Using the threshold concept framework to enhance entrepreneurship curricula in higher education

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Abstract

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This research uses the threshold concept framework as a lens to define entrepreneurship as an academic subject and suggest approaches to entrepreneurship education in higher education informed by how students understand it. A staged stakeholder curriculum inquiry has been conducted, interrogating the perspective of entrepreneurs, entrepreneurship educators and students of entrepreneurship education. By researching the distinctive way entrepreneurs think and practise, candidate threshold concepts (CTCs) in entrepreneurship have been identified. Approaches to educating students in entrepreneurship within a framework of engagement are suggested, together with a means of assessing students' experiences of learning entrepreneurship.

A conceptual framework to inform entrepreneurship education is presented, responding to calls for such an approach (Blenker, Elmholdt, Frederiksen, Korsgaard, & Wagner, 2014; Fayolle, 2013; Nabi, Liñán, Fayolle, Krueger, & Walmsley, 2017; Neck & Corbett, 2018). Applying the threshold concept framework serves as a counter discourse to the commodification of learning, to which entrepreneurship is particularly vulnerable. This research assumes that there are distinctive ways entrepreneurs think and practise and builds on research that argues entrepreneurs are distinguishable according to their cognitive tendencies (Shaver & Scott, 1992). It also assumes that these ways of thinking and practising can be developed in higher education and that students can be educated to think and practise like entrepreneurs (Palich & Bagby, 1995).

Taking an interpretivist and social constructivist approach, entrepreneurship has been treated as a socially constructed phenomena and a qualitative research approach has been adopted. A staged stakeholder curriculum inquiry involving semi-structured interviews, a Delphi survey and concept mapping workshops has been conducted with ten entrepreneurs, eighteen entrepreneurship educators and forty-eight students.

By identifying CTCs in entrepreneurship and gathering perspectives on effective ways to educate students in them; the bounded and integrative characteristics of threshold concepts enable a definition of entrepreneurship and inform the development of entrepreneurship curricula.

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Le seul véritable voyage, le seul bain de Jouvence, ce ne serait pas d'aller vers de nouveaux paysages, mais d'avoir d'autres yeux, de voir l'univers avec les yeux d'un autre, de cent autres, de voir les cent univers que chacun d'eux voit, que chacun d'eux est

The only true voyage of discovery, the only fountain of Eternal Youth, would be not to visit strange lands but to possess other eyes, to behold the universe through the eyes of another, of a hundred others, to behold the hundred universes that each of them beholds, that each of them is.

(Proust, 1923)

Sie sind so jung, so vor allem Anfang, und ich möchte Sie, so gut ich es kann, bitten, lieber Herr, Geduld zu haben gegen alles Ungelöste in Ihrem Herzen und zu versuchen, die Fragen selbst liebzuhaben wie verschlossene Stuben und wie Bücher, die in einer sehr fremden Sprache geschrieben sind. Forschen Sie jetzt nicht nach den Antworten, die Ihnen nicht gegeben werden können, weil Sie sie nicht leben könnten. Und es handelt sich darum, alles zu leben. Leben Sie jetzt die Fragen. Vielleicht leben Sie dann allmählich, ohne es zu merken, eines fernen Tages in die Antwort hinein.

You are so young, so much before all beginning, and I would like to beg you, dear Sir, as well as I can, to have patience with everything unresolved in your heart and to try to love the questions themselves as if they were locked rooms or books written in a very foreign language. Don't search for the answers, which could not be given to you now, because you would not be able to live them. And the point is, to live everything. Live the questions now. Perhaps then, someday far in the future, you will gradually, without even noticing it, live your way into the answer.

(Rilke, 1903, Letter 4)

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List of Abbreviations

APPG	All Party Parliamentary Group
CDP	Causative dynamic proposition
CED	Corporate and Executive Development
CEO	Chief Executive Officer
CTC	Candidate threshold concept
DfEE	Department for Employment and Education (replaced by Department for Work and Pensions)
DTI	Department of Trade and Industry (replaced by Department for Innovation, Universities and Skills and Department for Business, Enterprise and Regulatory Reform)
EBM	BA (Hons) Entrepreneurial Business Management
EIU	Economist Intelligent Unit
EU	European Union
GEM	Global Entrepreneurship Monitor
HEFCE	Higher Education Funding Council for England (replaced by UK Research and Innovation and Office for Students)
HEIF	Higher Education Innovation Fund
HESA	Higher Education Statistics Agency
JAMK	Jyväskylän Ammattikorkeakoulu (JAMK University of Applied Sciences)
MIT	Massachusetts Institute of Technology
OECD	The Organisation for Economic Co-operation and Development
P&G	Procter & Gamble Ltd.
PACEC	Public and Corporate Economic Consultants
QAA	The Quality Assurance Agency for Higher Education
SME	Small and Medium-sized Enterprise
TEF	Teaching Excellence Framework
UK	United Kingdom
UNCTAD	United Nations Conference on Trade and Development
USA, US	United States of America

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This thesis is the result of my own work and has not been previously offered in candidature for a degree at this or any other institution. The copyright of this thesis rests with the author. No quotation from it should be published in any format without the author's prior, written consent. Any information derived from this thesis should be appropriately acknowledged.

The photograph in Chapter 4 (Figure 4.4) is used with permission of Bob Bailey, Sc.D.

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Researching and working in entrepreneurship education has brought a particular depth and richness to the data, and I am grateful for the support, time, advice and experiences that my peers in the wider academic community, colleagues and students have afforded me. I sincerely appreciate the opportunity offered by Northumbria University to write up this research during a research sabbatical.

My experience prior to academia enabled me to build an extensive business network, including many entrepreneurs. I am very grateful for their willingness to contribute to this research and to refer additional research participants.

Choosing to undertake a doctoral qualification later in life has imposed significantly on my family and I am very grateful to my husband, children and parents for their support and encouragement.

Taking direction from Jim Watson (2007), I have tried to avoid boring people.

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Chapter 1. Introduction and background to the research

1.1. Introduction

This thesis sets out a staged stakeholder curriculum inquiry into entrepreneurship education, using the lens of the threshold concept framework, in order to find out what is distinctive about entrepreneurship and how best to educate students in it. There continues to be much debate around the distinctive nature of entrepreneurship, and even whether it can be taught or not (Pittaway & Cope, 2007). As early as 1934, Schumpeter described theories of entrepreneurship as paradoxical, uncertain and necessitating a degree of improvisation (Schumpeter, 1934). If entrepreneurship is to be learnt and taught in an educational context, then it is essential to identify a knowledge base and a conceptual framework for it.

To this end, a staged stakeholder curriculum inquiry has been undertaken, gathering the perspectives of entrepreneurs, entrepreneurship educators and entrepreneurship students[1]. By researching the distinctive way entrepreneurs think and practise, candidate threshold concepts (CTCs) in entrepreneurship have been identified.

The threshold concept framework is used here as a lens to discern what makes entrepreneurship distinctive in order to enhance entrepreneurship curricula. This conceptual approach has proved particularly fruitful in the development of my practice as an entrepreneurship educator. It has enabled me to define the subject I teach, what I want my students to learn, how to assess their understanding and how to develop the higher education curriculum with particular reference to entrepreneurship education.

Parts of this research have been previously published over the course of the study in the form of a journal article, two book chapters, a key note

[1] I have chosen to use the terms 'teacher' and 'educator' here and throughout interchangeably and synonymously, likewise the terms 'student' and 'learner'.

presentation and a number of conference presentations, see Appendix 1 for the full list of relevant publications to date.

In this chapter, I describe my personal background and set out the rationale and personal motivation for doing the research. The research questions, aim and objectives are set out, together with an overview of the research design and a summary of the research methods used. The format of the remainder of the thesis is then described.

1.2. My background

In this section, the link between my context and the research rationale is explained. I have been attracted to organising and organisations from an early age, allocating roles and responsibilities associated with building sandcastles on the beach to my friends as a toddler and becoming mesmerised by the uniformity of milk bottles coming off a filling line shown on "PlaySchool", (a television programme for pre-school children shown in the UK in the early 1970's). Having studied Mechanical Engineering, Manufacturing and Management at university, I started working for Procter & Gamble Ltd. (P&G) in Production Management, realised I was more interested in people than in machines and moved into the Human Resources Department, specialising in training and development.

I left P&G to join a newly formed executive development team within a recruitment consultancy, and then set up my own management development consultancy for a short while. However, the desire to keep learning and to work as part of a team meant that when the opportunity came to secure an academic contract as a Senior Lecturer at the University of Northumbria at Newcastle I did not hesitate to take it. The Business School seemed the obvious home for me as my work experience by then included employment in a "blue chip" consumer product company, a small but rapidly expanding service sector provider and a stint in self-employment.

At Newcastle Business School (Northumbria University), I worked in the Corporate and Executive Development (CED) Department, which mainly developed and delivered closed and open short accredited programmes to corporate clients and latterly came to house everything the Business School offered

that did not fit comfortably into the other departments. The CED Department had responsibility for two full-time undergraduate programmes. I was initially Programme Leader for the 1st year of the Business Leadership and Corporate Management programme and then, in 2013, took on Programme Leadership for the newly validated Entrepreneurial Business Management (EBM) programme, eventually focusing on the EBM programme exclusively.

The EBM programme (also called 'Team Academy Newcastle') was a new departure for the Business School and it was developed as a UK version of the Finnish 'Tiimiakatemia' (Team Academy). The attention of one of the Associate Deans of the Business School had been drawn to the Team Academy movement, which started in 1993 at JAMK University of Applied Sciences in Jyväskylä, Finland. She tasked a group of academics and support staff to experience the Team Mastery programme in Finland and find out more (see Table 1-1).

Billed as "the future of management education" by Peter Senge[2] in his video message for the Team Academy 15th anniversary celebration ("Peter Senge - Team Academy - Tiimiakatemia," 2011), Team Academy had been gaining popularity in Finland and was starting to make inroads on a wider international scale.

Table 1-1 The Team Academy approach ("Tiimiakatemia in a nutshell," 2013)

No students	but team entrepreneurs
No classrooms	but an open plan office
No teaching	but learning
No teachers	but coaches
No simulations	but real business

[2] Peter Senge is the founding chair of SoL (Society of Organizational Learning), Senior Lecturer, Sloan School of Management MIT, and cofounder of the Academy for Systemic Change. He is the author of *The Fifth Discipline*, recognized by *Harvard Business Review* as "one of the seminal management books of the last 75 years," and by the *Financial Times* as one of five 'most important' management books. The *Journal of Business Strategy* named him one of the 24 people who had the greatest influence on business strategy in the 20th century (adapted from "Peter M. Senge | MIT Sloan," 2019)

No control	but self-organizing

The approach undoubtedly produces some very desirable outcomes. Graduate employment levels and number of student start-ups are claimed to be significantly higher than those of other more traditional programmes (Tosey, Dhaliwal, & Hassinen, 2015). Increased self-awareness is the most commonly reported and most highly valued participant outcome (Ruuska & Krawczyk, 2013), and visitors are typically impressed by the confidence, capability and energy of team entrepreneurs (students), and their ability to take initiative and responsibility (Tosey et al., 2015). Students emerge with excellent soft-skills and a highly developed network of potential customers, employers, mentors and investors (Davey, 2016).

The Team Academy approach represents a very new way of structuring and delivering an undergraduate programme, and it has little defined knowledge content. In the original Finnish version of the approach, nothing is taught didactically and there is no set curriculum. Students have to acclimatise to a learning environment where there is minimal direction and instruction regarding what to learn or how to learn it. The Team Academy approach deliberately positions itself as radically different to traditional forms of higher education typically organised by academic discipline, and shifts the focus from teaching to learning; learning in general in the context of generating money; not learning anything predefined in particular. Team Academy does not give its students grounding in the typical range of business disciplines and justifies this by arguing that the students' own reading is led by the business needs and development of the individual. It is also based on a premise that specialist expertise, when needed, can be sourced externally.

Information about Team Academy tends to focus on pedagogy, with little written about knowledge content. When theory is discussed in the context of Team Academy, theories of learning are presented and it is described as a "radical form of socio-constructivism" or "radical constructivism", it is based on a "constructive-humanistic learning concept" (see "Akatemia - working to learn," 2019; Davey, 2018; Halttunen, 2006; Leinonen, Partanen, & Palviainen, 2004;

Lizartza, 2012 for a representative selection). Team Academy emphasise that their educational philosophy and pedagogy emerged through practise and were not derived from theory. It is representative of programmes where constructivist views have become ideologically and epistemologically opposed to the presentation and explanation of knowledge (Kirschner, Sweller, & Clark, 2006).

On Team Academy programmes, teams of students create and operate real business projects supported by coaches in a conscious and deliberate contrast to traditional programmes which might offer experiential learning through simulations. The students own their businesses outright and the universities have no stake in them. This level of authentic investment in the success or failure of their business projects increases the students' levels of psychological and emotional engagement in their enterprises (Tosey et al., 2015). Students are organised to work in teams and tasked with making money, pooling their experience to become more personally effective and to develop effective team working skills.

The experience is centred on regular sessions with a coach, typically called training or coaching sessions or action learning sets, once or twice a week, where the coach encourages dialogue to facilitate peer learning and knowledge creation. In these sessions, students sit with their coach in a circle. They discuss their business projects, what they have learned, report on finances and plan ahead. The coach may be an academic member of staff or an external business person with relevant business start-up experience, depending on the institution.

The approach was developed as a way of enhancing the employability of graduates and extends the notion of employability to include self-employment and venture creation (and eventually the creation of jobs for others). It is promoted as a highly practical approach to business education, where live, student-led projects constitute the entire syllabus.

Its priority is clearly centred on making a direct and economic contribution to society through job creation. The Team Academy approach is underpinned by the assumption that when people learn to be entrepreneurs, they become not so much employable as employment generating. There is also something of a revolutionary call in that this way of learning helps "put a brake on

the old hierarchical structures that hold back the economy" ("Team Academy - trip to the wild west of management education," 2019, section 4). Others have suggested it could be seen as glorifying the pursuit of private enterprise (Tosey et al., 2015).

There is an emphasis on the students themselves choosing their own educational pathways and as a consequence there can be as many syllabi as there are students. Assessments are primarily based on the performance of the team company (Davey, 2016) effectively rewarding students with a degree for successfully trading in a team. Profitable trading is treated as proxy indicator of learning.

There are nine Finnish universities using the Team Academy model to some extent (Robinson, Biggs, Dhaliwal, Happonen, & Tosey, 2011) and undergraduate post-graduate spin-offs in Spain, the Netherlands, France and Hungary as well as the UK; adult education programmes in over ten countries with more than ten thousand people using Team Academy methods worldwide. In Latin America, India and China, team coaches are being trained with a number of initiatives underway to launch degrees, high school courses and team learning programmes ("Team Academy Worldwide," nd).

Team Academy has won many awards in Finland and was designated an "Educational Centre of Excellence" by Finland's Ministry of Education in 2000, a centre of excellence in entrepreneurship by the Finnish Minister of Trade and Industry in 2008, and in 2010 Johannes Partanen (the author of the approach) was awarded the Finnish equivalent of a knighthood ('Opetusneuvoksen' - Counsellor of Education) for services to education.

Team Academy is described by its proponents as "a cause" (Tosey et al., 2015), who feel the need to "spread the word", and is something they are "fighting for". Students that do not fit are encouraged to leave, there is a sense that "if you are not part of the solution [Team Academy] you are part of the problem" and there is perhaps a prevalence for an overly simplistic dichotomous view of management education. Similarly there does not appear to be a great appetite for introspection, questioning, constructive critique or exploration of alternative approaches from within. Tosey et al. (2015) remark on the normative attributes of the Team

Academy culture and notice that critical reflection on the model does not appear to be promoted. Similarly the almost exclusive focus on positive emotions driving towards action present a significant barrier to the development of critical thinking. See Ruuska and Krawczyk (2013) for a particularly uncritical presentation of the approach.

The programme is judged to be a success because of the number of new businesses being started by graduates and high graduate employment rates. In addition, the turnover of team companies is usually used as a measure of success, along with their corresponding contribution of tax payments to the government. The relatively small number of drop-outs or students returning to more traditional forms of education is regarded as additional endorsement for the approach, together with the programme's reputation and the high number of programme applicants (Davey, 2016).

Northumbria University at Newcastle was one of the first two UK universities to introduce a Team Academy style programme in 2013. The EBM programme retains some but not all of the original Team Academy features. Re-applying the Team Academy approach wholesale in other countries has many challenges, indeed Tosey et al. (2015) argue that the Team Academy model worked integrally as a coherent whole and queried whether it could be transferred successfully outside the host nation with any modifications at all, however rational or necessary they appeared. This view is not shared by all and Davey's case study (2016, p. 14) calls the Team Academy model "highly transferrable" owing to "its well-structured and documented approach, which can be adapted to the needs of the host institution." In the Newcastle version of Team Academy, students cannot hire and fire each other as they all pay fees, neither can progression on the programme be dependent on any other criteria than satisfactory performance in summative assessments. The University cannot charge students for "office rental" and there are no equivalent preferential tax arrangements for business co-operatives. A round-the-world-trip incentive to boost business activity does not appear to motivate UK students in the same way as Finnish ones, indeed they resist most attempts to encourage them to act collectively, and only conform in this respect when strictly required to as part of the process of getting the degree.

The institutional requirements regarding quality assurance dictate a modular format for the degree, making non-module specific sessions challenging to timetable and workload, and this also impacts on the design of assignments. With the burden of starting and running a real business or businesses in addition to fulfilling the standard academic requirements necessary to obtain a degree level qualification, UK students on Team Academy programmes appear to be more instrumental in their approach, reluctant to invest discretionary effort in activities which are not strictly required. As the programme has developed in Northumbria University at Newcastle, taught knowledge content has been introduced, although there is considerably less content than on other mainstream Business Management programmes.

My pedagogical experience prior to academia had centred on skill building in employees from senior level managers and leaders to junior new recruits. The context for the application of the skills was always the employment context of the participants. This approach continued to be logical when developing programmes for corporate clients delivered by the university. However it started to make less sense when applied at an undergraduate level where participants clearly identified themselves as students and not as employees. Developing skills in students charged with developing their own real and immediate opportunities for application in employment felt unsatisfactory.

The aim of the original Team Academy programmes in Finland is for students "to collect money for a round-the-world-trip at the conclusion of their degree, by commencing their own enterprise and by supporting the students to learn the principles of entrepreneurship on their own learning path" (Davey, 2016, p. 3). The 'principles of entrepreneurship' are not defined. In addition, Team Academy aims to produce graduates that are capable of "educating themselves for life, arming them with the skills, knowledge and personal qualities to create their own initiatives and enterprises as well as access to the business networks likely to sustain them in their business and through their career" (Davey, 2016, p. 3). It appeared to me that students of Team Academy programmes can learn highly transferrable soft skills, but may lack both the ability to think critically, and the knowledge and understanding of entrepreneurship as a defined academic subject.

In summary, I found myself in a position where I was not convinced of the legitimacy of the programme of education I was leading, neither was I clear about the academic identity of entrepreneurship. As I took on responsibility for the Entrepreneurial Business Management programme, I started to search for entrepreneurship knowledge content in the form of conceptual frameworks and theoretical underpinning and the idea for this thesis was conceived. Similar to Barradell and Kennedy-Jones (2015) I was interested in the idea that there might be particular types of knowledge that were central to my subject (entrepreneurship) that if identified, would enable me to teach better and improve the experiences of my students.

Having established what motivated my personal interest in this research, the next section sets out the wider context of entrepreneurship education providing further justification for the research.

1.3. Entrepreneurship and Entrepreneurship Education

Entrepreneurship is important as it is a significant factor in driving economic growth (*Entrepreneurship Policy Framework and Implementation Guidance*, 2012) and enterprise and entrepreneurship education have been identified as potential enablers of positive social, economic and political change, increasing the likelihood of successful graduate employment across all subject areas, and positively contributing to the likelihood of an individual leading " a rewarding and self-determined professional life." (QAA, 2018, p. 2). The word entrepreneurship is used in this research to incorporate the meanings of the terms enterprise and entrepreneurship. Higher education is generally regarded as an appropriate place for the development of entrepreneurship (QAA, 2012) and there are even claims that it is key to the success of the higher education sector in the future. The neo-liberal agenda has had a huge impact on the world and policy making, not least in higher education. The funding arrangements for institutions in UK higher education have changed considerably and there is increasing pressure on universities to generate more of their own income and to demonstrate and quantify impact, especially in terms of contribution to economic growth. Together

with growing pressure to better meet the needs of employers by supplying more employable graduates, universities are increasingly perceived as useful sources of spin outs and start-up businesses.

There is a general lack of consensus regarding what entrepreneurship education in higher education really means (Pittaway & Cope, 2007), what needs to be learnt, whether it can be learnt, where it is best learnt, how to learn it, and how to measure if it has been learnt. There remain unanswered questions concerning how (and if) the higher education sector can contribute to entrepreneurship (Davey, Hannon, & Penaluna, 2016). There is no stable canon of knowledge that represents entrepreneurship and no established methodology for entrepreneurship education (Michels, Beresford, Beresford, & Handley, 2018). A general lack of research-grounded discussion on the quality of entrepreneurship education initiatives has been highlighted (Béchard & Grégoire, 2007), particularly in relation to what makes pedagogical innovations effective. There is a concern that the emergence and growth in entrepreneurship education has been faster than educators' understanding of what should be taught, and how outcomes might be assessed (Neck & Corbett, 2018). The disparate perspectives apparent in the entrepreneurship and entrepreneurship education literature present a challenge to the educator and an opportunity for this research.

Despite continuing debate about whether entrepreneurship can be taught and, if so, how best to teach it and whether university is the right place to learn it, the prevailing neo-liberal ideology has led to a huge increase in the provision of entrepreneurship education in higher education. It is argued here that this fragmented and disparate educational landscape has resulted from differing assumptions about the purpose of entrepreneurship education at university.

If the purpose of entrepreneurship education is to increase the number and success of new ventures, then entrepreneurship education needs to be concerned with developing the knowledge, skills and attitudes in students that will enable them to create successful new ventures and to become entrepreneurs. This approach implies that the economy (in terms of the gross domestic product) is the primary intended beneficiary of entrepreneurship education. If the purpose of entrepreneurship education is to enhance student employability, then

entrepreneurship education needs to be concerned with developing the generic skills in students that employers are looking for and value most highly, so employers can grow successful organisations. This approach implies that employers (the workforce) are the primary intended beneficiaries of entrepreneurship education. If the purpose of entrepreneurship education is to prepare students for an uncertain future, then entrepreneurship education needs to be concerned with developing the generic skills they will need to maximise their employability and to flourish in uncertain times. This approach implies that the students (the individual) is the primary intended beneficiary of entrepreneurship education.

It is argued here in the context of entrepreneurship education, the purpose of universities is first and foremost to educate students in entrepreneurship, and to further their knowledge and understanding of entrepreneurship. This might appear self-evident but increasingly the effectiveness of entrepreneurship education is judged not in and of itself, but only in terms of indirect consequences such as the generation of spin outs, the increased number and success of student businesses and the salaries of graduates. These are all beneficial by-products, but not ends in themselves. They will happen in any case if the core purpose of a higher education in entrepreneurship is being properly fulfilled. Its form should not be defined by its function.

