' career aspirations in relation to entrepreneurship. *Journal of Small Business Management*, 26(4), 5-13.
- Seekhley. (2018). *Seekhley.com*. Retrieved May 2018, from Kolb Model of Experiential Learning: <http://www.seekhley.com/research-kolb>
- Silveira, A., Bizarrias, F., & Olivense do Cormo, H. (2017). Entrepreneurial Intention of the Participants of the Startup Weekend: Longitudinal Analysis . *International Journal of Advances in Management and Economics*, 90-102.
- Solomon, G. (2007). An examination of entrepreneurship education in the United States. *Journal of Small Business and Enterprise Development*, 14(2), 168-182.
- Støren, L. A. (2014). Entrepreneurship in higher education: Impacts on graduates' entrepreneurial intentions, activity and learning outcome. *Education + Training*, 56(8/9), 795-813.
- Tautila, V. (2010). Learning entrepreneurship in higher education. *Education + Training*, 52(1), 48-61.
- The Economist. (2015, April 19). *The End of Moore's Law*. Retrieved January 20, 2017, from The Economist: <https://www.economist.com/blogs/economist-explains/2015/04/economist-explains-17>

- Thompson, E. R. (2009). Individual entrepreneurial intent: Construct clarification and development of an internationally reliable metric. *Entrepreneurship Theory and Practice*.
- Warhuus, J. P., & Basaiawmoit, R. V. (2014). Entrepreneurship education at Nordic technical higher education institutions: Comparing and contrasting program designs and content. *The International Journal of Management Education*, 12(3), 317-332.
- Wennekers, S., & Thurik, R. (1999). Linking entrepreneurship and economic growth. *Small Business Economics*, 13(1), 27-55.
- Wong, P., Ho, Y., & Autio, E. (2005). Entrepreneurship, Innovation and Economic Growth: Evidence from GEM data. *Small Business Economics*, 24(3), 335-350.
- World Economic Forum. (2016, Jan 19). *World Economic Forum*. Retrieved March 2018, from The 10 skills you need to thrive in the Fourth Industrial Revolution: <https://www.weforum.org/agenda/2016/01/the-10-skills-you-need-to-thrive-in-the-fourth-industrial-revolution/>

9. Appendix

P-values from two-sided, paired T-tests: differences in entrepreneurial intent before and after an Early Stage Programme				
Null hypothesis: there is no significant difference in alumni's entrepreneurial intent before and after taking part in the Early Stage programme.				
Legend: <i>Green</i> = <i>p-value</i> < 0,05 (reject null hypothesis). <i>Red</i> = <i>p-value</i> > 0,05 (cannot reject null hypothesis).				
	Pre ES: Avg (Start.Join.Initiate)	Pre ES: START	Pre ES: JOIN	Pre ES: INITIATE
Post ES: Avg (Start.Join.Initiate)	● 0,000002			
Post ES: START		● 0,000086		
Post ES: JOIN			● 0,000075	
Post ES: INITIATE				● 0,000065
Conclusion: reject null hypothesis in all cases. There is a significant difference in the average student's entrepreneurial intent after, when compared to before, attending an Early Stage programme, across all three intent definitions.				

Figure 7: P-values from two-sided, paired T-tests.

P-values from two-sided, paired T-tests: differences in changes in entrepreneurial intent from one intent definition to another				
Null hypothesis: there is no significant difference in the change (Δ) in an alumni's entrepreneurial intent from one intent definition (JOIN / START / INITIATE) to another definition. (Change = Δ = difference in measured intent before and after an Early Stage Programme).				
Legend: <i>Green</i> = <i>p-value</i> < 0,05 (reject null hypothesis). <i>Red</i> = <i>p-value</i> > 0,05 (cannot reject null hypothesis).				
	Δ AVERAGE INTENT	Δ START	Δ JOIN	Δ INITIATE
Δ AVERAGE INTENT		● 0,47822	● 0,73907	● 0,80046
Δ START	● 0,47822		● 0,56352	● 0,56967
Δ JOIN	● 0,73907	● 0,56352		● 0,95448
Δ INITIATE	● 0,80046	● 0,56967	● 0,95448	
Conclusion: Cannot reject null hypothesis in any of these cases. There is no significant difference in the change (Δ) in entrepreneurial intent from one intent definition (JOIN / START / INITIATE) to another.				

Figure 8: P-values from two-sided, paired T-tests, by entrepreneurial intention type.