What does it mean therefore to educate students in entrepreneurship? According to the threshold concept framework, in any academic discipline there are threshold concepts that bind the subject together and define the boundaries of the academic territory. By suggesting CTCs (Candidate Threshold Concepts) in entrepreneurship; the intrinsic, rather than instrumental good of entrepreneurship education might be understood. An understanding of CTCs in entrepreneurship would enable the autonomy and identity of the subject to be established, rendering it more robust and more valuable. Its identity would no longer be so nebulous, or be dictated by the market and the prevalent political ideology of our times. The threshold concept approach offers a means of distilling the essence of entrepreneurship knowledge that is both cognitively and socially constructed in a way that can usefully be applied in any educational context to both expose what

makes entrepreneurship distinctive and to define its boundaries as an academic subject.

Viewing entrepreneurship education through the lens of the threshold concept framework attempts to address the criticisms and threats of the prevailing neo-liberal approach to education. The purpose of entrepreneurship education is purely to further knowledge and understanding of entrepreneurship, and a conceptual framework is therefore vital in defining what this means. Entrepreneurship education must consist of enquiry into something in particular, an open-ended quest for understanding of that particular subject matter. The quest must be bounded in a subject, and not be generically relevant, hence it is vital that the nature of entrepreneurship is clear in an educational context. Entrepreneurship education must be regarded as an intrinsic good, like all higher education, and not evaluated using measures of indirect outcomes. And to do all this, entrepreneurship education must have a foundational subject core, a clear conceptual framework setting out what makes it distinctive.

Applying the threshold concept approach offers a conceptual framework to conceptualise entrepreneurship in an educational context. It enables the development of entrepreneurship curricula built around entrepreneurship threshold concepts, rendering entrepreneurship more robust, conceptually framed, bounded, distinctive, and ultimately more effective as an academic subject.

This research responds to calls for a shared, conceptual framework and theoretical foundation for entrepreneurship education (Blenker, Korsgaard, Neergaard, & Thrane, 2011; Fayolle, 2013). It responds to calls to draw on educational and pedagogical issues as well as the field of entrepreneurship research (Fayolle & Gailly, 2008) in the development of entrepreneurship education (Thrane, Blenker, Korsgaard, & Neergaard, 2016). There are calls for more research and the development of a scholarly expertise at the interface of education and entrepreneurship to develop a greater understanding of entrepreneurship learning and teaching, including formal entrepreneurship education in higher education, in order to enhance effectiveness and to avoid pedagogical stagnation (Béchard & Grégoire, 2005). Traditional teaching methods can risk undermining attitudes

conducive to entrepreneurship and a shift in both how and what is taught is required (*Helping entrepreneurs flourish: rethinking the drivers of entrepreneurship*, 2014b). Neck and Corbett (2018) note that there has been a paucity of research to date from the educator perspective, and the same rigour and discipline as is currently applied to the science and practice of entrepreneurship, should be applied to the teaching and learning of entrepreneurship.

The threshold concept framework offers a means of distilling the essence of entrepreneurship as ways of thinking and practising that may be usefully applied in any educational context to explain what makes entrepreneurship distinctive, define its boundaries and thereby improve the effectiveness of entrepreneurship education. The establishment of a pedagogy specific to entrepreneurship built around entrepreneurship threshold concepts will render it distinctive and enable a greater degree of effectiveness, alignment and consensus.

By revealing what is fundamental to what they are teaching, threshold concepts enable refined decision making and curriculum development by teachers (Cousin, 2006a). Once identified, threshold concepts, when defined as 'what is fundamental to a grasp of the subject', may also be used to decide what is and what is not taught within the subject, thus enabling it to be demarcated, bounded and distinguished from other subjects. Even when viewed as relative and socially constructed and thus flexible and contested, defining boundaries between subjects is still useful, however temporal and situated the boundaries might prove to be. We cannot teach everyone everything, we need some means to categorise knowledge and split it into meaningful chunks. Arguments about what should be taught where enrich our subject knowledge and make us better teachers. When such arguments cease, knowledge stagnates. Meyer and Land (2003) suggest threshold concepts might be used beneficially to benchmark curricula. There is little literature on the potential of the threshold concept framework to define appropriate knowledge boundaries. (Souleles, Ferreira, & Savva, 2020) in the one paper that could be found on this topic, research education in design for social change and conclude that the threshold concepts in this academic area have more to do with ways of thinking and practising, rather than discrete conceptual ideas.

Flanagan, Taylor, and Meyer (2010) comment that the application of the threshold concept framework may quickly lead to existential questions regarding the nature of the academic subject itself and how it might be differentiated from closely related subjects. They draw particular attention to semi-vocational and interdisciplinary subjects and whether graduates of such subjects might be defined by their skills or by their industry. They propose a threshold concept shared by two (or more) academic courses may come into view differently for the students on each course and call these compounded thresholds. There are clear parallels between the focus of their study (Electrical Engineering) and the focus of this study (Entrepreneurship). Whilst the threshold concept framework does not offer an easy answer to how areas of study may be differentiated from each other, it does offer a way to approach the issue.

The approach taken offers a potentially interesting, distinctive and portable way of opening up an emerging multi-disciplinary field and addresses criticisms directed at previous research to identify threshold concepts, around the lack of involvement of external stakeholders and insufficient efforts to achieve consensus (Barradell, 2013). This work will be of interest to those using the threshold concept framework to develop educational programmes in similarly recent, complex and contested fields, and also to those interested in the scholarship of teaching and learning entrepreneurship, who may be unfamiliar with the threshold concept framework and its potential for enhancing the effectiveness of entrepreneurship education.

This research points to a need for educators to focus on the design of curricula and other entrepreneurship education interventions that develop an understanding of threshold concepts. It strengthens the evidence base for the inclusion of "real-life experience" in entrepreneurship education, exposing students to experiences that give them insight into being an entrepreneur. It highlights the importance for entrepreneurs to continue to focus their own personal development efforts on developing their understanding of these threshold concepts. It suggests a possibly fruitful avenue for entrepreneurship researchers in researching the role of the "lived experience" in entrepreneurial practitioner learning using the lens of entrepreneurship threshold concepts in

applied methods of inquiry. It provides further support for the call to improve the balance between teaching and learning in higher education (Davey et al., 2016).

1.4. Research Questions

The research questions are set out in this section. The purpose of entrepreneurship education is considered here as to further knowledge and understanding of entrepreneurship in students, so they can understand the ways in which entrepreneurs think and practise. They can then choose whether or not to adopt an entrepreneurial approach to their own occupation or to become an entrepreneur. Adopting an entrepreneurial approach to an occupation requires thinking in an entrepreneurial way, thinking *like* an entrepreneur. The purpose of entrepreneurship education then is to create graduates that can think *like* entrepreneurs (also see Chapter 2, Section 2.5). Only those that successfully create new ventures whether at university, on graduation or at any point thereafter, will start to *become* entrepreneurs and start to think *as* entrepreneurs.

It is important to distinguish between "thinking like" and "thinking as" in the context of this research. "Thinking as" is used when the thinking of the person is integral to who they are. Someone who is thinking as an entrepreneur, is an entrepreneur. Whereas when the ways of thinking as an entrepreneur are deliberately adopted by someone else for the purposes of learning or teaching entrepreneurship, they can be said to be thinking like an entrepreneur. These ways of thinking and practising are adopted consciously and the person is aware of differences between how they might normally think or have previously thought, and how an entrepreneur might think. For example, an educator may be able to think like an entrepreneur, but remains an educator, not an entrepreneur. Only entrepreneurs can think as entrepreneurs, only educators think as educators. Entrepreneurship educators can understand how to think like entrepreneurs and how to educate students to think like entrepreneurs. Students of entrepreneurship programmes can learn to think like entrepreneurs, but they think as students. Ultimately, some of them may go on to become entrepreneurs and only then will they will think and practise as entrepreneurs.

Entrepreneurship is defined here as the activities undertaken by entrepreneurs, the practice of entrepreneurship. The ways in which entrepreneurs think and practise are defined here as the threshold concepts of entrepreneurship. The question "how do entrepreneurs think and practise?" implies that there is a distinction between the way entrepreneurs and non-entrepreneurs think and practise, which leads to the first research proposition:

Proposition one:

Entrepreneurs think and practise differently from non-entrepreneurs

The second research assumption is that it is possible to educate students to think and practise like entrepreneurs, these ways of thinking and practising are not things that people have to be born with. This process of educating students to think and practise like entrepreneurs is the process of entrepreneurship education.

Proposition two:

Students of higher education can be educated to think and practise like entrepreneurs. This is entrepreneurship education.

Underpinned by these two propositions, the research questions are set out. Since thinking and practising cannot be divided and assuming that entrepreneurs think and practise differently from non-entrepreneurs, the first research question is:

Research question 1:

What is distinctive about thinking like an entrepreneur?

Once the distinctiveness of thinking (and by inference practising) like an entrepreneur has been explained, the second question can be posed.

Research question 2:

How can students be educated to think like entrepreneurs?

Once answers to how students might be educated in entrepreneurship have been suggested, we can explore how students understand it, promoting the third and final research question:

Research question 3:

1.5. Research Aim and Objectives

The research aim and objectives are set out in this section. By conducting a staged stakeholder curriculum inquiry, interrogating the perspectives of entrepreneurs, entrepreneurship educators and students of entreprenership education, the aim of this research is to use the threshold concept framework to define entrepreneurship as an academic subject and suggest approaches to entrepreneurship education in higher education informed by how students understand it.

The research objectives are:

- to conduct a staged stakeholder curriculum inquiry involving entrepreneurs, entrepreneurship educators and students of entrepreneurship
- to identify candidate threshold concepts in entrepreneurship
- to explore educators' views on the effectiveness of approaches to entrepreneurship education
- to explore how students understand entrepreneurship

The research contributes to the call for more research grounded discussion on the quality of entrepreneurship education initiatives, particularly in relation to what makes pedagogical innovations effective. Using the threshold concept framework as a lens in this research will enable entrepreneurship to be demarcated as an academic subject and the development of entrepreneurship curricula.

1.6. Research Design

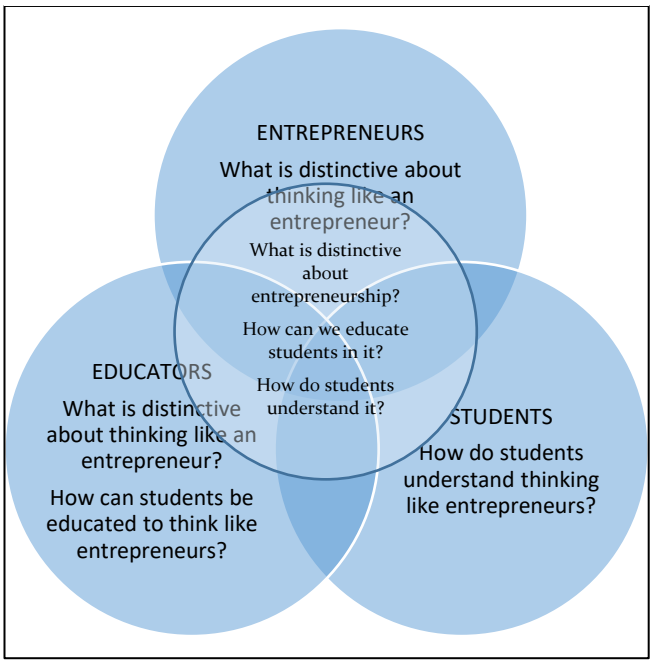
This study is designed to build on elements of transactional curriculum inquiry (Cousin, 2009a) developing it into what can be described as a staged stakeholder curriculum inquiry. Transactional curriculum inquiry (Cousin, 2009a) is a highly regarded way to explore the perspectives of the educator and the student in the identification of threshold concepts, but has been criticised as failing to incorporate the practitioner or external stakeholder view (Barradell, 2013).

Consequently the research was designed to seek perspectives from three participant groups including the practitioner view; entrepreneurs, entrepreneurship educators, and entrepreneurship students. The methodology of the research responds to a call for entrepreneurship and small firm research to move beyond quantitative approaches and functionalist paradigms (Higgins, Trehan, & McGowan, 2015) in order to increase the methodological diversity of the field. Methods of generating research data included a modified Delphi technique, semi-structured interviews and concept mapping.

The key stages of this study are set out in Chapter 5 and in Figure 1.1. As each stage builds upon the next, methods develop and evolve over the course of the research. The study constitutes a spiralling constructivist/interpretivist approach drawing upon a variety of research methods at different stages. It adopts a paradigm in which many realities are constructed from social and experiential bases that are local and specific in nature. The aim of this inquiry, adapted from Guba and Lincoln (1994) is to understand and reconstruct concepts that are critical to thinking and practising as an entrepreneur in a reality that is regarded as relative and socially constructed.

Ethical approval for all stages of this study was given by Durham University School of Education (UK).

Figure 1-1 Graphical representation of research design



- Stage 1 consists of a Delphi survey (Rescher, 1998) with entrepreneurs to suggest CTCs in entrepreneurship and what is distinctive about thinking like an entrepreneur.
- Stage 2 consists of semi-structured interviews with entrepreneurship educators to suggest CTCs in entrepreneurship (what is distinctive about thinking like an entrepreneur), and their perspective of the most effective ways of educating students in the CTCs. Data from Stage 2 has been analysed in light of the findings from Stage 1 and the CTCs in entrepreneurship have been further developed from the combined perspective of entrepreneurs and educators.
- Stage 3 consists of concept mapping workshops with students of an entrepreneurship programme to discern how they understood the CTCs in entrepreneurship defined in Stage 2.

1.7. Conclusion

In this chapter, I have described my personal background and set out the rationale and personal motivation for doing the research. The research questions, aim and objectives were set out, together with a summary of the methods used in

the research design. The format of the remainder of the thesis is as follows; in Chapter 2 the wider context of entrepreneurship education is considered including the key policy drivers and a consideration of its impact and purpose. Relevant literature in entrepreneurship and entrepreneurship education is reviewed in Chapter 3. Chapter 4 presents the methodology and Chapter 5 sets out the design of the research, and the methods adopted. The research findings from the first two stages of the research are presented in Chapters 6 and 7, with the research findings from the third and final stage presented in Chapter 8. Chapter 9 consists of a discussion of the research, recommendations and concludes the thesis.

Chapter 2. Context

2.1. Introduction

Having introduced the thesis in Chapter 1, this chapter offers further context for the research. The prevailing culture in UK Higher Education is considered as particularly relevant and integral to entrepreneurship education, and key policy drivers which have fuelled its rapid growth are explained. Various means of measuring the impact of entrepreneurship education are reviewed and alternative possible purposes of it are offered. The chapter concludes by arguing for the need to adopt a more conceptual approach to entrepreneurship education.

2.2. Neo-liberalism and higher education

> Not everything that counts can be counted
>
> (Collini, 2012, p. 139)

The neo-liberal agenda has had a huge impact on higher education. Historically, UK Government policy, to a greater or lesser degree, has been to make universities more responsive to the needs of the economy and to expand numbers to ensure democratic inclusiveness and promote social mobility (Collini, 2012). Entrepreneurship education can be seen as the crystallised pinnacle of a neo-liberal approach to higher education and its popularity has grown directly in line with the increasing commodification and growth of higher education, the introduction of student fees, the agenda of accessibility, and aspirations of education for all. As noted by Furlong (2013, p. i), "academic disciplines are not only intellectually coherent fields of study; they also have a political life".

Concerned in the main with marketization and the creation of economic growth and jobs; the objectives of entrepreneurship education in higher education appear to be shared by the UK Government, employers and higher education sector managers. Entrepreneurship education can be positioned as a panacea for the agenda of the Government who want economic growth; employers who want employable graduates; students who want employment with higher salaries; and educational institutions who want funding. Entrepreneurship education therefore is the logical and rational end product or culmination of a neo-liberal approach to

higher education. Associated policies and funding changes have subsequently led to a wholesale transformation of the higher education sector.

> Enterprise education is a business imperative. We should invest in lifelong learning through practical application; breaking down barriers between business and academia, whose distinctions are increasingly redundant in our digital age. New tech means new approaches and applications, and that means education is everybody's business
>
> Nathan Bostock, CEO, Santander UK (*APPG Entrepreneurship: Enterprise Education*, 2018, p. 2)

Presenting the differences between education and business as problems to be overcome rather than vital differences to be cherished exemplifies the current neo-liberal ideology prevalent in some parts of the UK higher education operating environment. According to the Browne report (Browne, 2010, p. 14), "Higher education matters because it drives innovation and economic transformation. Higher education helps to produce economic growth, which in turn contributes to national prosperity". Innovation and economic transformation have changed from being the indirect by-products of university activities to being regarded as their direct and primary purpose.

According to the Oxford Handbook of Entrepreneurship (Casson, Yeung, Basu, & Wadeson, 2006), theories of entrepreneurship have always claimed that entrepreneurship is core and not peripheral to the performance of the economy. Global and European economic and employment policies increasingly emphasise the importance of enterprise and entrepreneurship. Increased entrepreneurial activity is linked to economic growth, Gross Domestic Product per Head, business creation, innovation, employment, job creation, equity and social well-being (Cumming, Johan, & Zhang, 2014; *Entrepreneurship 2020 action plan: reigniting the entrepreneurial spirit in Europe*, 2013; Lackéus, 2015a; OECD, 2015; Valerio, Parton, & Robb, 2014; Wong, Ho, & Autio, 2005). According to the Economist Intelligence Unit (*Helping entrepreneurs flourish: Rethinking the drivers of entrepreneurship*, 2014a) 10% of the world's adults are entrepreneurs. Entrepreneurship is the "…key to job creation and growth in modern society" (Nielsen, Klyver, Evald, & Bager,

2012, p. xv). It has been argued that small businesses are even more important to the economy than large businesses when it comes to generating economic growth (Bolton, 1971, and Birch, 1979, cited in Nielsen et al., 2012, p. 5) and entrepreneurial competencies are highly sought after by policy-makers and practitioners (Hofer et al., 2010).

The total number of jobs in the UK increased by 11% between 1981 and 2002 but the pattern of growth was not even, with the number of public sector jobs falling (H. Davies, 2002). The fastest growth was seen amongst small businesses and in self-employment which accounted in 2002 for almost one in eight jobs in the economy as a whole (H. Davies, 2002). Small businesses and self-employment are predicted to be the most dynamic areas of the economy in the near future.

"Entrepreneurship is seen as the engine driving the economy and this has resulted in the growing interest in the development of education programmes that encourage entrepreneurship", (Gorman, Hanlon, & King, 1997, p. 56). The UK Government has frequently intervened in primary, secondary, further and higher education to help implement strategies designed to encourage a more enterprising society (H. Davies, 2002) in the hope of boosting prospects of economic growth. "Just as castles provided the source of strength for medieval towns, and factories provided prosperity in the industrial age, universities are the source of strength in the knowledge-based economy of the twenty-first century", (Dearing, 2002, speech given at Newcastle University).

Entrepreneurship education has grown rapidly since 1947 when the course claiming to be the first of its kind was delivered at Harvard Business School, USA (Katz, 2003; Kuratko, 2005; Solomon, 2007). In 2014, 45% of 18 to 25 year olds reported that their universities offered some form of entrepreneurship education, a figure that is no doubt higher today (*Helping entrepreneurs flourish: Rethinking the drivers of entrepreneurship*, 2014a). One explanation for the initial rapid rate of growth of systematic academic interest in entrepreneurship was the downfall of the largest Fortune 500 firms and the rise of entrepreneurial firms in the 1980s (Landström & Harirchi, 2018).

Governments and policy makers around the world have increasingly endorsed the potential importance and benefits of enterprise and

entrepreneurship education strategies and practices (DTI, 2001; DTI/DfEE, 2001; B. Jones & Iredale, 2014; Volkmann et al., 2009). The European Union has identified entrepreneurship as a key factor and a basic skill in the educational system (*Lisbon Treaty* 2000; OECD, 2001). The Organisation for Economic Cooperation and Development (OECD, 2001) and the World Economic Forum (Volkmann et al., 2009) alongside other influential organisations have reported on the important contribution enterprise education could make to social and economic regeneration and renewal. As the importance of the role of mind-sets, knowledge and skills in enabling the recognition and exploitation of entrepreneurial opportunities has been recognised, the contribution of educational institutions in developing them has also come to be more widely recognised (Valerio et al., 2014). Various studies have linked entrepreneurship in education to economic growth, improved public health, shattered glass ceilings and the increased commercialisation of academic research (Liguori, Corbin, Lackeus, & Solomon, 2019).

The societal role of universities and other higher education institutions is regarded as vital in Europe where the impact of intellectual capital can be measured in terms of social and economic progress. According to the European Council (*Conclusions of the Council and of the Representatives of the Governments of the Member States, meeting within the Council, of 26 November 2009 on developing the role of education in a fully-functioning knowledge triangle*, 2009), education, research and innovation must all function properly and interact fully with each other if Europe is to be able to meet the long-term challenges of a competitive global economy, climate change and an aging population. The intention is that the resulting new and evolving knowledge emanating from universities can be quickly translated into innovative products, services, approaches and methods in the wider economy and society. The development of creative, innovative and entrepreneurial mind-sets in both students and faculty can underpin the progressive development of a greater culture of enterprise resulting in a more dynamic European labour market and a more highly skilled workforce. This can strengthen Europe's innovative capacity and the development of a creative and knowledge-intensive economy and society.

"The UK Government sees entrepreneurial graduates as crucial for economic growth, and universities are critically placed to foster this entrepreneurial activity", (*APPG Entrepreneurship: Enterprise Education*, 2018, p. 5). However as much as it is claimed that increased levels of education are accompanied by higher economic returns, and that higher education builds an optimal society, there is no easy way to establish a causal relationship between the two (Alvesson, 2013) and empirical evidence is "extremely weak" (Wolf, 2004, p. 316).

In a quest to measure their return on investment in education in the form of improved economic performance, the neo-liberal shift in the prevailing political ideology from a welfare state model after the 1970's meant that rather than being a 'cultural good' and offering an antidote to the daily grind of economic life, the government of the time started to regard universities as "expensive, self-absorbed, arrogant and subversive" (Collini, 2012, p. 33). This argument was used to drive through significant funding cuts and increasing attempts to measure research quality and other measures of performance.

> It has long been apparent that universities cannot have it both ways: if they want reasonably generous financial support from the government of the day, then they have to accept becoming answerable to that government and its conception of what the electorate will bear
>
> (Collini, 2012, p. 110)

Increasingly it is becoming not merely desirable or appropriate in some cases, but *self-evident* that publicly funded activity has to be shown to "serve the needs of the economy" (Collini, 2012, p. 110).

Neo-liberalism has had a significant impact on how knowledge is seen. In a culture where everything aspires to be 'auditable", only things that can be counted, 'count', and 'value' replaces values. Performance criteria are imposed externally and activity must be justified in terms of contribution to institutional mission and strategy. Knowledge becomes defined almost exclusively as explicit, possess-able, manageable and assessable. It exists as something outwardly

focussed and external to individuals. Consequently, forms of knowledge that are more conceptual, tacit, personal, inward-focused, slippery, and less easily tamed risk extinction by being relegated or ignored entirely (Collini, 2012). Educators are required to produce measurable and improving outputs and performances as opposed to having a rationale for practice and a sense of meaningfulness in what they do.

Higher educational institutions are increasingly required to contribute to the economy in directly measurable ways in return for increasingly diminished levels of funding, to generate more direct income to compensate for the funding cuts, and to resource an explosion in student numbers. These pressures have led to what some have termed an "audit culture" as a way of demonstrating a directly measurable contribution to economic growth, and have resulted in significant growth in enterprise and entrepreneurship education.

The importance of measuring the effectiveness of education is taken for granted in most government publications in the present day. Typical of these is the recent report published by the All Party Parliamentary Group for Entrepreneurship which laments the lack of sufficient funding to "properly assess everything that is being done" (*APPG Entrepreneurship: Enterprise Education*, 2018, p. 9). The problem is seen as the lack of funds to enable comprehensive measurement, and it is assumed that the effectiveness of entrepreneurship education can actually be measured and quantified. The report does acknowledge however that there are problems with trying to measure all the outcomes of entrepreneurship education. For example; the problem caused by the lag effect where a student starts a business some years after graduating, and issues of attribution, in other words knowing whether or not the student would have shown the same or perhaps even more pronounced entrepreneurial traits without having had training in enterprise skills at university.

In 2001 the UK Government introduced a significant funding stream for British Higher Education institutions with the aim of stimulating them to work more with business and the community called the Higher Education Innovation Fund (HEIF). The HEIF was designed to "support and develop a broad range of knowledge-based interactions between universities and colleges and the wider

world, which result in economic and social benefit to the UK" (HEFCE, 2017). This fund and its successive developments have had an enormous influence on the development of enterprise and entrepreneurship education initiatives in UK higher education with a focus on measurable outcomes and in the increasing administrative resource required to audit performance.

The Teaching Excellence and Student Outcomes Framework, commonly referred to by its original name; the Teaching Excellence Framework ("Teaching Excellence and Student Outcomes Framework (TEF)," 2019) was introduced in the UK in 2016 and has been subsequently updated. The TEF was designed to assess excellence in teaching at universities and colleges, and how well they ensure excellent outcomes for their students in terms of graduate-level employment or further study, with the possibility of using ratings to measure levels of institutional ability, in order to determine (and increase or decrease) tuition fees. The TEF makes specific reference to enterprise and entrepreneurship in terms of 'Student Outcomes and Learning Gain' including 'Extent of student involvement in enterprise and entrepreneurship' and 'Number, impact and success of graduate start-ups[3]', further incentivising activities in these areas.

The "performance" of knowledge for the purpose of audit has had a particularly marked implication for entrepreneurship education as an emerging subject. The characteristics of a neo-liberal approach such as the prevalence of measurement and evidence, need for proof of applicability and usefulness, assessment and audit, have led to a preponderance of quasi-quantitative lists by which the effectiveness of entrepreneurship education might be measured. To paraphrase Shore and Wright (1999, p. 570), "To be audited (*assessed*), an organisation (*an academic course*) must actively transform itself into an auditable (*assessable*) commodity" (words in italics in brackets added). These include the

[3] A start-up is a small business that has recently been started by someone, also sometimes referred to as a "new venture" or "new business venture". The word "venture" is sometimes preferred to "business" as it can be interpreted more widely to include not-for-profit organisations, charities and community interest companies

setting out of learning outcomes, learning objectives, and long lists of competencies. Alvesson (2013) questions the progress of education fundamentalism and the widely accepted view that a university education for half the population is necessary and desirable, referring to the fetishizing of 'competence'. Competency based approaches have also been criticised as perpetuating cycles of 'non-learning' in which students are rewarded for reflecting teacher's comments back to them and stripping curricula of interdisciplinary connections (Kinchin, Cabot, Kobus, & Woolford, 2011).

In another bid for distinctiveness and quantifiable measures of effectiveness, a subsection of entrepreneurship education programmes known as 'venture creation programmes' use the number and success of student start-up ventures as the epitome of objective assessment measures of entrepreneurship programmes. This bears out Bernstein's (2000) assertion that relatively stable identities drawn from subject loyalties are being replaced by more volatile identities forged from "temporary stabilities (constructed) out of the products of the market" (p.59). Entrepreneurship could be said to be suffering an extreme version of the pathology affecting higher education in the UK as a whole, namely that of creative compliance resulting from gamesmanship played out in an indicator culture (Ball, 2003).

2.3. Key policy drivers for entrepreneurship education

The connections between enterprising behaviours and entrepreneurship to economic growth (*Entrepreneurship Policy Framework and Implementation Guidance*, 2012; Matlay & Carey, 2007) and social development (Valerio et al., 2014) are of great interest to governments and other policy makers. The development of the entrepreneurial capacity of European citizens and organisations has been one of the key policy objectives for the EU and Member States for many years (Bacigalupo, Kampylis, Punie, & Van den Brande, 2016). The "Oslo Agenda for Entrepreneurship Education," was published by the European Commission in 2006 with the intention of accelerating progress in systematically promoting entrepreneurial mindsets in society. The Agenda was an outcome of the

Conference on "Entrepreneurship Education in Europe: Fostering Entrepreneurial Mindsets through Education and Learning" (Oslo, 2006) which was initiated by the European Commission and organised jointly with the Norwegian government following a Communication from the European Commission on the same topic. Accelerating pedagogical reform was one of the seven calls for action.

> Member States should encourage education and training institutions to ensure that curricula, as well as teaching and examination methods at all levels of education, including doctoral level, incorporate and foster creativity, innovation and entrepreneurship. One way of doing this is to develop curricula on an ongoing basis in cooperation with research institutions, industry and other stakeholders, as appropriate.
>
> (European Council, 2009, no page number)

Globally, the need for entrepreneurship education and university engagement in the drive of economic growth have been stressed in publications by the United Nations (UNCTAD, 2012) and the World Economic Forum (Volkmann et al., 2009).

The current era of enthusiasm for enterprise and entrepreneurship education dates in the UK from the publication of the Dearing Report in 1997. It was the largest review of Higher Education in the UK since the early 1960's and amongst other things, called for universities to do more to encourage the development of enterprise skills and entrepreneurship in students (Dearing, 1997) through innovative approaches to programme design. In 2000, business and entrepreneurial development was listed as one of the four development strategic goals of British universities (*Universities UK: A forward look - Highlights of our Corporate Plan 2001 - 2004*, 2000) .

In 2008 the Department of Business Enterprise and Regulatory Reform set out the UK Government's renewed strategy and vision to make the UK the most enterprising economy in the world and the best place to start and grow a business (BERR, 2008). The Strategy set out five key enablers to take forward the Government's policy for enterprise in the UK. One of these enablers was

knowledge and skills, where a vision for a lifelong journey in enterprise education, starting in primary schools, continuing in universities and embedded in the workplace, equipped employees and owners with the tools to unlock their entrepreneurial talent (BERR, 2008).

In 2010 the UK Government reiterated the need for developing an enterprising culture (*A Strategy for Sustainable Growth*, 2010) and the drive for enterprise education within higher education was an important element of a 2011 White Paper for Education (*Students at the Heart of the System*, 2011). Wilson, in an independent review for the Department of Business, Innovation and Skills, (T. Wilson, 2011) called for an infrastructure that supported and enhanced enterprise development across the curriculum.

In 2012 the Quality Assurance Agency published its first guidance for UK higher education providers in enterprise and entrepreneurship education (QAA, 2012). The guidance was not intended to set out a new academic subject area but was intended to be used in conjunction with the appropriate QAA Subject Benchmark statement, "Enterprise and entrepreneurship are transdisciplinary, with a strong connection to issues of employability, innovation, knowledge transfer, commercialisation and intellectual property" (QAA, 2012, p. 2). The QAA published updated guidance in 2018 (QAA, 2018).

Further influential policy documents have included "An Education System Fit for an Entrepreneur" (Anderson, Culkin, Penaluna, & Smith, 2014) and Lord Young's report "Enterprise for All" (Young, 2014). The latest UK Government's industrial strategy again sets out a vision for Britain to be the best place to start and grow a business (*Industrial Strategy - Building a Britain Fit for the Future*, 2017) and a new role of Chief Entrepreneurial Adviser was briefly created by the Department for Business, Energy and Industrial Strategy (2016 – 2017). In 2016, the Entrepreneurship Competence Framework, "EntreComp" was introduced (Bacigalupo et al., 2016) as a tool to improve the entrepreneurial capacity of European citizens and organisations. The framework aimed to build consensus around a common understanding of entrepreneurship competence by defining fifteen competences in three areas together with learning outcomes and proficiency levels.

Most recently, Enterprise and Entrepreneurship is set to be recognised (Autumn 2019) as a subject discipline within the Higher Education Classification of Subjects (HECoS) coding system (HESA, 2016), securing its legitimacy as an academic subject.

2.4. The impact of entrepreneurship education

From most governments' perspectives in the Western, capitalist world, the more that can be done to increase enterprise and entrepreneurship activity the better, in order to maximise its positive impact on economic growth. Policy makers all over the world are seeking to infuse entrepreneurship into all levels of education. Despite the global interest and growth in entrepreneurship education and training, the effectiveness of many (if not most) initiatives has not been rigorously evaluated and it is not clear what is working and what is not (Valerio et al., 2014). A significant proportion of students are progressing through education without measurable gains in general skills (Arum and Roksa, 2011, p.36 cited in Alvesson, 2013, p. 96) and the students who score the lowest and improve the least are the business students (Alvesson, 2013). There is ongoing and widespread discussion about who or what is an entrepreneur, leading to the question of whether entrepreneurs are born or made and even whether or not entrepreneurship can be taught (Fiet, 2001; Henry, Hill, & Leitch, 2005).

Although policy makers see new venture formation as integral to economic growth the academic literature is more uncertain (Von Graevenitz, Harhoff, & Weber, 2010). Despite the mixed results of research into general links between entrepreneurship and growth in industrialised countries there is some evidence of the positive impact of particular forms of entrepreneurship on economic growth, such as academic entrepreneurship. Academic entrepreneurs employ more people (Dietrich, H. (1999) cited in Von Graevenitz et al., 2010, p. 90), university educated founders invest more in their businesses (Reynolds, Storey, & Westhead, 1994), their firms perform better and university spin-offs contribute positively to the regional economy (Shane, 2004). Findings such as these have convinced policy makers of the value of policies that sensitise and develop potential founders in

higher education institutions (Von Graevenitz et al., 2010) and have contributed to the proliferation of entrepreneurship education efforts.

There is some evidence that university based programmes support a range of outcomes which ultimately do contribute to economic growth and development (Bosma, Acs, Autio, Coduras, & Levie, 2008; Nabi et al., 2017). They include the skills, knowledge and attitudes associated with student venture creation (F. J. Greene & Saridakis, 2008), graduate business start-ups and overall job creation (P. G. Greene, Katz, & Johannisson, 2004). A positive link has been found between time spent in education and average income for entrepreneurs (Van Praag, Van Witteloostuijn, & Van der Sluis, 2013). There are some claims that enterprise education does have a positive impact on the number of students starting businesses, employability and earnings, and the growth of small businesses. An impact study conducted on behalf of the European Commission (*Entrepreneurship education: A road to success*, 2015) collated findings of ninety one studies in twenty three countries also concluded that entrepreneurship education works. They found that students participating in entrepreneurship education were more likely to start their own businesses and their companies tended to be more innovative and more successful than those led by persons without entrepreneurship education backgrounds. They found that entrepreneurship education alumni are at lower risk of being unemployed and are more often in steady employment. Compared to their peers, they have better jobs and make more money. The positive impacts extended to educational institutions, the economy and society.

A study carried out by the World Bank found compelling results for the capacity of entrepreneurship education in higher education to develop entrepreneurial mind-sets and capabilities, but less evidence linking them to longer term outcomes such as changes in entrepreneurial status or venture performance. It was noted that available and reliable information on programme outcomes was relatively sparse and warned against seeing such programmes as a "one dimensional silver bullet solution" when the global landscape is complex and heterogeneous (Valerio et al., 2014, p. 10).

Although there is mixed evidence that university increases the likelihood of a student starting a new business, the QAA (2018, p. 3) states that enterprise and

entrepreneurship education significantly increases start-up rates, as well as being inclusive and supportive of wider participation, has a positive influence on students' creativity, flexibility and the innovation process, has a positive impact on behaviour change and active citizenship, and has a positive impact on learning attainment and grades. Additionally they state that it significantly improves stakeholder engagement, demystifies career opportunities, enhances employability, and has a positive impact on positions gained within employment.

In the World Bank Study, only quantitative outcomes such as performance and status were deemed to be measurable, such as number of business start-ups or higher income. Programmes delivering qualitative outcomes such as mind-set and capability were not regarded as measurable which is typical of many attempts to evaluate the effectiveness of entrepreneurship education. There are also significant challenges in measuring the effectiveness of education quantitatively as it is impossible to say whether outcomes can be attributed to the instructor, the curriculum, the wrap around services, the participant or other factors or combinations of factors (Valerio et al., 2014).

Other sources dispute the effectiveness of entrepreneurship education. According to the Economist Intelligence Unit (EIU), there are contradictory views about the role of education in the development of entrepreneurs (*Helping entrepreneurs flourish: Rethinking the drivers of entrepreneurship*, 2014a). 79% of entrepreneurs surveyed believe that their university education was a positive contributing factor in their entrepreneurial success, but only 19% of 18 -25 years olds believed that their university was effective in giving them the skills they needed to start a business. 81% of entrepreneurs said they acquired more entrepreneurial skills through work experience than education. The findings from a 2013 impact study prepared for the UK Government Department of Business Innovation and Skills (Williamson, Beadle, & Charalambous, 2013) was also fairly tentative in its conclusions. Mixed results were reported regarding students' perceptions of the feasibility of starting a business and there was no evidence to suggest that students participating in enterprise education were more likely start a business or to develop new business opportunities in an existing small or large business. In summary the report concludes that,

> while the evidence suggests that enterprise and entrepreneurship education generally has positive benefits that should be expected to lead to some students starting new businesses and making contributions to the growth of existing businesses for example, the evidence does not conclusively show the attribution of this to enterprise and entrepreneurship education in either Further Education or Higher Education
>
> (Williamson et al., 2013, p. 7)

According to the EIU, successful entrepreneurs can make use of education, but "traditional teaching methods risk undermining attitudes conducive to entrepreneurship" (p. 5). Education can be of help but too often universities actually impede entrepreneurship (*Helping entrepreneurs flourish: Rethinking the drivers of entrepreneurship*, 2014a).

The benefits of tertiary education for entrepreneurs if present, appear to be indirect. The Economist Intelligence Unit calls out the need to find better ways to educate potential entrepreneurs, both before they start out and in the early stages of their efforts in order to create an environment more conducive to successful start-ups (*Helping entrepreneurs flourish: Rethinking the drivers of entrepreneurship*, 2014a). Most countries have enacted policies aimed at enhancing entrepreneurial behaviour using taxpayer's money. Many such initiatives have been criticised as fads which do not clearly constitute effective use of public money, and are not adequately based on solid evidence of what works (Wiklund, Wright, & Zahra, 2018). A large study of over eight thousand students from one UK region in 2007/2008 failed to find any evidence of an impact of a university education on intention to start a business (Nabi, Holden, & Walmsley, 2010). The reports concludes with a suggestion that the role of higher education in entrepreneurship education might be better positioned as one of identity formation with a focus on attitude formation and development and calls for research to understand this journey.

Von Graevenitz et al. (2010) suggest the most important impact of entrepreneurship education could be to enable students to sort themselves into those with an aptitude for entrepreneurial tasks and those without. Depending on

what they discover about themselves, students may adjust their entrepreneurial intentions up or down. Entrepreneurship education has the impact of making entrepreneurial intentions more pronounced (either more positive or more negative) and may actually *reduce* entrepreneurial intent overall. This is likely to be a useful, if somewhat less politically attractive outcome (Von Graevenitz et al., 2010). A decline in entrepreneurial intentions could be socially valuable, as those not suited to entrepreneurship would be less likely to try to become entrepreneurs and be less likely to contribute to costly business failure rates. Entrepreneurship education from this perspective is a valuable way of informing students about career options but not of increasing entrepreneurial intent overall. As presented here the effects of entrepreneurship education on entrepreneurial intention and the amount and success of subsequent start-up activity are not yet well understood with some contradictory findings (e.g. Nabi et al., 2010; Oosterbeek, Van Praag, & Ijsselstein, 2010).

2.5. The purpose of entrepreneurship education

As can be seen, attempts to judge the impact of enterprise and entrepreneurship education depend on what the purpose of it is judged to be. Some judge its purpose to be the generation of student and graduate start-ups together with more general job creation and increased graduate salaries, others are more ready to accept an enhanced entrepreneurial mind-set and the development of entrepreneurial intention and/or capability. A broader perspective of entrepreneurship is prevalent in Europe and Australia, whereas most US based scholars have preferred to keep a narrower business orientated focus on venture creation as the key defining purpose and characteristic of entrepreneurship education, (Liguori et al., 2019) arguing that this focus is necessary to avoid dilution of the field into progressive education (Neck & Corbett, 2018). The various assumed purposes of enterprise and entrepreneurship education are rarely articulated but there appear to be three general themes; increasing the number and success of new ventures; enhancing the employability of graduates and increasing their value in the job market; and preparing students for an uncertain future. These are considered in further detail now.

Universities contribute one to every hundred new business births in the UK (Godfrey & Hubbard, 2018) and two thirds of graduate start-up founders cite their university as an influencing factor in their decision to start a business (PACEC, 2015). There is an acknowledged temptation to encourage what is measurable through the use of incentives (*APPG Entrepreneurship: Enterprise Education*, 2018). A student start-up is a measurable outcome of entrepreneurship education and this is reflected in the metrics and requirements that come with HEIF funding (Higher Education Innovation Fund). As such, it risks becoming the focus of a university's efforts to monitor and evidence impact and the de facto purpose of entrepreneurship education. Producing an ever-increasing number of student start-ups becomes part of the central purpose of a university.

The faith of policy makers in universities to increase the number of students choosing to create new ventures, though seductive, may be misplaced. A 2013 report conducted on behalf of the government could find no evidence to link starting new businesses and making contributions to the growth of existing businesses to enterprise and entrepreneurship education in either further or higher education (Williamson et al., 2013). Although some studies demonstrate that entrepreneurship graduates are more likely to start businesses than graduates of other programmes (*The effects and impacts of entrepreneurship programmes in higher eduation*, 2012); that is perhaps to be expected. Many more students already interested in starting their own business, and perhaps with a strong intention to do so in any case, would be attracted to study on entrepreneurship programmes. One might as well ask why all or most entrepreneurship graduate students do not go on to start new businesses.

In their recent report (*APPG Entrepreneurship: Enterprise Education*, 2018), the All Party Parliamentary Group (APPG) for Entrepreneurship pointed out that the current TEF (Teaching Excellence and Student Outcomes Framework) metrics penalise universities whose students drop out to start their own businesses. They argue that this discourages universities from incubating start-ups. However, it does beg the question of what should be prioritised for universities; the provision of education or the creation of new ventures.

There is also some evidence to suggest that a university education may actually diminish the likelihood of a person's intention to start a new business (Oosterbeek et al., 2010; Von Graevenitz et al., 2010) and that the purpose of entrepreneurship education is more appropriately defined as the means by which students can evaluate their aptitude for entrepreneurial tasks. Informing the students that are not well suited to start-up activities that they are not, may be just as valuable an outcome of entrepreneurship education as confirming and strengthening the entrepreneurial tendencies of others that are (Von Graevenitz et al., 2010).

According to APPG for Entrepreneurship (*APPG Entrepreneurship: Enterprise Education*, 2018), enterprise skills enable students to adapt to change, to start-up businesses and become more employable, however, as the preceding section demonstrates, enterprise and entrepreneurship education may actually reduce the likelihood of some students starting businesses, so there is an argument for limiting students' exposure to enterprise skills training if student start-ups are what are wanted.

> A university, it may be said, is a protected space in which various forms of preparation for life are undertaken in a setting and manner which encourages the students to understand the contingency of any particular packet of knowledge, and its interrelations with other, different forms of knowledge.
>
> (Collini, 2012, p. 56)

The 'protection' enjoyed by students in the university space is problematic for the authentic experience of entrepreneurship in the form of new venture creation, which is inherently risky. This also suggests perhaps that entrepreneurship, when defined as new venture creation, cannot be learnt in such a space. Defining the purpose of entrepreneurship education as the creation of start-ups is therefore problematic.

The enhancement of employability is often set out as a purpose of entrepreneurship education. The education system plays a crucial role in

preparing young people for the world of work and employability (H. Davies, 2002). As economic dependence has shifted in the Western world away from large corporations, enterprise and entrepreneurship education has presented an alternative response to traditional graduate career paths through the promotion of self-employment, and employment in micro businesses and SME's (Small and Medium-sized Enterprise's), where opportunities for employment growth are regarded as more likely (B. Jones & Iredale, 2014). Higher education is generally regarded by the UK Government and policy makers as an appropriate place for the development of enterprise and entrepreneurship (QAA, 2012) leading to employability or self-employability. One reported aim of enterprise education is to bring about socio-economic and community regeneration by strengthening effective links between education and work (T. Wilson, 2012). Just as people will need more enterprising skills and attitudes to set up businesses (or enter self-employment), they will also need them to build their careers and stay employable (H. Davies, 2002). Even in larger firms and in the public and voluntary sectors, entrepreneurial skills are more highly valued than they were in the past (H. Davies, 2002). Modern society is believed by many to depend on graduates that can think entrepreneurially, have the courage to create and are ready to take risks to realise their ideas (Rose, Leisyte, Haertel, & Terkowsky, 2018, forthcoming).

Presenting self-employment or working for a SME as options after graduation can help students cope with and adapt to a more insecure and uncertain world of work (Heery & Salmon, 2000) and increase employment opportunities. Enterprise education places self-employment and entrepreneurship on a par with employment, opening up more opportunities. At the same time it can help students develop a useful range of skills and attitudes as well as widening their social perspectives (B. Jones & Iredale, 2014). Defining the enhancement of employability as a purpose of entrepreneurship education appears to make sense, but the enhancement of employability is commonly regarded as one of the purposes of higher education as a whole and so therefore attempts to apply it to one subject area specifically are unsatisfactory.

As well as directly enhancing students' employability, it has also been claimed that the enterprise and entrepreneurship education agenda can enable

higher education institutions to partly abdicate their responsibilities for graduate employment. According to Ball (2003), just as a culture of competitive performativity encourages institutions to take ownership for transforming and disciplining themselves and their employees thus freeing policy makers from this responsibility, so an emphasis on the development of enterprise and entrepreneurship skills in students could be said to enable others to abdicate their responsibilities for this. Individual students are encouraged to recognise and take responsibility for the relationship between their occupational prospects and the competitiveness of their commodified selves. As a result, their resultant employability is no one's responsibility but their own and failure to secure appropriate employment can be explained by a lack of individual effort, engagement or commitment.

In addition to the purported economic benefits, there are those that argue for the development of entrepreneurial competencies for all, as a prerequisite for coping with our increasingly globalised, fast-paced and uncertain world (Gibb, 2002; B. Jones & Iredale, 2010; Surlemont, 2007). The purpose of entrepreneurship education being in this case to prepare students for uncertainty. Entrepreneurship, alongside other generic skill sets, derives a portion of its legitimacy from a belief that instead of going to university to prepare for a known and stable future, graduates must be able to adapt rapidly to keep pace with the changing requirements of life and work. They must "learn to learn", prioritising flexibility and the ability to develop new skills over the accumulation of knowledge.