Raw data from study of 41 Early Stage Alumni																
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	6	6	3	10	10	10	23	2		5,00	10,00	-5,00		-4	-4	-7
2	7	7	9	3	5	5	25	2		7,67	4,33	3,33		4	2	4
3	7	10	10	7	10	8	24	1		9,00	8,33	0,67		0	0	2
4	10	8	10	9	9	9	23	2		9,33	9,00	0,33		1	-1	1
5	9	8	7	8	6	5	21	1		8,00	6,33	1,67		1	2	2
6	8	1	3	8	1	4	27	2		4,00	4,33	-0,33		0	0	-1
7	8	7	9	6	6	7	24	2		8,00	6,33	1,67		2	1	2
8	10	10	10	3	4	5	25	2		10,00	4,00	6,00		7	6	5
9	5	9	7	3	4	5	23	2		7,00	4,00	3,00		2	5	2
10	7	7	8	5	5	5	22	1		7,33	5,00	2,33		2	2	3
11	8	9	9	7	5	6	26	1		8,67	6,00	2,67		1	4	3
12	10	6	7	7	8	8	21	1		7,67	7,67	0,00		3	-2	-1
13	10	4	6	4	3	4	22	1		6,67	3,67	3,00		6	1	2
14	10	10	10	10	6	6	24	2		10,00	7,33	2,67		0	4	4
15	7	10	9	10	6	6	25	2		8,67	7,33	1,33		-3	4	3
16	10	10	7	8	7	8	24	1		9,00	7,67	1,33		2	3	-1
17	10	5	8	10	4	5	22	1		7,67	6,33	1,33		0	1	3
18	9	9	8	5	5	6	25	1		8,67	5,33	3,33		4	4	2
19	8	10	7	6	4	5	26	1		8,33	5,00	3,33		2	6	2
20	7	7	8	5	6	6	24	2		7,33	5,67	1,67		2	1	2
21	5	7	10	2	9	3	23	1		7,33	4,67	2,67		3	-2	7
22	10	10	10	9	10	10	22	1		10,00	9,67	0,33		1	0	0
23	10	7	10	10	5	10	25	1		9,00	8,33	0,67		0	2	0
24	5	7	7	4	5	4	30	1		6,33	4,33	2,00		1	2	3
25	10	2	1	10	4	0	27	2		4,33	4,67	-0,33		0	-2	1
26	8	7	9	5	3	3	23	2		8,00	3,67	4,33		3	4	6
27	10	8	10	10	8	10	22	1		9,33	9,33	0,00		0	0	0
28	7	10	7	4	3	7	26	2		8,00	4,67	3,33		3	7	0
29	7	5	9	5	3	5	23	1		7,00	4,33	2,67		2	2	4
30	10	8	5	10	7	4	21	1		7,67	7,00	0,67		0	1	1
31	10	10	8	10	10	8	22	1		9,33	9,33	0,00		0	0	0
32	10	2	5	10	2	2	24	2		5,67	4,67	1,00		0	0	3
33	9	10	7	6	7	6	24	2		8,67	6,33	2,33		3	3	1
34	8	8	10	8	8	10	27	2		8,67	8,67	0,00		0	0	0
35	9	6	5	7	4	3	23	1		6,67	4,67	2,00		2	2	2
36	10	8	7	7	2	6	24	1		8,33	5,00	3,33		3	6	1
37	10	5	6	5	2	0	25	1		7,00	2,33	4,67		5	3	6
38	7	8	9	5	7	5	21	1		8,00	5,67	2,33		2	1	4
39	5	5	6	8	8	7	25	1		5,33	7,67	-2,33		-3	-3	-1
40	4	9	2	1	2	3	26	1		5,00	2,00	3,00		3	7	-1
41	7	7	9	6	4	8	23	1		7,67	6,00	1,67		1	3	1
AVG	8,22	7,37	7,49	6,73	5,54	5,78	23,95	1,39		7,69	6,02	1,67		1,49	1,83	1,71

Figure 9: Raw data from survey of 41 ES alumni (see legend below)

LEGEND for Raw Data Table	
Column	Column represents
A	Respondent number (anonymous)
B	Intention, from 0-10, after ES attendance, to "...start my own company."
C	Intention, from 0-10, after ES attendance, to "...join an early phase start-up company."
D	Intention, from 0-10, after ES attendance, to "...initiate or lead an entrepreneurial project as part of my job in a big company."
E	Intention, from 0-10, before ES attendance, to "...start my own company."
F	Intention, from 0-10, before ES attendance, to "...join an early phase start-up company."
G	Intention, from 0-10, before ES attendance, to "...initiate or lead an entrepreneurial project as part of my job in a big company."
H	Respondent's age
I	Years since respondent attended ES
J	(blank)
K	Mean of B, C & D
L	Mean of E, F and G
M	Difference in mean entrepreneurial intent after vs before ES (calculation: column K minus L)
N	(blank)
O	Difference in mean intent to start a company after vs before ES (calculation: column B-E)
P	Difference in mean intent to join a start-up after vs before ES (calculation: column C-F)
Q	Difference in mean intent to initiate entrepreneurial project at work after vs before ES (calculation: column D-G)

Figure 10: Legend for Raw Data Table.