It is widely believed that young people in education now will face greater economic uncertainty and more frequent change in their future working lives than did their predecessors (H. Davies, 2002). As well as being perceived as a means of boosting economic growth; enterprise and entrepreneurship education is regarded by some as a way to weaken the link between economic uncertainty and social exclusion (H. Davies, 2002) and to increase the self-worth of individuals involved (B. Jones & Iredale, 2014). The European Council (2009) highlighted the crucial role of universities in the development a more highly skilled, enterprising and flexible workforce seeing this as the foundation for economic growth and prosperity, as well as an improved quality of life. According to the European

Council (*Conclusions of the Council and of the Representatives of the Governments of the Member States, meeting within the Council, of 26 November 2009 on developing the role of education in a fully-functioning knowledge triangle*, 2009) the fundamental role of education is to provide for the development of individuals so that they may realise their full potential in today's society, and in doing so, educational institutions necessarily have a very broad range of functions and responsibilities.

Educationalists have increasingly come to recognise the connection between an enterprising approach to teaching and learning (McLarty, Highley, & Alderson, 2010) student motivation, and the promotion of freedom and choice (B. Jones & Iredale, 2014). This in turn leads to the development of enterprising skills and competencies perceived as relevant to modern society, and promotes entrepreneurship. Enterprise and entrepreneurship education is often justified and presented as the ultimate pedagogy of uncertainty, and the most appropriate way to prepare students for an unknown future. Entrepreneurship is presented as an appropriate response to globalisation and the increasing need to be flexible in graduates, to adapt and survive.

> To thrive in the modern world, Britain's next generation must be adaptable to change….Universities have been central to many of the great intellectual revolutions across history – now they must embrace enterprise education to imbue students with the necessary enterprising skills to flourish in the twenty-first century.
>
> (*APPG Entrepreneurship: Enterprise Education*, 2018, p. 3)

Graduates must be able to flourish in conditions of inherent and unavoidable uncertainty (Shulman, 2005). The pedagogical approach of their higher education experience should seek to adequately prepare students for these conditions, with the optimum balance of knowledge, skills and attitude. A pedagogy of uncertainty is called for (Barnett, 2004) where the actual learning processes are high risk and transformational. Defining the enhancement of students' ability to manage uncertainty as a purpose of entrepreneurship education also appears to make sense, but as with employability, this is also regarded as one

of the potential purposes of higher education as a whole and so therefore attempts to apply it to one subject area specifically are unsatisfactory.

The three main themes evident when identifying the purpose and impact of entrepreneurship education, namely; increasing the number and success of new ventures; enhancing the employability of graduates and increasing their value in the job market; and preparing students for an uncertain future, are equally important but difficult to measure and connect directly with any specific educational intervention. This lack of clarity concerning an overarching purpose is also evident in the sector as a whole and not just in entrepreneurship. As Rothblatt (2006) notes there is a general lack of clarity around what a university is, or what one is for. Moreover, disparate purposes of entrepreneurship education inhibit effective curricula development. A more conceptual approach is called for, but first, what is meant by 'entrepreneurship' in entrepreneurship education needs to be considered.

2.6. Defining 'entrepreneurship' in entrepreneurship education

> In the UK, both enterprise and entrepreneurship education are now a recognised part of the higher education curriculum.
>
> *(APPG Entrepreneurship: Enterprise Education, 2018, p. 5)*

According to the British sociologist Basil Bernstein (2000, p. 86), marketization, external regulation and a culture of audit have resulted in a sense of crisis in Higher Education. Universities have lost a sense of essential purpose and are reluctantly coming to terms with their diminishing levels of autonomy (Furlong, 2013). A lack of theory driven research in entrepreneurship has given rise to questions of disciplinary legitimacy (Wiklund, Davidsson, Audretsch, & Karlsson, 2011). In pursuit of legitimacy, some argue that research has become less relevant (Wiklund et al., 2018). Entrepreneurship has attracted scholars from many different disciplines and become a highly multidisciplinary field, leading to a very fragmented scholarly community. Legitimacy for entrepreneurship has been

anchored in "external stakeholders" (practitioners, policy-makers and politicians) (Landström & Harirchi, 2018) but increasingly is moving to increase its academic legitimacy perhaps at the expense of relevance. In their recent analysis which included influential works in entrepreneurship research, Landström and Harirchi (2018) suggest that the field is still in the "pre-theorizing" stage. In the absence of their own concepts and theories, entrepreneurship scholars have borrowed many theories from other research fields. That said, field specific theories and concepts are starting to emerge. Landström and Harirchi (2018) highlight in particular the influence of the work of Saras Sarasvathy and Scott Shane.

Without a unifying conceptual framework or clear theoretical grounding, the academic identity of entrepreneurship is especially susceptible to external forces, such as genericism, market and economic trends. Its identity as an academic subject is fragile and vulnerable.

Marketisation and state regulation created fertile ground for the birth of generic skill sets. While the neo-liberal agenda has arguably been the author of the growth of enterprise and entrepreneurship as subjects in higher education, the resultant prevailing operating culture could be said to impede the development of the distinctiveness of any subject. Entrepreneurship risks becoming all things to all people (or nothing to anyone) as its meaning is stretched, and used according to the circumstance or application. The need to maximise the take up of courses in higher education institutions has driven a growth in the provision of generic subjects as they are seen to empower students and increase accessibility.

Entrepreneurship, when defined as a collection of entrepreneurial skills, shares a number of features with other generic skills. It integrates several core skills (such as thinking skills, problems solving skills and team working skills) and is derived from both external influences and the independent formal curriculum. It is outward facing and directed towards extra-educational experiences having originally appeared in further education (not universities). It also shares an explicit link to the perceived demand of employers and the work place (specifically that graduates needed to be "flexible") and can be seen as applicable to all subjects, regions and fields of practice at all levels (adapted from Beck & Young, 2005, p. 190).

A product of the market, entrepreneurship also shares the same kind of emptiness as generic skill sets which can be explained by its lack of intrinsic theoretical and conceptual content. Collini (2012) argues that 'transferable' or generic skills are effectively becoming abstract propositions when incorporated into the curriculum without the requirement of the students to engage in a particular subject matter. The skills agenda is "rather like training people in tricks for improving their memory but without their having any past to recall" (Collini, 2012, p. 145), "Transferable skills can only ever be a by-product of doing good work, at whatever level, not its goal." The distinctive academic identity of entrepreneurship is threatened by external pressures to meet demands for the provision of generic skills. It is especially vulnerable to this threat as it has no unifying conceptual framework or clear theoretical grounding.

As presented earlier, entrepreneurship education can be framed to suit many purposes, complicating its categorisation and treatment. A student might enrol on an entrepreneurship programme to either learn about entrepreneurship, and/or to become an entrepreneur, or to become a more successful entrepreneur, and/or to get a degree. A programme or course in any academic subject discipline might be delivered using entrepreneurship as a pedagogical approach or educational philosophy (Lackéus, 2015b) in order to enhance student learning and/or to develop skills in students attractive to employers. A student might be taught entrepreneurial skills in order to enhance their employability and prepare them for an uncertain future. Entrepreneurship education may also be available in the form of extracurricular activities in enterprise and new venture creation provided by the careers service or graduate and student enterprise team.

Clearly entrepreneurship education means something different in every case when it is regarded as an instrumental good, valuable because of what it enables students to do, rather than an intrinsic good, valuable as an end in itself. Landström and Harirchi (2018) point out that the emergence of entrepreneurship as a scholarly field can be explained by its importance to society with great practical and political relevance, rather than a mandate to understand the phenomenon "for its own sake". Arguments over the values and purposes of universities have always been and continue to be characterised by the conflict between the 'useful' and the

'useless'. In his book, "What are Universities for?" Collini (2012) makes the distinction between human activities that are 'instrumental goods' (valuable to us because of what they enable us to do) and 'intrinsic goods' (ends in themselves). He argues that if the public discourse only accommodates the idea of instrumental or 'useful' goods then it will be hard to justify any other type of activity. This equates to entrepreneurship education being regarded as only 'useful' if it enables the increase in the number and success of new ventures and enhances the employability of graduates. Clearly success in both of these areas is dependent on many more variables that those over which a university has control.

The imperative to pursue a fuller understanding of any subject matter once established as part of an academic discipline, means it quickly is extended beyond any imperative to meet defined needs, and moves beyond what is applicable or 'useful', to areas driven by the intellectual logic of the discipline and the "human mind's restless pursuit of fuller understanding" (Collini, 2012, p. 27). Subjects which were initially introduced for broadly practical purposes have outlived those purposes and gone on to establish themselves as scholarly disciplines in their own right. It is not the subject-matter itself that determines whether something is, at a particular moment, 'useful' or 'useless', but whether enquiry into that subject is undertaken as an open ended quest for understanding, and this is given primacy over any application or immediate outcome. Collini (2012) argues that this is one mark of an academic discipline. "Undergraduate education involves exposing students for a while to the experience of enquiry into something in particular, but enquiry that has no external goal other than improving the understanding of that subject matter", (Collini, 2012, p. 56).

The academic identity of entrepreneurship cannot be distinctive nor defined in an educational context when it has multiple instrumental purposes and is measured in terms of "usefulness". In its pursuit of 'usefulness', entrepreneurship has undermined its quest for academic legitimacy.

Entrepreneurship, similar to Business Studies, is typical of a cluster of disciplines and might be termed a non-disciplinary, interdisciplinary or multi-disciplinary subject. The production of knowledge is commonly and historically organized in disciplines. According to the interpretation by Beck and Young

(2005) of Bernstein's work, academic identity, and disciplinary identity by implication here, is primarily associated with the type of knowledge structure termed "singulars". These are socially constructed and most clearly exemplified by the traditional "pure" academic disciplines. As knowledge evolves, independent disciplines may converge to form a new field of knowledge, often to support a domain of professional practice (Muller, 2009). Newer fields are characterised by "a relatively simple social base, the lack of an accepted body of professional knowledge and the lack of a foundational disciplinary core" (Muller, 2009, p. 214). As a consequence, their identity is relatively weak compared to older and more established fields and disciplines.

Business schools and business courses have long struggled with academic legitimacy perhaps because of this. Beck and Young (2005) explain that singulars, exemplified by the traditional "pure" academic disciplines according to Bernstein, have two sides, like a coin. The inward facing side is concerned with 'calling', sense of identity, disciplinary commitment and inner dedication, and the other outward facing side is concerned with more mundane issues such as application, impact and status associated with practical application in the outer world. Entrepreneurship derives its legitimacy as a field of scholarship from external stakeholders rather than unifying conceptual frameworks and theories and consequently may be compared to a coin with only one side; the more mundane, outward facing side. Bernstein argued that changes to the culture of higher education were having a profound and detrimental effect on professional and academic identities for which "inwardness" and "inner dedication" were core elements, having been developed from a "particular kind of humane relationships to knowledge" (Beck & Young, 2005, p. 184). Not having been developed in this way, entrepreneurship knowledge has arrived without this essential, more conceptual part. Entrepreneurship has not evolved within or even in collaboration with higher education. It has not grown up or out of any traditional disciplines. The inner dedication evident in scholars of established disciplines might be derived from their disciplinary organisation and knowledge base, which also serve to insulate them to some extent from the pressures of the market and state regulation (Beck & Young, 2005). Lacking both in terms of disciplinary

organisation and an academically derived knowledge base, entrepreneurship has no such protection and its disciplinary identity is consequently fragile and vulnerable.

The pressure to offer generic skills sets, the privileging of function over form and its recent appearance as an academic subject make it challenging to define what does and does not constitute entrepreneurship. The boundaries of its academic identity are unclear. According to Beck and Young (2005), Bernstein argues for the "insulation" between categories of specialised knowledge to be preserved and contends that singulars generate strong inner commitments resulting from the "perceived intrinsic value of their specific knowledge domains" (Beck & Young, 2005, p. 185). Identity is derived from the relations between such knowledge domains and the relative strength or weakness of their boundaries.

As a consequence, entrepreneurship can be accused of shapeshifting at will, responding to the most prescient calls from the market and falling prey to populism, crowd pleasing and becoming whatever is required. The ubiquity of entrepreneurship compromises the development of further disciplinary integrity as it tries to be a jack-of-all-trades but is in fact a master of none.

A research field can only be built and earn legitimacy if it is differentiated from neighbouring fields. Boundaries with other fields, however fuzzy, must be established, and the community of researchers must share a given paradigm, even with minimal consensus (Bruyat & Julien, 2000). A clear boundary defining what is, and what is not entrepreneurship is required.

Defining the nature of entrepreneurship in education is less than straightforward. Hannon (2005) suggests entrepreneurship education initiatives might be categorised according to the philosophical stance of the particular educators designing and delivering them. Approaches maybe usefully conceptualised as being "about", "for" or "through" entrepreneurship (Hannon, 2005). These approaches can be mapped against metaphors for knowledge suggested by Sfard (1998); knowledge as acquisition (education about entrepreneurship) and knowledge as participation (education for and through entrepreneurship). Academic subjects can be roughly divided according to these two knowledge metaphors namely "pure" (knowledge as acquisition) or "applied"

subjects (knowledge as participation). See Table 2-1 Conceptions of knowledge and learning (drawn from Hannon, 2005, and Sfard, 1998).

Table 2-1 Conceptions of knowledge and learning (drawn from Hannon, 2005, and Sfard, 1998)

Conceptions of Knowledge and Learning	
Learning about entrepreneurship	Learning for and through entrepreneurship
Knowledge as acquisition	Knowledge as participation
Cognitive constructivism	Social constructivism

Knowledge can be regarded as something that exists independently of the learner and has to be acquired through a process of cognitive constructivism. Learning in this case is a process of replicating the conceptual framework in the head of the expert, in the head of the students. The conception of knowledge as information to be acquired is evident in educational initiatives which teach students *about* entrepreneurship. If knowledge is regarded as something external to the learner, then a distinctive knowledge base for entrepreneurship ought to be definable. Many entrepreneurship programmes in higher education adopt this approach at least in part. They are based on the assumption that learning is an individual and bounded process to be conducted apart from other activities, and happens as a result of teaching (Wenger, 1998).

However, according to social learning theories, knowledge is something that *cannot* exist independently of the learner. Learning is about becoming and identity creation, through a process of social constructivism (Sfard, 1998). Knowledge is gained through participation and application and is more about who the learner becomes, than what they come to possess. The act of learning can be regarded as an act of identity formation. In coming to see the world in a particular way, learners are likely to associate themselves with other people who share distinctive ways of doing things and this enables them to position themselves in relation to others part of, or distinct from that group.

In summary, a lack of conceptual framework and theories has rendered entrepreneurship vulnerable to the external demands of the market and the threats of genericism. When it is defined by its measurable usefulness in application it

loses sight of its core purpose and becomes pulled in many different directions, destined to fail. Not having evolved from other academic disciplines, it lacks this source of academic identity. The boundaries of entrepreneurship as an academic subject need to be defined, so both what it is, and what it is not are clear. It is proposed here that entrepreneurship is about who the learner becomes, and also about what knowledge they come to possess. Entrepreneurship learning is conceptualised both as acquisition and participation. Knowledge and understanding of entrepreneurship is both cognitively and socially constructed through research and practice. The objective of entrepreneurship education then, is to further the knowledge and understanding of entrepreneurship in the students both in terms of what they know and who they are, and to enable them to understand how an entrepreneur thinks and practises in the world.

2.7. The need for a conceptual approach

If entrepreneurship is regarded not only as an instrumental good (valuable because of what it enables students to do) but also as an intrinsic good (valuable as an end in itself), a more conceptual approach is called for. In attempting to define a conceptual framework for entrepreneurship education, it is worth also setting out the assumptions that are being made concerning the overall nature and purpose of higher education. There is strong public support for the argument that universities are a public good. Collini (2012) argues that there remains a strong popular desire that universities should incarnate a set of aspirations and ideas that go beyond any form of economic return. Retaining the separation and the differences between education and business might better serve the purposes of both.

> ...a society does not educate the next generation in order for them to contribute to its economy. It educates them in order that they should extend and deepen their understanding of themselves and the world, acquiring, in the course of this form of growing up, kinds of knowledge and skill which will be useful in their eventual employment, but which will no more be the

> sum of their education than that employment will be the sum of their lives.
>
> (Collini, 2012, p. 91).

A university may thus be said to exist to provide post-secondary school education, and to further advanced scholarship and research across a number of academic disciplines. 'Education' is taken to mean more than professional training, "Education takes a particular form in universities, where, whatever professional or vocational 'training' is also undertaken, the governing purpose involves extending human understanding through open-ended enquiry", (Collini, 2012, p. 91).

'Advanced scholarship and research' may or may not have immediate practical application. Education, according to Collini (2012), encourages students to recognise the ways in which particular bits of knowledge are not fixed, eternal, universal or self-sufficient by exposing them to the experience of enquiry into those things. Almost any subject matter may be the subject of such enquiry, but there has to be engagement with a 'particular' subject matter. It cannot be done by ingesting a set of abstract propositions about the contingency of knowledge.

A well-functioning university delivers many positive indirect outcomes resulting from the primary outcomes of education, advanced scholarship and research. In as much as the purpose of a university course in entrepreneurship may be regarded as the 'means', the direct outcomes may be regarded as the 'ends'. There are many other indirect outcomes of a university but they should not be confused with its overarching purpose. The reason for the existence of a university is not to produce the indirect outcomes it does. A course in entrepreneurship does not exist in order to maximise the employability of its graduates or to generate student start-up businesses although again these outcomes might well result as indirect bi-products. Likewise in the course of furthering advanced scholarship and research it is likely that graduates will be well prepared for the future, being highly employable and possibly starting their own businesses thus making a valuable contribution to economic growth.

> We constantly fall into the trap of justifying an activity – one initially (and perhaps for long thereafter) undertaken because of its intrinsic interest and worth – as something we do because it yields incidental benefits which are popular with those not in a position to appreciate the activity's intrinsic interest and worth. If we find ourselves saying that what is valuable about learning to play the violin is that it helps develop the manual dexterity that will be useful for typing, then we are stuck in a traffic-jam of carts in front of horses.
>
> (Collini, 2012, p. 91)

The problem comes in judging how well universities are fulfilling their primary purpose. Direct measurement of education, advanced scholarship and research is not possible, so efforts have been concentrated on measuring the indirect outputs of these things, in a hope that they work as effective proxies. The resolution of this debate will be possible by making the theoretical assumptions in the field of entrepreneurship explicit, enabling educators to determine how and what is taught. The field of entrepreneurship, as it is currently constituted however, does not have an overarching theory, making this problematic (Henry et al., 2005). The assumption that entrepreneurship can be understood and taught to students implies that a general theory of entrepreneurship will eventually be developed (Fiet, 2001). Taking the perspective of Kuhn (1962) who proposed that theory was the most practical thing students could be taught, Fiet (2001) argues that theory is an essential part of education, as it is the only way that educators can help students anticipate the future and as such, offers the most promise as course content (Fiet, 2001).

This research uses the lens of the threshold concept framework to inform a conceptual approach to entrepreneurship education. A full explanation of this approach is set out in Chapter 4, sections 4.3 and 4.4. This approach can enable individuals to appreciate how a subject area such as entrepreneurship is qualitatively different to other subject areas such as Management or Design (Donovan, 2017). A threshold concept can be a form of disciplinary property (Cousin, 2006a) and offers a useful way of identifying and distinguishing a

discipline, subject, profession or field of study. Land, Meyer, and Smith (2008) suggest they may define the boundaries of academic territories. Threshold concepts can be partly regarded as "ways of thinking and practising" (McCune & Hounsell, 2005), integral and embodied in the learner.

2.8. Conclusion

In this chapter, the arrival of entrepreneurship education has been situated in the context of a neo-liberal education agenda. In the quest to quantify and measure impact, the purpose of entrepreneurship education has become mixed up and confused with the economic objectives of government. By offering a more conceptual approach to entrepreneurship education, this research further legitimises and grounds the teaching and learning of entrepreneurship in higher education and enables the development of more effective curricula. As a result, it will be more likely to deliver on its promise as both an instrumental and intrinsic good.

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Chapter 3. Literature Review

3.1. Introduction

The purpose of this chapter is to put the research into the context of relevant literature in entrepreneurship and entrepreneurship education. In order to explore what might be distinctive about entrepreneurship it is important to first appreciate the origins of the subject in the literature and the development over time of multiple, alternative perspectives of entrepreneurship. An integral part of the literature on entrepreneurship is concerned with entrepreneurship education. Approaches to entrepreneurship education vary according to its implied purpose and how the effectiveness of a particular approach is to be measured. Consequently, multiple approaches to educating students in entrepreneurship are evident in the literature. The most common approaches are reviewed in this chapter in order to inform the research into how best to educate students in entrepreneurship.

3.2. Entrepreneurship

This section gives an overview of the diverse perspectives regarding the nature of entrepreneurs and entrepreneurship in the literature in order to contextualise entrepreneurship education in higher education. Davidsson (2016) suggests two overlapping social realities are possible in research into entrepreneurship respectively focusing on behaviours and activities; entrepreneurship as the study of a particular kind of person (an entrepreneur), and entrepreneurship as the study of a particular kind of activity (entrepreneurship).

3.2.1. Entrepreneurship – the activity

Entrepreneurs, enterprise and entrepreneurship have many definitions and connotations, they are 'slippery' concepts (Blundel, Lockett, & Wang, 2018). An inability to reach broad alignment regarding a definition of entrepreneurship has hampered research progress according to Low and MacMillan (1988). In their literature review they acknowledge the challenges inherent in the phenomenon of entrepreneurship describing it as multifaceted and cutting across many disciplinary boundaries. They suggest that, "the desire for common definitions and

a clearly defined area of inquiry will remain unfulfilled in the foreseeable future" (p.141). In entrepreneurship research, there is no commonly accepted unifying definition of entrepreneurship and scholars use the term flexibly for their own purposes (Wiklund et al., 2018). Given the rise of the "gig" economy, where the labour market is characterized by the prevalence of short-term contracts or freelance work as opposed to permanent jobs, defining entrepreneurship in terms of new venture creation is becoming less relevant. Entrepreneurship is becoming increasingly defined as the pursuit of opportunity regardless of resources controlled *and* regardless of the organisational form involved (Wiklund et al., 2018).

The fact that entrepreneurship is not firmly rooted in any particular discipline is regarded as a strength by some (Wiklund et al., 2018) allowing scholars to explore a wide range of issues, and applying diverse theoretical and empirical approaches. Many, including Wiklund, Wright and Zahra (2018) characterise entrepreneurship as a young discipline rooted in practice. Most attempts to define entrepreneurship in the literature capture an aspect of it but not the whole picture. Low and MacMillan (1988) argue that the phenomenon of "entrepreneurship" may be too imprecise a construct to be of much use to researchers. They criticise much entrepreneurship research for failing to uncover the causality of relationships or to explore implications for practice.

Taking the definition from the Chambers Dictionary (Schwarz, 1993) an entrepreneur is described as someone who undertakes an enterprise, especially a commercial one, often at personal financial risk. The Oxford Handbook of Entrepreneurship (Casson et al., 2006), does not distinguish between the activities of an entrepreneur, and entrepreneurship. The Handbook continues with a description of entrepreneurship as, "the product of a 'modern' post-enlightenment world in which continual change has become the norm, where 'progress' (technical, social and economic) has become expected and where notions of liberal individualism predominate" (Casson et al., 2006, p. 34).

However, in a later chapter, a distinction between enterprise and the entrepreneur is made (Metcalfe in Casson et al., 2006, p. 61). According to these writers, the essential feature of enterprise is regarded here as the introduction of

novelty into the economic structure, new ways of behaving generally based on new beliefs and in many cases new knowledge. The entrepreneur is the agent of the changes in the rules and their implementer. Baumol (1996) contends that entrepreneurs are "ingenious and creative in finding ways that add to their own wealth, power and prestige" (p. 4). According to Davidsson (2016), as a societal and economic phenomenon entrepreneurship may be defined as, "the competitive behaviours that drive the market process", or "the introduction of new economic activity that leads to change in the marketplace" (p. 1). The wider impact of the entrepreneur is regarded as very significant to the economy and society as a whole. The phenomenon is considered on a macro level and the person of the entrepreneur comes into play.

The Oxford Handbook of Entrepreneurship (Casson et al., 2006) construes entrepreneurship from a predominantly economic perspective in terms of arbitrage, innovation and risk taking. This school of thought positions entrepreneurs as accomplished multi-taskers who courageously, vitally and individually step up to the mark, taking on challenges and making decisions when others are less inclined to do so, despite the vagaries of the operating environment.

> Entrepreneurs specialise in taking difficult and complex decisions for which other people do not want to take responsibility. The implication is that entrepreneurs make a vital contribution to economic growth. In performing their role in society, entrepreneurs carry out a range of different tasks: they collect information, make judgement calls, raise finance and develop business organisations. The intensity of entrepreneurial activity is dependent on multiple factors: the volatility of the environment, market structure and institutions, attitudes to risk, the availability of capital, government policy, cultural factors and social mobility.
>
> (Casson et al., 2006, pp. 1-2).

Entrepreneurship, when regarded as the initial emergence of new opportunities which are then evaluated and utilised through organising; can be distinguished from the entrepreneurial process, which is "the movement from

discovering or creating an opportunity, evaluating it and finally exploiting it through organising" (Nielsen et al., 2012, p. xvi). However the two perspectives are still closely related. By focusing on the organising aspect of entrepreneurship, the need to create a new business entity is no longer contingent. The organising may lead to a new organisation; either an independent organisation or a new organisation within the framework of an existing organisation. The Organisation for Economic Cooperation and Development (OECD) and Eurostat also broaden the activity beyond solely that of new venture creation; "Entrepreneurship is the phenomenon associated with entrepreneurial activity, which is the enterprising human action in pursuit of the generation of value, though the creation or expansion of economic activity, by identifying and exploiting new products, processes or markets" (OECD, 2016, pp. 12-13). Entrepreneurs are defined as, "those persons (business owners) who seek to generate value through the creation or expansion of economic activity, by identifying and exploiting new products, processes or markets" (OECD, 2016 in Blundel et al., 2018, p. 3). In line with this view of entrepreneurship, Global Entrepreneurship Monitor (GEM) broaden their definition of entrepreneurship even further as, "Any attempt at new business or new venture creation, such as self-employment, a new business organization, or the expansion of an existing business, by an individual, a team of individuals, or an established business" (Reynolds et al. 1999. p.3). They make it clear that even an attempt at new business or new venture creation is sufficient, no further criteria of operational success needs to be met.

As this research is concern with entrepreneurship education, and education is an activity undertaken by people, I am treating entrepreneurship as the phenomenon associated with entrepreneurial activity as practised by entrepreneurs, "An entrepreneur is an individual who initiates, pursues and creates entrepreneurship" (Nielsen et al., 2012, p. xvi). This avoids the issues associated with defining entrepreneurship in terms of the many different perspectives of the entrepreneurial process, and the outcomes of such a process, in the literature. My focus will be on the ways of thinking and practising of the individuals occupied with entrepreneurial activities and not the phenomenon of entrepreneurship in its entirety. Entrepreneurship will be treated as equivalent to the entrepreneurial

activities undertaken by individual entrepreneurs. In this way, I am defining an entrepreneur by how he or she thinks and what he or she does in connection with the generation or creation of value.

This thesis focusses on the ways in which entrepreneurs think and practise in order that those differences might be known and understood by students of higher education entrepreneurship programmes. Entrepreneurship educators are increasingly recognising the value of programmes where students learn both *about* entrepreneurship (developing an understanding of entrepreneurship) and learn *for* entrepreneurship (developing entrepreneurial skills and mind-sets) (Wang & Chugh, 2014) in an integrated way. This approach assumes that the best way to understand entrepreneurship is to adopt the perspective of a prospective entrepreneur, and to attempt to practise entrepreneurship.

The individual entrepreneur is the focus of this research, however entrepreneurs do not engage in entrepreneurial activities in isolation. Consequently, entrepreneurship can mean different things in different contexts. The context in which entrepreneurship happens is somewhat neglected in entrepreneurship research. Nielsen et al. (2012) citing Hindle (2010, p. 15), identify this as a shortcoming in the literature. The complex interaction between various stakeholders in the success of entrepreneurship can be seen as a triple helix of government, industry and education (Etzkowitz & Leydesdorff, 1995). From this perspective; Government, in the form of economic, political, and government bodies, the public sector, policy makers, and law makers impact on the education sector and the private sector. Education impacts on new venture creation and employability and graduate quality impacts on economic growth. Industry in the form of commerce, markets, doing business, trading, and the private sector reap benefits from the education sector and create economic prosperity, thereby contributing to economic growth.

The academic context in particular is highlighted as one that may feel constraining for entrepreneurship with its focus on contemplation and knowledge generation as opposed to action and commercialisation (Nielsen & Gartner, 2017). Nielsen et al. (2012) explain that a contributing factor to the existence of many different entrepreneurships is that entrepreneurship is studied within many

different disciplines within an educational context. The terms defined in this thesis are similarly context dependent and pertinent to entrepreneurship in education in a business school context.

The term 'entrepreneur' appears to have been introduced into economic theory by Richard Cantillon (1755) (Casson et al., 2006). According to Cantillon, the entrepreneur is a specialist in taking risk. An entrepreneur buys goods or services for resale before consumers have indicated how much they are willing to pay giving the producer an assured income in the short term at least. The entrepreneur bears the risk of price fluctuations in consumer markets and has an entitlement to appropriate any resultant profits, or suffer consequential losses. The term entrepreneur later expanded to describe a person who plans, supervises, organises or even owns factors of production by the end of the 1700's (Nielsen et al., 2012).

Knight (1921) refines the concept of risk, distinguishing between risk which is insurable, and uncertainty which is not. Rather than taking insurable risks, entrepreneurs are rewarded by profit for bearing the uninsurable risk of uncertainty, also offering a potential explanation for their actions. Gartner (1988) referencing Knight in the 1900's, wrote that the purpose of the entrepreneur was to carry the inherent uncertainty within the economy on his shoulders. Where different outcomes in the future exist and are known, the entrepreneur's role was to calculate probabilities and make decisions based on them, a form of insurable risk. Where different outcomes in the future exist and are not known, the entrepreneur's role was to guess outcomes (based on a defined range of possible outcomes) with incremental certainty based on the accuracy of previous guesses, gradually building a picture of a likely future outcome, moving over time from risks of uncertainty to more insurable risks. Subscribers to this rather behaviourist view of entrepreneurship see profit as compensation or reward for risk taking, where great uncertainty can deliver great reward and where different outcomes in the future cannot be known.

Schumpeter (1934) developed the idea of the entrepreneur as a heroic and revolutionary innovator who creates new industries and precipitates major structural changes in the economy. Challenging the theory of equilibrium in the

market where all internal sources of change have been eliminated, he contended that the market develops from within in a capitalist system and therefore cannot be in equilibrium. He also questioned the role of the market in generating order because this implies that all agents operating in the market are satisfied with the pattern of activity and would therefore see no way to improve it in a way that could create greater rewards for them. He described the competitive processes of capitalist development as processes of 'creative destruction'. He identified five main ways in which entrepreneurs effect these changes, making a clear connection between entrepreneurship and a capitalist system (Schumpeter, 1939, cited in Casson et al., 2006, p.8):

- New products
- New processes of production
- New markets
- New sources of raw materials
- New organisational forms

A distinction is made between those who supply funds and those who create profit by the 1800's (Coulter, 2001, cited in Carland, Carland, Hoy, & Boulton, 1988; Nielsen et al., 2012). According to these authors, entrepreneurship can be regarded purely as an investment alternative, and a mechanism for growing capital. Pittaway (2005) argues that the entrepreneur in fact bears no risk, and instead it is the venture capitalist who allocates the funds to the entrepreneur who bears the uncertainty and risk in the economy. Entrepreneurship is more concerned with the maximisation of return on investment in this case. The creation of profit in entrepreneurial businesses may be distinguished from that of businesses in general because it can be seen to result from a strategy of aggressive expansion, and a dissatisfaction with the status quo ("What's the Difference Between Entrepreneurs & Small Businesses?," n.d.). Schumpeter also argued that capitalists were associated with risk, not entrepreneurs, being the ones liable to experience any losses. He treated the supply of capital and the supply of entrepreneurial services separately, attaching risk to the supply of capital (Schumpeter, 1954, cited in Casson et al., 2006, p. 41). Schumpeter viewed entrepreneurial innovation as

revolutionary and discontinuous rather than small-scale, marginal, gradual and cumulative.

Authors such as Fayolle (2007) define entrepreneurs in terms of the role they play in the economy categorising them into four roles, namely "risk-taker/ risk-manager", "innovator", "alert seeker of opportunities" and "coordinator of limited resources." Schumpeter argues that entrepreneurship is a proactive and creative activity, generating new opportunities and organisations in the economy by combining existing things, and arguably acting as the main source of development in the economy (Schumpeter, 1934). Increasingly, concepts of entrepreneurship have become centred on innovation and the creation of something new, and new venture creation is only one of many possible outputs. According to these writers, entrepreneurship can be regarded as a form of innovation (Schumpeter, 1934), and an act of value generation or creation for oneself and others. However, Western views, particularly in the USA, use predominantly financial terms to measure value generated or created.

Authors from the 'Austrian' school such as Kirzner (1973) expand the definition of entrepreneur to include those engaged in "low-level" entrepreneurship. According to them, entrepreneurs spot and exploit differentials between supply and demand in the market to make a profit. Kirzner (1973) emphasises the alertness of the entrepreneur to currently unexploited opportunities for trade. They are not so much rewarded for bearing uncertainty, but for alertness to opportunity. In the 1980's entrepreneurship as a process of innovation was complemented with a view of entrepreneurship as a process of discovery or diffusion. Casson (1982) for example suggests that an entrepreneur specialises in judgemental decisions about the coordination of scarce resources.

Up until the mid-1980's, most theories of entrepreneurship were expressed in very general terms and were concerned with major conceptual issues such as the nature of economic profit, the difference between risk and uncertainty and the relation of market process to market equilibrium (Casson et al., 2006). Economic perspectives of entrepreneurship prior to the 1990's focused on the entrepreneur; their exercise of judgement in decision making; their entrepreneurial ability, their access to finance and their social networks (Casson et al., 2006). The nature of the

decisions made by entrepreneurs according to Ripsas (1998) can be characterised by

1. Their innovative nature and by implication, their connection with new knowledge
2. Their uncertainty and by implication, dependence on partial knowledge
3. The extraordinary profit reward that can follow

Metcalfe in Casson et al. (2006, p. 79) contrasts two views of the entrepreneur; the entrepreneur as innovator and the entrepreneur as market arbitrager; entrepreneurship as anarchic and destructive, creating opportunity[4]; and entrepreneurship as constructive, discovering and realising opportunity. Bruyat and Julien (2000) similarly contrast two perspectives of the entrepreneur, on the one hand one who creates and develops new business of any kind, and on the other an innovator and relatively exceptional person who changes the economy on a significant scale.

There has been a move from deterministic personality and cultural theories of entrepreneurship towards theories which are more dynamic, contextual, comprehensive and process orientated (Low & MacMillan, 1988). Low and MacMillan call for more research which incorporates multiple levels of analysis (such as the individual, group, organisational, industry, society for example). They argue that missing any one perspective increases the chances of overlooking factors which may have a critical impact on the success of the new venture and call for authors to state their theoretical perspective more explicitly, setting out all their assumptions concerning the nature of entrepreneurship. For example, network theories attempt to situate entrepreneurship in a social context, arguing that entrepreneurial success cannot be attributed to individual acts, and the entrepreneurial process can only be interpreted in the context of a broader social process which acknowledges the interaction between psychological, personal/demographic, organisational and situational/environmental variables.

[4] As in "The urge to destroy is also a creative urge", attributed to Mikhail Bakunin, 1814 – 1876, a Russian anarchist, revolutionary and philosopher

In summary, the nature of entrepreneurship is "complex, creative and transformative." (Nielsen et al., 2012, p. xvii). Entrepreneurship can be regarded as more than the creation of economic value by starting a business, and is a complex phenomenon that occurs in many different contexts, varying in terms of scope, process and output (Nielsen et al., 2012). The creation of a new venture is only one possible output, and entrepreneurship has innovation and the creation of something new at its core. Having examined the literature concerning the nature of entrepreneurship, literature concerning the nature of an entrepreneur will now be considered.

3.2.2. Entrepreneurship – the actor

Traits and characteristics are regarded as relative stable or concrete tendencies in people and are either inherited from birth or developed as a result of certain influences during the course of life. Whether the traits and characteristics of entrepreneurs are inherent, developed, or a combination of the two is unclear and contested. Some (often the entrepreneurs themselves) conceptualise entrepreneurship as a type of vocation or calling, similar to that of an artist, musician or explorer;

> Entrepreneurship, particularly if you're a founder, is a calling, not a job. That's biggest piece of advice I could give any entrepreneur. The problem today is that it's cool and trendy, so you think you should do it. Entrepreneurship is for crazy people, much like an artist. You don't get assigned to be a sculptor, a painter or a writer. It's something that you can't get rid of. It's inside of you, dying to get out.
>
> (Blank, 2014, para. 9).

When a sample of eighteen to twenty-five year olds were asked in 2014 if entrepreneurs were born or made there was a near even split, however entrepreneurs were more likely to say "born" (41% to 26%) (*Helping entrepreneurs flourish: Rethinking the drivers of entrepreneurship*, 2014a). Many attempts have been made to identify a particular psychological disposition of those who engage in entrepreneurship (Autio, 2007). The "need to achieve" (Atkinson, 1957) among

the actors in a given society has been presented as a possible explanation of why some people concentrate on economic activity and are successful and others are not, and also why societies starting from similar points achieve different economic outcomes. The "need to achieve" has been linked to the entrepreneurial personality (McClelland, 1967). Begley and Boyd (1987) conducted a study of one hundred and forty seven founders and ninety two founders from members of the Smaller Business Association of New England and reported that founders reported a higher need for achievement, increased risk-taking propensity, and a higher tolerance for ambiguity than non-founders.

Other characteristics highlighted include self-esteem, novelty seeking, risk taking propensity, disagreeableness, extraversion, emotional stability, openness to experience and conscientiousness (Shane, 2010). Entrepreneurship's "Big Five" (Vecchio, 2003) are listed as risk taking propensity, need for achievement, need for autonomy, self-efficacy and internal locus of control. Blundel et al. (2018, p. 263) in their book "Exploring Entrepreneurship" set out five of the characteristics most commonly associated with entrepreneurs. See Table 3-1.

Table 3-1 Adapted from "Five 'classic' individual level entrepreneurial characteristics" (Blundel et al. 2018, p. 263)

Characteristic	Argument
Need for achievement	People with a high need for achievement are attracted to entrepreneurial situations as they offer opportunities to satisfy this need.
Over-optimism	People who take an overly optimistic perspective are more likely to underestimate the risks associated with entrepreneurial situations and are therefore more likely to expose themselves to these risks.
Risk-taking propensity	People who enjoy taking risks, or who are more tolerant of uncertainty are attracted to entrepreneurial situations.

Desire for autonomy	People who value autonomy and are resistant to external forms of control are attracted to entrepreneurial situations.
Locus of control	Entrepreneurs are more likely to believe that they are largely in control of achieving outcomes, rather than outcomes being the product of external factors.

In the 1990's, the field of entrepreneurship seemingly abandoned the study of the entrepreneur. Despite some more recent attempts, no one has found any substantial proof that entrepreneurs are "born that way". There is as yet no substantial evidence of genetic traits for an entrepreneur. Criticism of this approach is significant and based around a number of themes;

- A lack of robust methodological approaches including non-comparable samples and a bias towards successful entrepreneurs
- Fundamental problems around determining causality
- Mixed and conflicted results indicating the level of variation within the entrepreneurial population is the same as that in the general population
- Questions surrounding the temporal nature of the results and the stability of the traits over time

Whilst it may be possible to claim that many entrepreneurs manifest these traits, it is also evident that many who manifest these traits are not entrepreneurs and many entrepreneurs do not manifest all of these traits. The question "who is an entrepreneur?" also becomes paramount. The stable, universal and defining set of entrepreneurial traits appear to be elusive, perhaps non-existent and even irrelevant (Davidsson, 2016).

According to Nielsen et al. (2012), trait theory tends to ignore the interdependency of traits and the influence of environmental factors. Such a wide range of traits have been generated as to render the concept of the characterisations of 'a successful entrepreneur' meaningless. The identification of the entrepreneur's personality has not yet been empirically possible (Carland et al., 1988). Low and MacMillian (1988) conclude that entrepreneurs tend to defy

aggregation and while they may be expected to differ from the mean, the nature of these differences is unpredictable, therefore any attempt to profile the typical entrepreneur is inherently futile. There is as much difference between entrepreneurs as between entrepreneurs and other people. The largely unsuccessful quest to identify the personality profile of the successful entrepreneur is what psychologists would call a 'personological' endeavour (Shaver & Scott, 1992) and Shaver and Scott (1992) criticise the approach for being outmoded in any case, preferring to view behaviour as a combination of the person and their environment. Some psychologists prefer to favour the examination of cognitive processes occurring within the individual as a way to distinguish those who create new ventures from those who do not.

Even if entrepreneurs are born as such, it remains true that most attempts to empirically describe differences between entrepreneurs and managers in large organisations using psychological, personal or demographic variables have met with limited success. Busenitz and Barney (1997) offer three possible explanations given in the literature; inadequate methodology as mentioned before; inappropriate focus, which would be better changed to look at external causes of entrepreneurial behaviour; and inappropriate focus which would be better changed to compare behaviours of entrepreneurs and managers of large organisations. They point out however, that more robust methods have not altered findings significantly, neither does shifting the focus to external causes explain why some perceive and exploit opportunities and others do not. However some researchers continue to believe that a better understanding of the mind of an entrepreneur would lead to a better understanding of the processes that lead to the creation of new ventures. Not least because adopting this view would also mean that entrepreneurship can be taught.

Having considered the literature regarding the phenomena of entrepreneurship activity and the person of the entrepreneurs; research taking a more theoretical approach to entrepreneurship is now reviewed in order to develop a more conceptual perspective.

3.2.3. Entrepreneurship research

Entrepreneurship research is widely characterised as largely phenomenon driven with limited attention to theory. The research domain or field of entrepreneurship can be defined as the examination of how, by whom, and with what effects opportunities to create future goods and services are discovered, evaluated and exploited (Venkataraman, 1997). The field involves the study of sources of opportunities; and the set of individuals who discover, evaluate and exploit them (Shane & Venkataraman, 2000). Carton, Hofer and Meeks (1998) offer two approaches to defining entrepreneurship. The first identifies entrepreneurs and then defines entrepreneurship as what the entrepreneurs do. The opportunity tradition posits that an entrepreneur is an entrepreneur because of how he or she behaves namely because he or she discovers, evaluates and exploits opportunities to introduce new goods and services, ways of organising, markets, processes and raw materials (Shane & Venkataraman, 2000). The second defines entrepreneurship and then defines entrepreneurs as people that engage in entrepreneurial activity. The emergence tradition posits that an entrepreneur is an entrepreneur because of how he or she behaves namely because he or she undertakes activities in the process of new venture creation. Entrepreneurs are distinct from people who are not entrepreneurs because they form new organisations (Gartner, 1988). Entrepreneurship is "synonymous with the behavioural act of new venture creation" (Pittaway, 2005, p. 22). Entrepreneurship can mean the act of creating new organisations and renewing existing organisations, the "birth of new methods and processes, their evaluation and organisation," (Nielsen et al., 2012, p. xv). Entrepreneurship can be considered as an organising process that leads to the formation of a new organisation. "Entrepreneurship is defined as the initial emergence of new opportunities being evaluated and utilised through organising" (Nielsen et al., 2012, p. xvi). The act of organising makes opportunities visible to investors, customers and other potential beneficiaries. In this paradigm, entrepreneurs are business owner-managers and remain as such for as long as they are running their own business. Such individuals can be a focus of research into entrepreneurship (Davidsson, 2016). This approach focuses on behaviours rather than dispositions noting that earlier research has

been unable to demonstrate any unique personality, trait or characteristic to distinguish entrepreneurs from other people (Carsrud & Brännback, 2009; Gartner, 1988; Palich & Bagby, 1995). For such individual behaviours to be defined as entrepreneurial, they must be associated with outcomes that are successful or influential. Competencies deemed entrepreneurial include knowledge about how entrepreneurs create value; skills in marketing, resource acquisition and opportunity identification; and attitudes such as entrepreneurial passion, self-efficacy, proactiveness and tenacity (Fisher, Graham, & Compeau, 2008). These are widely believed to be something people may be born with but that can also be developed over time (Fayolle, 2007; Hindle, 2007; Neck, Greene, & Brush, 2014; Rae, Martin, Antcliff, & Hannon, 2012; Ramoglou, 2013).

If entrepreneurs are those people who practise entrepreneurship, and anyone practising entrepreneurship is an entrepreneur, the definitions are circular and can be criticised for being self-referential, flawed and incomplete. Privileging structure (the entrepreneurial context or eco-system) over agency (the individual entrepreneur) reifies some features of the social world which are then assumed to structure other features, negating agency and creativity in humans, which, in turn are assumed to be predictable and robotic processors of information (Garud, Hardy, & Maguire, 2007). Privileging agency (the individual entrepreneur) however, promotes heroic models of actors and can be criticized for being historically inaccurate, decontextualized, and so broad as to be meaningless. By emphasizing intentionality, little attention is afforded to the unintended consequences of action, which can be a critical contributor to innovative breakthroughs. Researchers have attempted to address these issues by offering theoretical perspectives that combine structure and agency in some form of mutually constitutive duality.

An alternative perspective is offered by Shane (2000) who presents a theory of entrepreneurship at the nexus of enterprising individuals and valuable opportunities. It is argued that the missing dimension might be the entrepreneurial context, the environmental factors or eco-system within which the person embodying an entrepreneurial pre-disposition finds him or herself. It could be the interplay between the processes of new venture creation, the individual and

the context of external factors such as financial support (Prahalad, 2005) that might enable the prediction of entrepreneurial activity and hence offer the key to economic development and success. Others suggest that the phenomenon of entrepreneurship cannot be understood if the individual, the project, the environment and the links between them are not all taken into consideration (Bruyat & Julien, 2000).

In this thesis, entrepreneurship is regarded as the ways in which entrepreneurs think and practise. It acknowledges that the entrepreneur is not simply responding automatically and machine-like to environmental stimuli but a human being with freedom of action, capable of irrational behaviour, learning, creating and influencing the environment (Bruyat & Julien, 2000). Proposing a dialogic relationship between the individual and new venture creation, Bruyat and Julien (2000) describe entrepreneurship as being concerned with the creation of new value, and change and creation for the individual. In initiating the process of new value creation, the individual themselves is also changed.

Davidsson (2016) suggests three corresponding sets of research questions:

> Why, when and how opportunities for the creation of goods and services come into existence?
>
> Why, when and how some people and not others discover and exploit these opportunities?
>
> Why, when and how different modes of action are used to exploit entrepreneurial opportunities?
>
> (Davidsson, 2016, p. 23)

This thesis is concerned with part of the second of these research questions namely why some people discover and exploit opportunities for the creation of value. The approach adopted in this thesis is based on the proposition that entrepreneurs think and practise in a distinct way (Baron, 1998). Entrepreneurs are characterised by their use of imagination, boldness, ingenuity, leadership, persistence and determination according to Baumol (1993) and many warn of the difficulties in finding an adequate frame of analysis for these 'troublesome

individuals' (Metcalfe, J.S. in Casson et al., 2006, p. 60). Entrepreneurial cognitive processes are examined in more detail in the following section.

3.2.4. Entrepreneurship cognitive processes

A focus on entrepreneurial cognition acknowledges that it is an individual who creates a new venture, in the context of the economic environment, social networks, entrepreneurial teams, marketing, finance and legal and political constraints and incentives. Entrepreneurs may best be distinguished from non-entrepreneurs according to their cognitive tendencies (Shaver & Scott, 1992) and consequently, students may be effectively educated in entrepreneurship using approaches which alter their cognition to be more like that of successful entrepreneurs (Palich & Bagby, 1995). Research into cognition is concerned with how people think (perceptions, memory and mental processes) and how the way they think influences their behaviours. Research into entrepreneurial cognition has grown rapidly as the trait approach to understanding entrepreneurs has become less attractive and resolution appears no closer (Baron & Ward, 2004; R. K. Mitchell et al., 2007). Blundel et al. (2018, p. 268) summarise the key themes in research in entrepreneurial cognition and an adaptation of their work is shown in Table 3-2.

Table 3-2 Adapted from 'Entrepreneurial cognition: summary of key themes' (Blundel et al., 2018, p.268)

Research Theme	Commentary
Differences in cognition	Differences both in terms of content (what) and process (how) between entrepreneurial and non-entrepreneurial thinking
Opportunity perception	How differences in cognition of entrepreneurs help them be more alert to opportunities and/or more capable of exploiting them
Cognitive biases	Cognitive biases associated with entrepreneurial decision making
Entrepreneurial mind-set	The adaptation of cognition to deal more effectively with a typical entrepreneurial operating environment
Creativity	How differences in cognition of entrepreneurs help them be more creative in both creating opportunities and addressing entrepreneurial challenges
Perceived self-efficacy	How a person's belief in their capacity to be an entrepreneur affects their ability to do so

Developmental cognition	How differences in cognition of entrepreneurs help them learn and how this knowledge can improve entrepreneurship education

Heuristics are mental shortcuts used in decision making processes which reduce information overload and enable faster decision making. Use of heuristics can result in systematic biases, and evidence of bias is used to prove the use of heuristics in decision making (Wadeson, N. in Casson et al., 2006, p. 92). Three entrepreneurial cognitive biases have been dominant in the literature (Shane & Venkataraman, 2000)

- Optimism: a tendency to seize opportunities despite uncertainty about the outcome
- Willingness to generalise based on small samples: a tendency to take big decisions despite a lack of available information
- Intuition: a reluctance to collect information to support decisions, rather going with gut feelings or personal beliefs

Entrepreneurs are as likely as most to use heuristics in decision making, and their decisions are therefore likely, perhaps more or less likely than those of non-entrepreneurs, to manifest systematic bias. This is because entrepreneurs are typically in decision making situations characterised by uncertainty, novelty, emotion, time-pressure and information over-load, where the reduction of information over-load and speed are very desirable (Baron, 1998) and there are distinct advantages to using heuristics. There is some criticism of this hypothesis not least because it not been established whether the use of heuristics in decision making is linked to improved performance (Shanteau, 1989) so it is not clear whether entrepreneurs are more prone to bias in decision making than others, or if it just that they more frequently find themselves in decision making situations where there is a need for speed and to limit information overload. Biased thinking may advantage and distinguish entrepreneurs in some respects. Entrepreneurs, they suggest, might be differentiated by their cognition, rather than by their personality traits.

Tversky and Kahneman (1974) identify three heuristics that are employed to assess probabilities and to predict values when making judgements in uncertainty; availability, representativeness and anchoring and adjustment. These are relevant to entrepreneurs when characterised as people rewarded by profit for bearing the uninsurable risk of uncertainty, and their use may result in associated biases. The availability heuristic submits that people base their probability estimate for an outcome on how easy it is for them to imagine it. People believe that things they can imagine easily are more likely to happen than things they find harder to imagine. For instance, a leader of a UK political party might have believed the outcome of a referendum on EU membership would be 'remain' because they found it too hard to imagine the alternative outcome. The representativeness heuristic submits that people make decisions according to comparisons with similar situations already known to them. This can lead to a tendency to overestimate the degree to which small samples of information resemble the population from which they are drawn, otherwise known as the law of small numbers (Tversky & Kahneman, 1971). In entrepreneurs this bias is often evident in their belief that their own personal experience of a problem, or that of a small number of friends and potential customers, is representative of a larger population and can lead to an overestimation of demand. In addition they may not have access to large samples either because they are not available or to obtain them would be prohibitively expensive (Busenitz & Barney, 1997). The anchoring and adjustment heuristic submits that people have a tendency to anchor on an initial reference point, which subsequently has an undue influence on their subsequent estimations.

There is some evidence to support the idea that the willingness to start a business is associated with a reduced perception of risk resulting from representative bias and illusions of control in MBA students (Simon, Houghton, & Aquino, 2000). Others have also found that entrepreneurs tend to be overconfident and use the representativeness heuristic as previously mentioned (Busenitz & Barney, 1997). Such studies have been criticised for assuming biases in general knowledge judgements displayed by participants would be equally present in judgement concerning entrepreneurial opportunities. Some stronger

cognitive biases may influence an individual to become an entrepreneur in the first place, but a reduced susceptibility to biases may distinguish experienced and successful entrepreneurs from novice entrepreneurs (Wadeson, in Casson et al., 2006, p. 108).

Consistent with a move to research adopting a more behavioural approach, Busenitz and Barney (1997) conducted a study to explore differences between one hundred and twenty four entrepreneurs and ninety five managers in large organisations, focusing on decision making style. They found that entrepreneurs were more susceptible to the use of decision-making biases and heuristics and conclude that entrepreneurs and managers in larger organisations think differently. They examined in particular overconfidence (over estimating the probability of being right) and representativeness (the tendency to overgeneralize from a few characteristics or observations) and found these two variables correctly categorised entrepreneurs and managers 70% of the time. They argue that if this difference is stable over time it suggests that people who are more susceptible to the use of heuristics and biases in decision making will be the ones who are more likely to become entrepreneurs. They propose that, "Entrepreneurial activities simply become too overwhelming to those who are less willing to generalise through the use of bias and heuristics" (Busenitz & Barney, 1997, p. 14).

Cognitive biases may be useful in explaining some hitherto unexpected research findings. For example it is useful to consider that the risk taking propensity of entrepreneurs has not been found to differ substantially from non-entrepreneurs (Brockhaus Sr, 1980), never the less, entrepreneurship has a risk-orientated reputation. Shaver and Scott (1992) suggest that entrepreneurs take more risks (as perceived by non-entrepreneurs) because they do not perceive risks in the same way, "One must have fear to demonstrate courage" (Shaver & Scott, 1992, p. 26).

Busenitz and Barney (1997) also suggest their findings may explain that while risk is often regarded as synonymous with entrepreneurship, many studies have shown that risk-taking propensity in entrepreneurs is not greater than that of managers in larger organisations. It may be that entrepreneurs are more likely to perceive less risk by being more willing to generalise from limited experience and

feeling overconfident. Entrepreneurs may be different in the way they perceive and think about risk. Various biases have been associated with entrepreneurial thinking, including overconfidence, optimism, illusion of control and the planning fallacy.

Overconfidence is associated with the heuristics of availability and anchoring and adjustment, as well as confirmation bias and hindsight bias (Russo & Schoemaker, 1992). Confirmation bias is a tendency to seek more and attach greater weight to information that confirms existing beliefs and to ignore discounting information (Klayman & Ha, 1987). Hindsight bias is a tendency to see past events as having been more predictable than they actually were. Optimism bias is the tendency to believe things will turn out well and it has three main forms; over positive self-evaluation, over-optimism about future plans and events, and over-optimism arising from an illusion of control (S. E. Taylor & Brown, 1988). It is frequently associated with entrepreneurs (Wadeson, N. in Casson et al., 2006, p. 97). The illusion of control is a tendency for people to believe they can control or have an influence over outcomes over which they actually have no control, or to over estimating the control they have. This can result in a reduced perception of risk (Wadeson in Casson et al., 2006, p. 98). The planning fallacy is a tendency for people to underestimate the amount of time it will take to complete tasks (Kahneman & Tversky, 1977) and it tends to become more pronounced in unique and highly uncertain situations. Various other concepts and theories have been associated with the investigation of entrepreneurial behaviour, and the following section offers a brief overview of them.

Attribution is important when considering the achievement orientation of entrepreneurs (Shaver & Scott, 1992). When an act is intentional, successful performance is attributed to ability and effort (internal elements) and task difficulty and luck (external elements). Of these, ability and task difficulty are stable and effort and luck are variable. If failure is attributed to bad luck (external, variable) for example, the individual can believe that things will be different in the future and be more likely to persist in their endeavour. The attributional model has been found to predict achievement behaviour in a number of settings (Shaver & Scott, 1992).

A high level of self-efficacy is also frequently cited as a defining characteristic of entrepreneurs (Hechevarria, Ingram, Justo, & Terjesen, 2012). Self-efficacy refers to the degree to which someone believes he/she has the ability to successfully complete a task (Bandura, 1977b). Self-efficacy and the decision to be an entrepreneur have been linked (Shane, 2003), and it is also associated with entrepreneurial business strategies and performance (Westerberg, 1998). Entrepreneurial self-efficacy measures a person's belief in their ability to start a new venture, incorporating both personality and environmental factors, and has been proposed as a strong predictor of entrepreneurial intent and action (McGee, Peterson, Mueller, & Sequeira, 2009). Nascent entrepreneurs have been shown to feel more confident in all stages of the entrepreneurial process than individuals who have not tried to create a new venture, in particular in the search for opportunities and marshalling the required resources to exploit them, suggesting that entrepreneurs approach such things differently from non-entrepreneurs (McGee et al., 2009). The link between entrepreneurial self-efficacy and new venture performance however is mixed (Miao, Qian, & Ma, 2017). Despite this, in their meta-analysis of 27 samples, Miao et al. (2017) found a moderate correlation between entrepreneurial self-efficacy and firm performance although causality is unclear. Perceptions of self-efficacy can be affected by mastery experiences (interpretations of the results of one's own past efforts), vicarious experiences (observing others), social persuasions (the comments of others) and somatic and emotional states (Wadeson in Casson et al., 2006).

Intrinsic motivation is the motivation to do something for its own sake, without an external incentive or dis-incentive (Ryan & Deci, 2000). Intrinsic motivation may lead to creativity (Amabile, 1997) and there is some evidence to support the proposition that entrepreneurs tend to be relatively creative (Shane, 2003) and it may therefore be concluded that they are relatively more intrinsically motivated.

Counter factual thinking is thinking about how things might have been done differently. It can lead to the formation of alternative strategies for the future so that experience may be learnt from (Wadeson in Casson et al., 2006, p. 101). Gaglio and Katz (2001) linked counterfactual thinking to the concept of

entrepreneurial alertness (Kirzner, 1973). Baron (2000) however, found that entrepreneurs are less likely to engage in counterfactual thinking.

Intention based models hold that intentions are the best predictor of behaviour. The theory of reasoned action submits that the intention to act is determined by the decision maker's attitude towards the behaviour (its expected consequences) and his or her subjective norms (what others whose opinions are valued will think about the behaviour) (Fishbein & Ajzen, 1975). The theory of planned behaviour extends this with a third factor which is perceived behavioural control (how much control the decision maker believes they have over carrying out the behaviour) (Ajzen, 1991).

Baron (2004) suggests that another way in which entrepreneurs might think differently is in how they choose to frame decisions. He argues that entrepreneurs are more likely to consider the downside of not taking a particular course of action, than the downside of taking a particular course of action, resulting in more risk-seeking behaviour. Others have found that entrepreneurs are likely to frame business scenarios more positively than others, seeing opportunities where others are more likely to see risks (Palich & Bagby, 1995). As previously discussed, rather than having a greater propensity to bear risk than others, entrepreneurs may simply categorise and subsequently frame the same stimuli differently from non-entrepreneurs (Palich & Bagby, 1995). When asked to respond to three equivocal business scenarios in terms of strengths, weaknesses, opportunities and threats, in a study of thirty five entrepreneurs and fifty seven non-entrepreneurs, entrepreneurs perceived more strengths and opportunities than non-entrepreneurs and were more optimistic about the future of the hypothetical firm, despite being no different to non-entrepreneurs when assessed for risk taking propensity (Palich & Bagby, 1995). In conclusion, the authors noted that entrepreneurs do not prefer to take risks, they are just more likely to see the world through "rose coloured glasses" (Palich & Bagby, 1995, p. 433). Entrepreneurs appear not to perceive risk in the same way as non-entrepreneurs. As such, research in areas of entrepreneurship cognition and entrepreneurship activity may been seen to be on a continuum spanning from a focus on the psychology of the

individual at one end (cognition), to a focus on practices from a socio-cultural perspective at the other.

Having considered the origins of the subject of entrepreneurship in the literature and the development of multiple, alternative perspectives of entrepreneurship, this chapter now focuses on entrepreneurship education literature in order to inform the research into how best to educate students in entrepreneurship.

3.3. Entrepreneurship education

The primary drivers of entrepreneurship research originally were to understand entrepreneurs and entrepreneurship in order to help entrepreneurs and to take entrepreneurship into the classroom (Wiklund et al., 2018). Landström and Harirchi (2018) suggest in their web-based questionnaire survey of the community of entrepreneurship scholars that it is unclear whether there is a distinct "discipline" called entrepreneurship, but rather a collection of scholars with different disciplinary origins studying similar phenomena within many diverse, small and dense network groups, in other words, "a social scholarly community" (p. 659). They suggest entrepreneurship be regarded as a "phenomena-driven field that is bound together by a shared communication system and social interactions" (p. 658), arguing that entrepreneurship has not yet developed into a larger coherent scholarly community, or created a "discipline" bound by theoretical inspiration. Entrepreneurship education has been criticised for not adequately reflecting the innovation evident in the surrounding entrepreneurial landscape (Kariv, Matlay, & Fayolle, 2019), and as a scholarly field, is more vulnerable to change and more dependent on the interests of external stakeholders from which to derive its legitimacy (Landström & Harirchi, 2018).

Research in entrepreneurship education has grown rapidly (Kassean, Vanevenhoven, Liguori, & Winkel, 2015) moving from roughly two publications a year between 1987 and 2000 to roughly five a year between 2001 and 2007, to roughly 20 year between 2008 and 2017 (Aparicio, Iturralde, & Maseda, 2019). Research in entrepreneurship education has been progressively published in more journals; articles appearing in 20 different journals between 1987 and 2007,

compared to 89 different journals between 2008 and 2017 (Aparicio et al., 2019) although it is interesting to note these journals are business specific and do not focus on learning and education. The journal Entrepreneurship Education and Pedagogy which is published in association with the United States Association for Small Business and Entrepreneurship (USASBE) launched in 2018 and is the first peer reviewed journal dedicated to entrepreneurship education. In a review of articles on the Web of Science Core Collection database published between 1987 and 2017, Aparicio et al. (2019) note that entrepreneurship education research has evolved from regarding entrepreneurship education as part of economic development strategy to a more academic perspective, and increasing focus on the teaching process and the context of entrepreneurship education. They also note a move from teachers to students as the main agents of the educational process and the importance of the acquisition of competencies rather than the transmission of knowledge. Despite its rapid growth, robust theoretical and methodological foundations in entrepreneurship education are notably lacking in the literature (Fayolle, 2018) and entrepreneurship education literature is more likely to be concerned with impact and pedagogies, as well as being fragmented and biased towards entrepreneurship rather than education (Fellnhofer, 2019). Fellnhofer (2019) notes that whilst educational methods for teaching entrepreneurship are perhaps as diverse as definitions of entrepreneurship education, it can be broadly defined as the development of personal qualities, attitudes and skills on the one hand, and specific training to set up the entrepreneurial venture on the other.

This presents significant challenges to entrepreneurship educators, "There is a strong contention that entrepreneurship education should be different from normal teaching because it's about teaching you to create something that does not exist" (Nielsen et al., 2012, p. xvii).

Providing academic content to potential entrepreneurs offers some benefits, but merely treating entrepreneurship as just another subject is not likely to be effective. According to the Economist Intelligence Unit (*Helping entrepreneurs flourish: Rethinking the drivers of entrepreneurship*, 2014a) entrepreneurs have clear opinions regarding what would make more effective entrepreneurship education. They hold that education needs to go beyond

imparting a specific body of knowledge, believing this approach to be largely obsolete given the growing accessibility of data. Education needs to be more experience driven and personalised, where students can learn how to apply information together with skills of creativity and problem-solving. Educators need to create learning environments where risk taking is encouraged so students realise that failure is a normal part of development. Networking is also of primary importance, learning the skills necessary to network successfully and also the role of networking in enabling better contact with the professional world both for employment and mentoring. Calls to address the apparent discrepancy between entrepreneurial trends and entrepreneurial education join those calling for "*relevant* preparation for the entrepreneurial journey" (Kariv et al., 2019, p. 1) and challenging it to offer a meaningful experience.

Strong academic skills are seen as relatively unimportant to entrepreneurial success (17% of surveyed entrepreneurs), whilst traditional educational approaches in any case strongly discourage failure and risk taking (*Helping entrepreneurs flourish: Rethinking the drivers of entrepreneurship*, 2014a). Entrepreneurial skills are difficult to teach through traditional methods and learning practices in which the learner tends to be more or less a passive recipient (*Entrepreneurship Education: Enabling Teachers as a Critical Success Factor*, 2012). Effective entrepreneurship education therefore needs to emphasise solving problems in new ways, synthesising solutions rather than acquiring a specific body of knowledge and getting the right answer.

Scholars' perspectives on whether entrepreneurship can be taught or not can be grouped into four main themes:

- Those who believe it can be taught (Gorman et al., 1997; Kuratko, 2005; Pittaway & Cope, 2007)
- Those who believe it cannot be taught (Nicolaou & Shane, 2009)
- Those who believe some parts can be taught, and other parts cannot (De Faoite, Henry, Johnston, & Van der Sijde, 2003)
- And lastly those that believe it does not matter whether you can teach it or not, as you cannot assess it anyway (Henry et al., 2005; Martin, McNally, & Kay, 2013)

Entrepreneurship may also be regarded as a pedagogy, rather than an epistemology. Lackéus (2015b) proposes a new educational philosophy, grounded in entrepreneurship, which may be compared with enterprise education. This implies that entrepreneurship can describe a pedagogical approach (entrepreneurial pedagogy) rather than the knowledge content of a curriculum, and any subject may therefore be taught in an entrepreneurial way. The focus on value creation, claims Lackéus, goes some way to address the concerns of those challenging the wider adoption of entrepreneurship in education on the grounds of lack of resources, fear of capitalism, organisational and assessment issues. Lackéus (2015b) defines his educational philosophy grounded in entrepreneurship as "letting students learn through creating value for others" (p. 3). He claims the resulting processes are rich with interpersonal interaction and emotional learning events which enhance student engagement and deepen learning of both entrepreneurial and subject specific knowledge, skills and attitudes. Lackéus (2015b) distinguishes attempts to infuse entrepreneurship into education in programmes where students learn about entrepreneurship (viewed as starting a business and becoming an entrepreneur), from those where students learn through entrepreneurship, where entrepreneurial processes are embedded into existing curriculum structures for the purpose of "making people more entrepreneurial" (Lackéus, 2015b, p. 1). Kyrö (2005) anticipated this emerging entrepreneurship-based educational philosophy which supported students in the development of risk-taking and creative abilities.

Approaches to entrepreneurship education can be broadly grouped into three (Hannon, 2005; Heinonen & Hytti, 2010; O'Connor, 2013) or with the addition of "embedded"; four (Gibb, 2002; Lackéus, 2015a; Morselli, 2019; Pittaway & Edwards, 2012)

1. "Teaching about": a theoretical approach to gain an understanding of the phenomenon of entrepreneurship. "About" approaches are theoretical and guided by content.
2. "Teaching for": a vocational approach to learn the skills, knowledge and attitude needed to become an entrepreneur. "For" approaches are orientated to occupation.

3. "Teaching through": an experiential approach to develop an understanding of entrepreneurship through experiencing entrepreneurial processes, the aim being to go through a real entrepreneurial learning process in "safe" conditions.
4. In embedded approaches entrepreneurship is delivered within other non-business subjects, the aim being to give learners entrepreneurial experience and awareness relevant to their field of study (Pittaway & Edwards, 2012).

Whilst "teaching for" and "teaching through" have gained in popularity, some regard "teaching about" as indispensable because, they argue, only by understanding theoretical frameworks can students adapt and flourish in an uncertain future (Fiet, 2001). Others argue that "for" and "about" approaches are the most relevant to students wishing to become entrepreneurs, whilst the "through" and "embedded" approaches are useful to any student (Lackéus, 2015a). There is a tension between what is easy to deliver in the existing educational context and what is most effective.

The conceptualisation of knowledge as acquisition is aligned to the "teaching about" approach, knowledge in this context is accepted to mean information that can be "possessed". For example, "I know the value added tax rate in the UK". However, according to (Perkins, 2008), "learning will only be truly effective when the conception of the knowledge underlying it has a proactive character. Proactive knowledge goes beyond understanding to prepare the learner for the alert and lively use of knowledge" (p.3). This perspective would appear to support initiatives where students apply knowledge and learn *for* and *through* entrepreneurship. The knowledge gained goes beyond understanding to self-initiated re-application, development and adaptation. Perkins (2008) identified and ranked three types of knowledge on a progressive scale of effectiveness or usefulness; possessive, performative, and proactive. Educational approaches to entrepreneurship as described above have been mapped to underpinning values and beliefs, types and conceptualisations of knowledge, learning mind-sets, and approaches to learning in Table 3-3.

Table 3-3 Educational approaches to entrepreneurship

Educational initiatives that…	…emphasise the following underpinning values and beliefs… (Hannon, 2005)	…and may be aligned to the following types of knowledge (adapted from Perkins, 2008; Perry & Rao, 2007)	..where knowledge is conceptualised as …	..and is associated with the following conceptions of learning - learning mind-sets (Säljö, 1979)	..and may be associated with the following approaches to learning (Entwistle, 2000)
…are about entrepreneurship	emphasise the academic study of entrepreneurship	possessive	information	acquiring facts	surface
…are delivered through entrepreneurship or by embedding entrepreneurship	suggest entrepreneurship is a pedagogy and an epistemology and can be learnt/taught through other subjects, and embedded within other contexts besides business and management	performative	understanding; requiring flexible thinking and action	understanding	strategic
…are for entrepreneurship	aim to create entrepreneurs, preparing learners for enacting an entrepreneurial life by creating new ventures	proactive	opportunistic; requiring self-initiated deployment	sense making	deep

B. Jones and Iredale (2010) have drawn attention to the tensions, similarities, and differences in entrepreneurial education concepts. Different academics and policy makers emphasise different aspects of entrepreneurial education and seek to define the concept in their own self-interest. Entrepreneurial education is subject to debate, analysis, policy development and pedagogical practice. Meanwhile discussion of the complexities surrounding the meaning and purposes of enterprise and entrepreneurship education continues (Fayolle, Gailly, & Lassas-Clerc, 2006; Gibb, 1993, 2002, 2005; Hannon, 2006; Rae et al., 2012).

In a study of entrepreneurship education and training programmes around the world, the World Bank (Valerio et al., 2014) categorised the possible outcomes of such programmes into four domains:

1. Entrepreneurial mind-sets (socio-emotional skills and overall awareness of entrepreneurship associated with entrepreneurial motivation and success as a future entrepreneur such as self-confidence, leadership, creativity, risk propensity, motivation, resilience and self-efficacy)
2. Entrepreneurial capabilities (competences, knowledge and technical skills associated with entrepreneurship such as management skills, accounting, marketing and technical knowledge)
3. Entrepreneurial status (the temporal state of a student as measured through entrepreneurial activities and beyond such as starting a business, becoming (self) employed, achieving a higher income)
4. Entrepreneurial performance (the change in performance of the student's venture as a result of the intervention for example higher profits, increased sales, job creation, increased survival rate)

B. Jones and Iredale (2014) suggest measuring the impact of entrepreneurship education programmes by measuring:

- The number of new businesses started.
- If and to what extent there is an increase in participants expressing an interest in starting or working for a SME.

- Those who might consider starting their own business sometime in the future (entrepreneurial intent).
- If students involved are more enterprising at the end of the project than they had been at the outset.

In an extensive literature review (2004 – 2016) examining the relationships between pedagogical methods and specific outcomes; Nabi et al. (2017) note that there continues to be a focus on short-term and subjective outcome measures of entrepreneurship education such as entrepreneurial attitudes and intentions, and a lack of detail regarding the pedagogies under review. They argue for more studies on the measurement of longer term outcomes such as venture creation behaviour and business performance, implying that venture creation behaviour and business performance are the true and only valid measures of the success of entrepreneurship education. As typical of the US entrepreneurship research community, this implies that entrepreneurship education should be focused on "educating *for* entrepreneurship", be quantifiable, and quantitatively measured.

As discussed in Chapter 2, there is a tension between the purpose of higher education and the purpose of entrepreneurship education in higher education. By assuming that venture creation behaviours and business performance are the best measures of the effectiveness of entrepreneurship education in universities, it follows that venture creation and business performance must be the purpose of entrepreneurship education programmes. An alternative purpose of entrepreneurship education has been set out Chapter 2, which is more sympathetic to the assumption that higher education is most effective when regarded as a social good with intrinsic value. This thesis supports the perspective that the purpose of entrepreneurship education is to further knowledge and understanding of entrepreneurship. Entrepreneurship is defined here as the distinctive way in which entrepreneurs think and practise in the course of undertaking entrepreneurial activity.

In their review, Low and MacMillan (1988) call for research into entrepreneurship which is more theory driven. In his study of eighteen syllabi of entrepreneurship courses undertaken at a retreat for entrepreneurship scholars of

international reputation, Fiet (2001) found one hundred and sixteen different topics with only about one third in common. The substantial diversity in course content highlighted a lack of alignment to a common paradigm for entrepreneurship, an indistinct domain and a failure to agree even on the purpose of entrepreneurship education. Other such as Hannon, Collins, and Smith (2005, p. 12) highlight "confusion about the purposes and impact of entrepreneurship education".

Whichever conceptualisation or combination of conceptualisations one chooses for entrepreneurship, the fact remains that none of them so far tell the whole story, none is sufficient on its own. From an educator's perspective however, widening the scope of entrepreneurship education to include the business context may well be a step too far. Equally narrowing down a definition of entrepreneurship to those activities carried out by entrepreneurs is equally problematic, many people with supposedly entrepreneurial traits have not set up new ventures, and many self-employed people or small business founders do not display an entrepreneurial approach.

Consequently, focusing on the distinctive ways in which entrepreneurs think and practise in the world is particularly appealing in an educational context notwithstanding the many challenges this approach presents. Social cognition, unlike personality traits, can be changed and therefore represent an encouraging line of inquiry for research in entrepreneurship education. The effectiveness of "Frames of reference" training programmes in changing cognitive processes have already been demonstrated (Palich & Bagby, 1995). Palich and Bagby (1995) suggest that training that provides a framework to identify the critical dimensions of assessment, and how to appraise business situations according to those attributes might be beneficial.

This section has focused on literature that concerns the person of the entrepreneur and why, when and how some people and not others discover and exploit opportunities to create future goods and services, and how students might be educated in entrepreneurship. As such this research takes a psychological approach to entrepreneurship where the emphasis is on understanding the

individual and the distinctive ways they have of thinking and practising in the world. Within the individual, the processes used to represent the external world and the exercise of choice in decision making are of particular interest in distinguishing entrepreneurs (Shaver & Scott, 1992). It may be that both of these are susceptible to education and of consequent interest to the entrepreneurship educator. This thesis responds to a call for greater links between entrepreneurship education literature and educational literature in order for the field of entrepreneurship education literature to progress (Fellnhofer, 2019).

3.4. Conclusion

In this chapter, literature pertaining to entrepreneurship and entrepreneurship education has been reviewed. It shows that the terms 'entrepreneurship' and 'entrepreneur' have a diverse range of meanings, and scholars use them flexibly for their own purposes. In this research, an entrepreneur is defined by the act of generating or creating value and entrepreneurship is regarded as equivalent to the entrepreneurial activities undertaken by individual entrepreneurs in a defined context. Attempts to establish a stable, universal and defining set of entrepreneurial traits have been largely unsuccessful to date, and research has moved towards examining distinctively entrepreneurial cognitive processes in an effort to determine what it is that enables some people to successfully create value. Understanding the mind of an entrepreneur could lead to a better understanding of the processes that lead to the creation of new ventures and enable the potential development of those cognitive processes through entrepreneurship education. In this thesis, entrepreneurship is regarded as the distinctive ways in which entrepreneurs think and practise. Linked to this, a significant body of entrepreneurship literature has endeavoured to establish a more conceptual approach and an underpinning theory of entrepreneurship, which also would be very useful in an educational context. The absence of an established theoretical basis to entrepreneurship to date has resulted in three pragmatic approaches to entrepreneurship education; teaching about entrepreneurship, teaching for entrepreneurship and teaching through entrepreneurship where the concepts informing entrepreneurial ways of thinking

and practising are tacit if present at all. The tension between external wider political and economic objectives and the objectives of universities has further muddied the waters regarding the form and function of entrepreneurship education. A more conceptual approach to entrepreneurship education overcomes this tension to a certain extent and would enable it to deliver both instrumental and intrinsic good.

Having reviewed the literature and argued that entrepreneurship can be defined as generating or creating value, and ways of thinking and practising as an entrepreneur can be regarded as the outcome of applying entrepreneurship concepts, a methodological position can be discerned for this research study, together with choices regarding research design. These are set out in the following two chapters.

Chapter 4. Methodology

4.1. Chapter overview

The threshold concept framework is being used in the research design as a lens through which to approach entrepreneurship education. Defining the threshold concepts in any academic subject will help to identify what makes the subject distinctive and inform the development and optimisation of the curriculum. By using the likely bounded characteristic of threshold concepts, the bounded nature of entrepreneurship threshold concepts and therefore of entrepreneurship itself may be established. The threshold concept framework promotes the notion of episteme. An episteme can be described as the system of ideas or ways of understanding that allow knowledge to be established. It encapsulates accepted ways of thinking within a subject or discipline (Perkins, 2006). In attempting to identify entrepreneurship threshold concepts, I am making use of an analytical framework that will help to demarcate entrepreneurship, to better understand how students learn, to better understand what might cause students to become stuck, and consequently what pedagogical modifications might need to be made to facilitate their learning. This chapter sets out the research methodology, reviews relevant threshold concept literature, and considers the design of the research.

Following this introduction, the research paradigm is presented and the explanation and relevance of the threshold concept framework to this research is set out. Transactional curriculum inquiry (Cousin, 2009a) is then proposed as a useful starting point for data gathering and the way in which it has been developed in this research into what is being termed a 'staged stakeholder curriculum inquiry' is described and justified.

The staged approach is a distinctive feature of the design of this research and enables the expertise and perspective of three different stakeholder groups to be analysed independently and considered collectively. Each stage of the research builds upon the one before, allowing for a deep and rich picture of candidate entrepreneurship threshold concepts to be constructed together with implications for entrepreneurship curricula development. The staged approach permits the

characteristics of the relevant stakeholder groups to be recognised and responded to in the choice of research method chosen for each group.

The chapter reviews the ethical considerations in the research and evidence of the relevant approvals. The sampling approach is explained and the particular challenges associated with the identification of threshold concepts are considered throughout, together with the limitations of the proposed approaches. See Table 4-1 for a summary of the research design and Figure 4-1 for a graphical representation of it. The details of the research design are set out in detail in Chapter 5.

Figure 4-1 Research Design

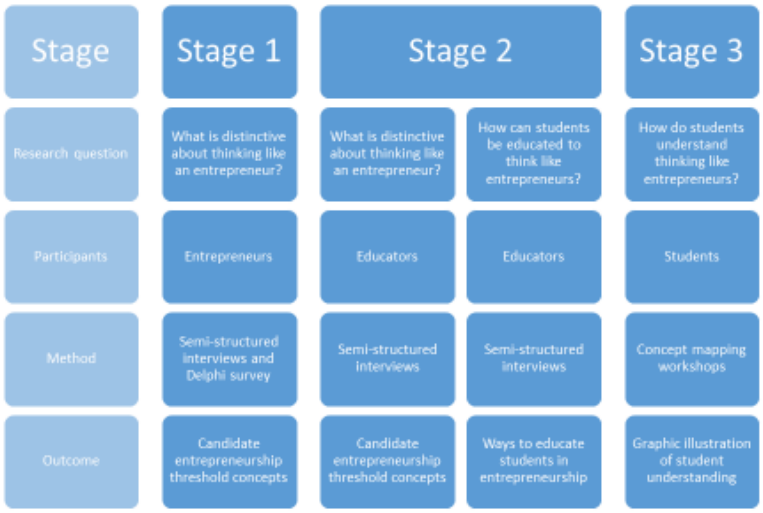


Table 4-1 The research design

Stage	Relevant Research Question	Participants	Method	Data	Relevant Research Objective
1	What is distinctive about thinking like an entrepreneur?	Entrepreneurs	Semi-structured interviews and Delphi survey	Interview transcripts *17 x 1:1 interviews* Response to Delphi survey *10 fully participating panel members*	To identify candidate threshold concepts in entrepreneurship
2	What is distinctive about thinking like an entrepreneur? How can students be educated to think like entrepreneurs?	Entrepreneurship educators	Semi-structured interviews (individual and group)	Interview transcripts *3 x group interviews* *8 x 1:1 interviews* *18 interviewees in total*	To identify candidate threshold concepts in entrepreneurship To explore educators' views on the effectiveness of approaches to entrepreneurship education
3	How do students understand thinking like entrepreneurs?	Students of an entrepreneurship programme	Concept mapping workshops	Concept maps *2 x concept mapping workshops* *11 x concept maps* *48 participants in total*	To explore how students understand entrepreneurship

4.2. The research paradigm

Social science is the scholarly and systematic application of the principles of a science of behaviour to the problems of people within their social contexts. It is a means of dealing with the direct experience of people in specific contexts. One aspect of educational research is the application of the principles of a science of behaviour to the problems of teaching and learning within education, and the clarification of issues having some bearing on these concepts (Cohen, Manion, & Morrison, 2011).

In this research I have taken an interpretivist and social constructionist stance. I have treated entrepreneurship as a socially constructed phenomenon and adopted a qualitative research approach which asks open questions as they occur in context rather than setting out to test predetermined hypotheses (Carter & Little, 2007). In the research design, I have stressed the importance of subjective experience and acknowledge that I am part of the world I am researching. This supports the possibility of multiple realities and the context specific nature of what is being researched (Cohen, Manion, & Morrison, 2018). Elements of these realities may be shared among many individuals so constructions are therefore only more or less informed and sophisticated rather than more or less "true" in any kind of absolute sense (Guba & Lincoln, 1994). The objective of the research is to understand a phenomenon (entrepreneurship) as it is seen and interpreted by the participants themselves *socially*, in a world characterised by multiple views of reality and where I work with the world as it is construed by the participants (bottom up) (Cohen et al., 2018).

As an entrepreneurship educator with a background in consultancy, self-employment and the private sector, I share or at least partly share a frame of reference with both the entrepreneur and entrepreneurship educator stakeholder groups in my research. From an interpretivist perspective, behaviour can only be understood when the researcher shares the frame of reference and reflexivity is a central component of and a crucial strategy in qualitative research (Berger, 2015). In order to reflect on my influence, I have explored the relevant parts of my

background and biography as a frame of reference for this research in Chapter 1, Section 1.1 (Cohen et al., 2018).

Criticisms of social constructionism are centred on arguments of intellectual weakness because of its relativistic stance; if reality is socially constructed we save ourselves the trouble of having to search for a definitive truth as all truths are equally valid. However, the approach is justified here where I am regarding entrepreneurship and education as socially constructed phenomena and through the three research methods used have allowed participants to construct their own understandings.

I have adopted a qualitative approach to data collection in this research.

> [Qualitative research is] a form of social inquiry that tends to adopt a flexible and data-driven research design, to use relatively unstructured data, to emphasize the essential role of subjectivity in the research process, to study a number of naturally occurring cases in detail, and to use verbals rather than statistical forms of approach.
>
> (Hammersley, 2013, p. 12)

There are strong reasons for doing qualitative research here as it has enabled me to explore a complex and multi-layered phenomenon (Strauss & Corbin, 1998), such as ways of thinking and practising. I have used an abductive approach to inquiry, emphasising theory development rather than theory generation, thus differentiating it from grounded theory (Corbin & Strauss, 1990).

In taking a qualitative approach, notions such as reliability and validity are no longer relevant as measures of research quality. Instead, I have sought to achieve findings that are credible, transferable, dependable and authentic (Seale, 1999). I have followed the recommendations of Miles and Huberman (1994) and have suggested 'propositions' to indicate that this research is concerned with the development of a conceptual framework (see Chapters 6, 7 and 8). The research methods employed have been developed to resonate with the relevant research communities and a wide target audience (Cohen et al., 2018).

Any research paradigm, as a set of basic beliefs, represents a human construction that has been devised as the most informed and sophisticated view the researcher is capable of and must rely on persuasiveness and utility rather than proof (Guba & Lincoln, 1994). In social constructionism the researcher is interactively linked with the object of investigation so that findings are created as the investigation proceeds. I acknowledge the central role my values have played in generating the research findings, I have endeavoured to take an ethical approach to ensure that my participants' values are integral to the research and I have not privileged my own perspective, but have sought to give both equal consideration. The issues under consideration here have been examined from the perspectives of three stakeholder groups, which render the research findings more credible and trustworthy.

I will now move on to present the threshold concept framework and its role and value in this research.

4.3. The threshold concept framework

4.3.1. Introduction

The threshold concept framework posits that in any academic discipline there are concepts that have a particularly transformative effect on student learning. Termed threshold concepts, they represent a transformed way of understanding something, without which the learner cannot progress (Meyer & Land, 2005). In transforming the learner, threshold concepts change the learner's perceptions, subjectivity and world-view. There is a repositioning of the self (Meyer & Land, 2005) where the learner's understanding of the nature of their own existence and their conception of reality adjusts, an ontological as well as a conceptual shift. This can often be uncomfortable and is therefore sometimes resisted. Mastery of a threshold concept simultaneously changes an individual's idea of what they know and who they are (Cousin, 2009b). Such conceptual understanding is likely to be irreversible and is unlikely to be forgotten or unlearned. Threshold concepts are integrative in that they expose how other things can be related to each other.

> The defining features of a threshold concept indicate that it must relate to a specific and important aspect of a syllabus, and that it must be capable of opening up the subject in important ways through integrating other, lower level concepts.
>
> (Entwistle, 2008, p. 32)

Defining the threshold concepts in any subject discipline is likely to inform the development of the curriculum in order that it might be optimised. Threshold concepts are concepts that bind a subject together, being fundamental to ways of thinking and practising in that discipline (Meyer & Land, 2003, 2005). The concepts that are critical to thinking as an entrepreneur, and consequently to entrepreneurship, may be termed entrepreneurship threshold concepts (Meyer & Land, 2003, 2005). It is important to note that only entrepreneurs can think 'as' entrepreneurs, students can only learn to think 'like' entrepreneurs. Using the threshold concept framework (Meyer & Land, 2003) to define entrepreneurship presents an important opportunity both in terms of the credibility of the subject area, and the design and delivery of enterprise and entrepreneurship curricula in higher education.

4.3.2. The promise of threshold concepts in entrepreneurship

Identifying threshold concepts in entrepreneurship could be useful for entrepreneurship educators in a number of respects. Three particularly pertinent ways are set out in more detail in the following sections; to avoid an overstuffed curriculum; to unblock student learning and facilitate curriculum development; and to demarcate the discipline.

4.3.2.1. To avoid an over-stuffed curriculum

Identifying some concepts as "threshold" offers a way of differentiating between core learning goals which enable the learner to see things in a different way and other learning goals which, though important, do not have the same significantly enabling and transformative effect. This allows the educator to focus on the conceptual understandings that enable a fuller understanding of the

subject, and foster integration of knowledge, avoiding an over-crowded curriculum. The burgeoning interest in entrepreneurship education, as perhaps typical of any subject seeking to establish itself as an academic discipline, has led to a proliferation of learning outcomes and competencies that risk overwhelming an entrepreneurship educator wishing to address the subject comprehensively. That said, there are methodological challenges in distinguishing between "key", "core" and "threshold" concepts (Barradell, 2013).

4.3.2.2. To unblock student learning and facilitate curriculum development

Failure to understand, view or interpret a threshold concept will stop the progression of learning. The threshold concept framework addresses the kind of complicated learner transitions learners undergo (Cousin, 2008a). Recognising threshold concepts and the different ways individual learners approach them will enable educators to make the curriculum more effective and efficient and to unlock learner progress.

> The significance of the framework provided by threshold concepts lies, we feel, in its explanatory potential to locate troublesome aspects of disciplinary knowledge within transitions across conceptual thresholds, and hence to assist teachers in identifying appropriate ways of modifying or redesigning curricula to enable their students to negotiate such transitions more successfully.
>
> (Land, Cousin, Meyer, & Davies, 2006a, p. 205)

4.3.2.3. To demarcate the discipline

Osmond, Turner, and Land (2008, p. 244) used the threshold concept framework as lens to identify the "underlying agenda of things students need to have" in the context of a transport and product design course. By clarifying the "knowledge practices" (p. 244) students needed to acquire, Osmond et al. (2008) sought to identify pedagogic strategies to enhance the student learning experience. This potential benefit is of particular interest in entrepreneurship, which has not

evolved from an academic context, but is a product of the market as discussed in Chapter 2.

4.3.3. Ways to identify threshold concepts

The threshold concept framework offers a way of seeing and understanding disciplinary ways of thinking (Donald, 2002) and 'ways of thinking and practising' (McCune & Hounsell, 2005) in the discipline. An understanding of the threshold concepts of a discipline supports a person in becoming part of the 'disciplinary tribe' (Becher & Trowler, 2001) and helps reveal a discipline's underlying episteme (Timmermans & Meyer, 2017).

From a social constructionist perspective there is no such thing as an 'incorrect' identification of a threshold concept. However, a lack of consensus concerning the threshold concepts in any specific area of focus is likely to mean that the full benefit of streamlining learning goals by identifying the 'jewels in the curriculum' (Land et al., 2006a) will not be fully realised and the distinctiveness of the disciplinary approach will be jeopardised. Much of the threshold concept literature concerns the nature of a threshold concept, how threshold concepts might be taught and how learners come to understand threshold concepts. However, the work of identifying threshold concepts is helpful in making ways of thinking and practising within the discipline explicit, and therefore making the discipline more amenable to being learnt and taught (Timmermans & Meyer, 2017).

There appears to be more interest in the process of identifying threshold concepts and the development of the curriculum once they have been identified, than in determining the definitive identity of the threshold concepts in any particular context. Using the threshold concept framework to deconstruct a subject in order to optimise ways to teach and learn it, is a valuable act in its own right (Barradell & Kennedy-Jones, 2015). The process of identification and the resulting curricular redevelopment usually delivers significant value. The disciplinary threshold concepts mentioned in the literature are commonly used as devices to illustrate other aspects of theory such as affective learner positions (Cousin, 2006). In fact there are some risks inherent in attempting to produce a list of definitive threshold concepts in any discipline as such efforts imply a

monolithic perspective of the discipline reflecting power and privilege, and are likely to draw accusations of attempting to control it (Wilkinson, 2014). Reflecting this perspective, I have sought to identify candidate threshold concepts in entrepreneurship. The use of the term "candidate threshold concept" started to appear in the literature from 2008 (Osmond et al., 2008; Shanahan, Foster, & Meyer, 2008; Zander et al., 2008) and has been chosen here to communicate a sense of fluidity and openness to the potential evolution of these concepts in entrepreneurship; they are being offered as starting points for discussion, selection and further consideration, not as absolute fixed definitions.

P. Davies (2006) suggests threshold concepts might be identified using educator interviews, which should encourage the description of critical incidents thereby revealing threshold concepts where the authors exhibit self-awareness of themselves as part of a community, showing they have an understanding of how that community thinks and practises. Various data sources have been used in the identification of threshold concepts, including exam responses and classroom behaviour observation, as well as comparison of different groups of scholars, or groups of students, or experts and novices, of their respective analysis of the same set of phenomena or problems.

There are a number of methodological challenges in researching threshold concepts. Interviewing educators may only enable the identification of the fundamental building blocks of the subject, or things that they already include in their teaching. Educators may confuse what is fundamental in their discipline with what is fundamental to learning (Carstensen & Bernhard, 2008), they may take threshold concepts for granted and never mention them. Educators may perceive a whole conglomerate of disparate concepts to be troublesome instead of seeing a single integrated (or complex) concept as the threshold concept. Whichever method of research is chosen, P. Davies (2006) emphasises that, "An attempt to identify a threshold concept should employ a mode of enquiry that is distinctive and necessary given the characteristics of the threshold concepts" (p.79).

Cousin (2009a) describes threshold concept research as a form of research requiring partnership between subject specialists, educational

researchers and learners, where curriculum inquiry and curriculum design feed into each other. Typically threshold concept research is designed to explore the following questions:

1. What do academics consider to be fundamental to a grasp of their subject?
2. What do students find difficult to grasp?
3. What curriculum design interventions can support mastery of these difficulties?

Barradell (2013) highlights some of the limitations of previous research to identify threshold concepts. These include a failure to involve the wider professional community adequately and a relative lack of agreement amongst research participants about the threshold concepts within any particular academic subject. To address the first of these limitations, I have included a group of external stakeholders (entrepreneurs) in this research as subject specialists in entrepreneurship. To address the second limitation, Barradell (2013) suggests the use of consensus methodologies to facilitate agreement such as Nominal Group Technique and the Delphi survey technique. "Consensus methodology could be considered a very structured way of performing transactional curriculum inquiry" (p. 274). Consequently, I have used a Delphi survey to achieve consensus of external stakeholder perspective. Barradell (2013) goes on to point out that the conversations in which threshold concepts are discussed are recognised as being integral to the process of their identification. I have conducted group interviews with educators where possible to allow for such conversations and concept mapping workshops have also been designed to facilitate conversations between the students in groups according to their year of study. In this way, I have not treated threshold concepts as external realities that need to be "accessed" but as a form of understanding that is socially constructed in the process of staged stakeholder curriculum inquiry, rather than joint negotiation.

4.3.4. The defining characteristics of threshold concepts

Meyer and Land (2006) point out that threshold concepts exist in certain disciplines, giving space for the possibility that perhaps they are not present in all academic disciplines, or at least not present in the same way. The nature of knowledge in scientific disciplines is different from that of the humanities for example. Academic disciplines differ in the extent to which they are abstract or concrete, applied or theoretical, conceptual or practice based (Biglan, 1973a, 1973b).

C. Taylor (2006) suggests that the nature of a learning threshold may also be congruent with the nature of the subject. She argues that threshold concepts in biology are likely to be processual (concerned with processes) because biology is concerned with all the forms of life which is dynamic and process based. She offers the construction of a hypothesis as a threshold concept in biology, and explores the progression of students' structured thinking associated with this concept. Threshold concepts in entrepreneurship may be generative (associated with creating something of value from nothing) because entrepreneurship is concerned with value creation.

Similar to the experiences of Cousin (2006b) when discussing the concept of "otherness" in cultural studies, the academic subject of entrepreneurship does not lend itself easily to the threshold concept framework. To adapt Cousin's comments on an area of cultural studies, entrepreneurship may be another disciplinary area which resists the construction of a taxonomy of stable threshold concepts; "(its) sweep is too broad, too internally disputed and theoretically unfriendly to anything that looks like essentialist classification" (Cousin, 2006b, p. 134).

Osmond et al. (2008) in the context of a course on transport and product design, also found difficulties in expressing measurable outcomes of learning within the discipline. The "comparative lesser degree of consensus on what constitutes the working body of knowledge" (p.244) rendering the possible identification of threshold concepts more challenging. When attempting to

identify the threshold concepts in the practice of accounting; Lucas and Mladenovic (2006) found it challenging to achieve consensus amongst educators and instead noted that educators were more inclined to identify "central generic attributes" (p.150) which should be developed by students. They concluded that there might be an overarching threshold concept in the practice of accounting, which was its function as an organising framework or structure.

A 'concept' in this context may not be limited to knowledge content but "may represent how people "think" in a particular discipline, or how they perceive, apprehend, or experience particular phenomena within that discipline" (Meyer & Land, 2003, p. 412). Barradell (2013) notes, "threshold concepts may never be a 'one size fits all'; disciplinary differences regarding ways of thinking and practising professionally, academically and pedagogically make sameness impossible and probably unnecessary" (p.267).

Throughout this research, I have not set out to objectively test possible entrepreneurship threshold concepts against such a set of defining features, preferring to take an interpretivist and social constructionist approach. I have used the data generated by my research participants to identify candidate entrepreneurship threshold concepts, having asked them to describe distinctively entrepreneurial ways of thinking and practising. In this research, candidate entrepreneurship threshold concepts are explained as distinctive and bounded ways of thinking and practising, which are potentially troublesome to a greater or lesser degree, whereby the individual is irreversibly transformed in a way that enables the integration of other concepts relevant to an understanding of entrepreneurship.

According to the scholarly community of those conducting research using the threshold concept framework (Flanagan, 2019) a threshold concept is likely to be characterised by its transformative nature and some or all of the other following features:

- Troublesome: Threshold concepts are likely to be troublesome for the student.

- Irreversible: Given their transformative potential, threshold concepts are also likely to be irreversible, i.e. they are difficult to unlearn.
- Integrative: Threshold concepts, once learned, are likely to bring together different aspects of the subject that previously did not appear, to the student, to be related.
- Bounded: A threshold concept will probably delineate a particular conceptual space, serving a specific and limited purpose
- Discursive: The crossing of a threshold will incorporate an enhanced and extended use of language
- Reconstitutive: Understanding a threshold concept may entail a shift in learner subjectivity, which is implied through the transformative and discursive aspects already noted. Such reconstitution is, perhaps, more likely to be recognised initially by others, and also to take place over time
- Necessitates a state of liminality in the learner: The crossing of the threshold has been compared to a 'rite of passage' in which a transitional or liminal space has to be traversed

Authors differ in their opinions of how many of the likely characteristics of a threshold concept a concept needs to have in order to be regarded as a threshold concept. Shanahan et al. (2008) note that, "It is unlikely that any single concept will possess all characteristics in equal measure – or that a single concept will have the same effect for every individual learner" (p. 155). Timmermans and Meyer (2017) state that it is unnecessary for all features to be evident in the learning experience, and Baillie, Bowden, and Meyer (2013) propose that the superordinate and only non-negotiable feature of a threshold concept is its transformative nature.

Shinners-Kennedy (2008) highlight the risks of confusing big, significant or important concepts with threshold concepts, as one characteristic does not necessarily imply the other. There is general confusion in the literature between "key" and "threshold" concepts. Most threshold concepts proposed to date have been distinguished by their everyday-ness, for example "state" in computer science. This very familiarity makes them hard to distinguish. Shinners-Kennedy (2008)

explains that, “everyday activities are likely to prove troublesome as they are so automated and compressed, it is difficult to extract the component concepts from them” (p.128). P. Davies (2006) notes that a threshold concept is, “taken for granted by practitioners in a subject and is therefore rarely made explicit” (p.74). Similarly Osmond et al. (2008) noted that the notion of ‘Spatial Awareness’ remained for the most part relatively untheorized and tacit in groups of educators and students in the context of a course on Transport and Product Design, “Spatial Awareness is not something that designers acknowledge or talk about because it is the natural world they inhabit” (Osmond et al., 2008, p. 252). There is a shared way of perceiving the ideology of a subject, in other words “the invisible structures and beliefs by which we [members of a community] operate and which appear as natural, unchallengeable ways of doing things” (S. Mitchell, 2001, p. 2).

4.3.5. Transformativeness and troublesomeness

Some researchers have focused on the transformative and troublesome characteristics of threshold concepts (Male & Baillie, 2011), regarding these two characteristics as ‘non-negotiable’. Similarly I have focused on these two defining characteristics to facilitate the identification of candidate threshold concepts in this research, alongside evidence of integrative, bounded and irreversible characteristics. Meyer and Land (2006) assert that knowledge should be troubling in order for it to be transformative, implying that knowledge without transformation is purposeless. Some forms of conceptual knowledge are more transformational than others (Rattray, 2018), and not all conceptual knowledge is transformational in the way a threshold concept is. Threshold concepts necessitate transformations which require significant emotional and cognitive effort. Contrary to the view of O'Donnell (2010) the effort required for these transformations can never be substituted for by improvements in teaching and learning being, as they are internal and unique to each learner, just as there is a limit to the positive effect external conditions can have on the transformation of a caterpillar to a butterfly within a chrysalis. The degree of affective shift required is dictated by how much the learner has to “let go” of their previous world-view. Threshold concepts require significant affective shifts. Pace (2017) in his work in decoding the disciplines notes

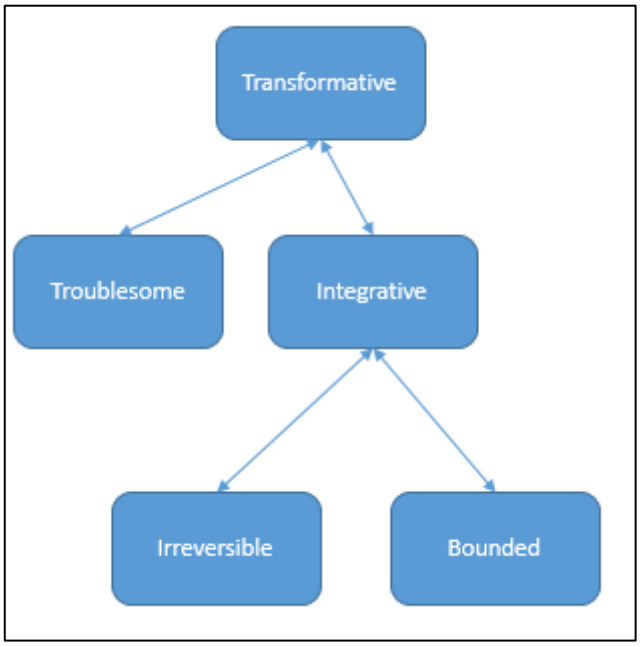
"bottle-necks" for student learning, not all of which are necessarily threshold concepts. In decoding the focus is on what learners do, the mental operations associated with learning, rather than what they are learning. Baillie and Johnson (2008) noted that "students had greater difficulty with learning objectives where their personal values and opinions suddenly became relevant" (p.139) implying a greater affective transformation was required.

P. Davies and Mangan (2007) suggest that the transformative, irreversible and integrative characteristics of threshold concepts are, at any rate, interwoven.

> A concept that integrates prior understanding is necessarily transformative, because it changes a learner's perception of their existing understanding. If a concept integrates a spectrum of prior understanding, it is more likely to be irreversible, because it holds together a learner's thinking about many different phenomena. To abandon such a threshold concept would be massively disruptive to an individual's whole way of thinking.
>
> (P. Davies & Mangan, 2007, p. 712)

P. Davies (2006, p. 74) argues that if a concept is integrative, it is necessarily transformative and therefore irreversible. If it is integrative, then it also is bounded and troublesome. P. Davies and Mangan (2007) derive the troublesome and bounded nature of threshold concepts from their transformative, irreversible and integrative characteristics arguing that a threshold concept is bounded because it integrates a particular set of concepts, beliefs and theories and is troublesome because it requires transformation. It follows then that a threshold concept cannot be transformative without also being troublesome, integrative, irreversible, and bounded to varying degrees. See Figure 4.2 for a depiction of the suggested relationship between the likely characteristics of threshold concepts.

Figure 4-2 The relationship of threshold concept characteristics, drawing on P. Davies and Mangan (2007)



Creating a supportive learning environment involves a deep appreciation of the dialectic between knowing and being. "Mastery simultaneously changes what we know and who we are. Learning is a form of identity work" (Cousin, 2008a, p. 264). If it is accepted that learning is transformational, it does not necessarily mean that every concept learnt is a threshold concept. Meyer and Land (2006, p. xi) note that, "certain conceptual understandings can have a powerfully transformative effect," implying that the transformational effect of understanding some concepts is greater than others. It is the significance of transformation that is important; conceptual understandings that have a powerfully transformative effect are worth differentiating and drawing attention to as these are likely to be the threshold concepts. Transformational effects will also be associated with varying degrees of troublesomeness as evidenced in affect, and caused by shifts in learner identity. It also follows that transformation is, by its very nature, troublesome, although not all learners will be similarly troubled. Some students may be able to navigate and experience significant transformation without experiencing any of the emotional trauma which often indicates troublesome knowledge. It is important to note that when developing the notion of the threshold concept framework, Meyer and Land drew extensively on Perkins' notion

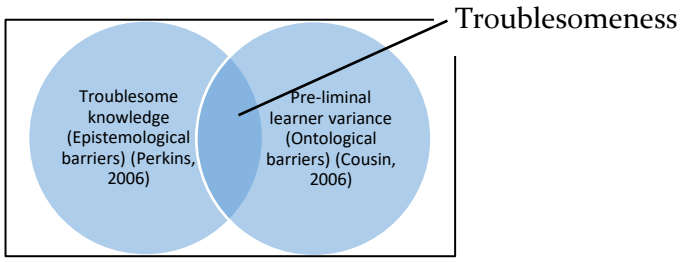
of troublesome knowledge (Perkins, 1999), deriving many of the characteristics of threshold concepts from those of troublesome knowledge.

Knowledge might be troublesome for a number of different reasons (Perkins, 1999). When it is ritualised, it lacks meaningfulness to the learner and is typically noticeable in the routine ways in which students answer questions. Students may have learnt a form of words but do not have a deep understanding of their meaning and cannot explain or expand on their responses when pressed. Inert knowledge has no perceived relevant application, so is only surfaced by the student when called on explicitly, usually in the context of an assessment. This often points to a failure to make a connection between theory and practice and connect what they have experienced "in real life" to what has been learnt "in the classroom". Knowledge can be conceptually difficult, complex and hard for students to grasp. Alien or counter-intuitive knowledge may not be recognised because it is different from what the student assumes to be true, perhaps because it emanates from another culture or discourse. Incoherent knowledge is troublesome as there is no organising principle connecting aspects of knowledge which, when considered discretely, are unproblematic. Tacit knowledge is troublesome because it represents unexamined understandings shared within a specific community of practice, hidden even to members of the community (the unknown knowns). Sibbett and Thompson (2008) identify a further type of troublesome knowledge in the context of cancer care and art therapy. Termed nettlesome knowledge they describe "elements of knowledge that are deemed taboo in that they are defended against, repressed or ignored because if they were grasped they might 'sting' and thus evoke a feared intense emotional and embodied response" (p. 229).

Some knowledge may be troublesome, but the affective position of the learner may also present barriers to their understanding and the crossing of a learning threshold. An ideal affective learner may be characterised as a self-reflective learner who makes continual adjustments to themselves in the light of self-examination. Understanding the relative affective position of a learner can help the educator adopt the most effective pedagogical approach. The basis for a learner to adopt one or more of these positions may be explained ontologically.

Ontological obstacles to learning are manifest as an active refusal of learning or an anxiety about its transformative effects. The degree of troublesomeness would perhaps indicate the degree of transformation required in the particular learner to achieve conceptual understanding. The degree of troublesomenesss experienced by each learner would therefore be a combination of the degree of conceptual difficulty and variation in the learner (Figure 4-3).

Figure 4-3 Barriers to learning



Epistemological and ontological learner variation could explain why a threshold concept is not always troublesome to every learner, or is not troublesome to the same degree or in the same way. A threshold concept can of itself inherently represent troublesome knowledge, although not all learners will be similarly troubled. Asking educators to identify concepts that students find troublesome, recognising that not all students may be similarly troubled, is therefore a reasonable approach to the identification of learning thresholds. If students' responses can be located in a framework of troublesome knowledge for interpretive purposes then it could give an insight into the degrees of variation in the learner and allow the teacher to address the students' difficulties better (Shanahan & Meyer, 2006). If a particular point in the curriculum usually presents difficulties for some learners and acts effectively as a barrier to their learning progress, then this may indicate the presence of a threshold concept. This also introduces the possibility that the issue could lie with the learner or the particular point in the curriculum, or even with both as any educator will confirm not all learners get stuck in the same way.

The threshold concept framework allows the process of theorising a subject to be modelled for students, so they can start to think like experts (Kinchin

et al., 2011). Experts interpret problems in the context of their wider understanding and this is often tacit and therefore can be hidden from the students

4.3.6. Liminality and pre-liminal variation

Threshold conceptual understanding, due to the transformation required of the learner, is rarely instant. Meyer and Land (2006) consider why certain learners get "stuck" but not all. There is acknowledged variation in the learner which is referred to as "pre-liminal variation" and this affects if, how and when a particular learner will understand a threshold concept. The term liminality derives from the Latin word "limen", meaning "threshold" or "border". Thresholds are spaces in between where subjects are in neither one place nor another, but are transforming and transitioning. Just as the threshold of a door signifies the dividing line between one room and other, or between inside and outside, so the liminal space signifies the space between not understanding a threshold concept and understanding it. The liminal space is where new ways of thinking and practising are triggered and come to replace old ways (Meyer & Land, 2005).

As the learner starts to separate themselves from their previous "world view", but before they have fully adopted the new "world view", they can be described as being in a "liminal" state. In this troublesome, liminal place within the threshold, the learner is between worldviews, fully holding neither one, and sometimes oscillating between the old and the new as both flicker in and out of focus. Even before entering this liminal space, as a threshold concept comes into view for the learner, pre-liminal variation can become evident, depending on the degree of conceptual difficulty (actual and perceived) and the degree of ontological and epistemological transformation required. The liminal state is often emotionally charged allowing educators to notice and relate to situations redolent of the liminal states in their students, also serving as a potentially useful indicator of the proximity of a threshold concept (Felten, 2016). He calls for closer attention to be paid to the affective student experiences of learning, and to the classroom and the curriculum as "troublesome sites for liminality" (Felten, 2016, p. 7). It has been suggested that a greater understanding of self and one's story is the main catalyst for moving out of the liminal space (Savin-Baden, 2008).

4.3.7. Affective learner positions

Liminality might be experienced as both a cognitive and affective state that is more easily navigated by some students than others (Rattray, 2016). Cousin (2006b) suggests four "heuristic devices" or ideal/typical affective learner positions affecting pre-liminal variation in learners approaching a threshold concept:

- The spectator/voyeur
    - Student bypass interrogation of their own position or of themselves
- The defended learner
    - Students who are resistant or hostile even to the topic of study
- The victim-identified learner
    - Drawn to the glamour of oppression
- The self-reflective learner
    - Continual adjustment in the light of self-examination

Understanding the relative affective position of a learner can help the educator adopt the most effective pedagogical approach for them. In crossing learning thresholds, students necessarily have to abandon previously familiar ways of thinking and practising and this often elicits an emotional response (Shinners-Kennedy, 2016). The more significant the personal transformation that is indicated, the stronger the individual emotional response. Crossing the liminal space is often associated with fear and anxiety (Meyer & Land, 2005) yet this is often where the opportunity for learning is maximised (Land, Meyer, & Flanagan, 2016b). In order to learn, an individual must invest something of themselves, "Without a certain amount of risk and anxiety, there is a limit to how much learning occurs. One must have something at stake. No emotional investment, no intellectual or formation yield" (Shulman, 2005, p. 18).

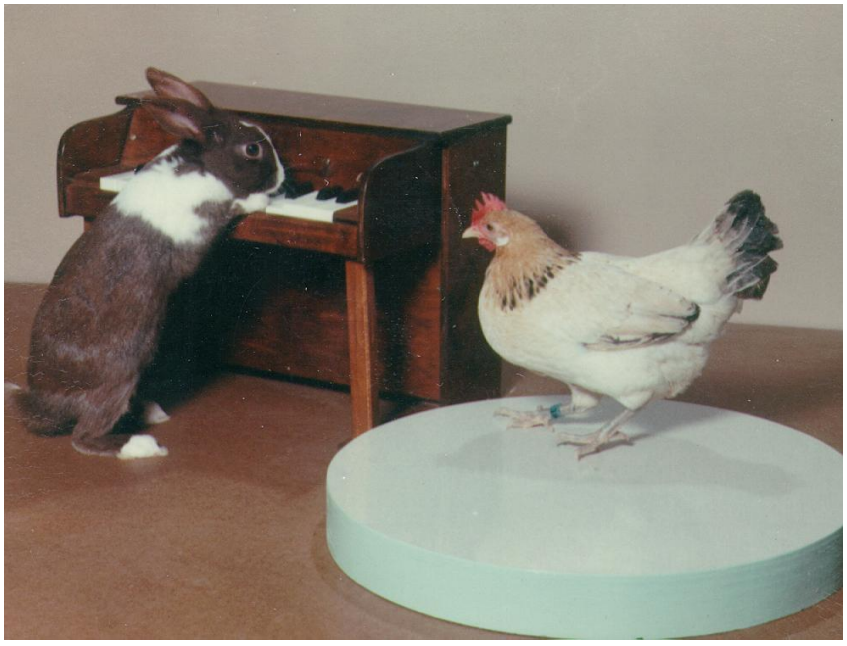
Transformative effects are associated with troublesomeness evidenced in affect and caused by shifts in learner identity. It is the degree of transformation that is important; conceptual understandings that have a powerfully transformative effect are worth differentiating and drawing attention to as they are more likely to be threshold concepts. If learning necessitates transformation, and transformation can be troublesome and uncomfortable, then students and

educators must accept and even value negative emotional responses to learning. This is not contradictory to the idea of a "safe learning environment", it is possible for the educator to create a feeling of safety where the learner is able to experience and pass through levels of discomfort as required by their personal transformations. In this context, understanding a threshold concept might also be experienced as exciting and exhilarating for example, feelings not normally associated with comfort.

4.3.8. Mimicry in the liminal space

Learners can mimic understanding in the liminal space, either as an inadvertent and innocent step on the way to a full understanding of the concept, or as a deliberate attempt to resist, avoid or by-pass the necessary transformation required to achieve full conceptual understanding. This has relevance to deep and surface approaches to learning (Entwistle, 2000). Mimicry can be associated with the learner's difficulty in understanding the 'underlying' or 'epistemic" game. The idea being not only to know how to play the game but to play the game knowingly (Hannon, 2006). In Figure 4-4 it is reasonable to suggest that the rabbit does not understand the concept of playing a piano, neither does the chicken understand the concept of dancing.

Figure 4-4 Dancing chicken accompanied by a rabbit on piano (Bailey, n.d.)

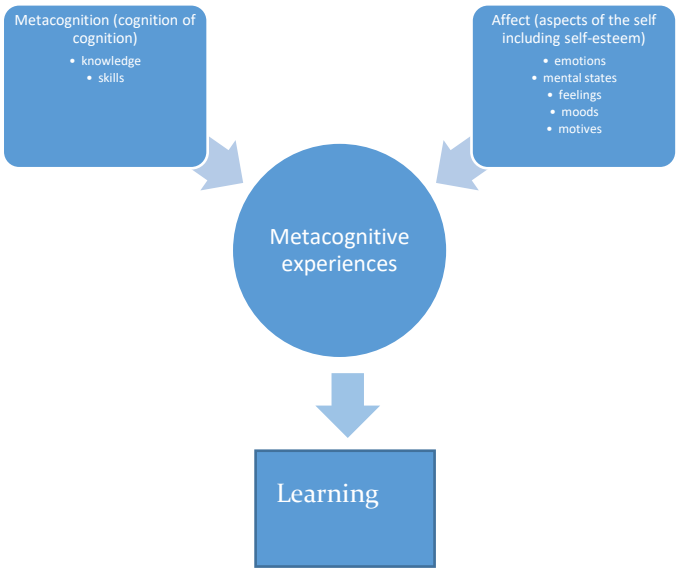


Mimicry can be a first stage of understanding, and an indication of liminality. Or it can be a form of ritualised learning that does not lead to mastery (Cousin, 2006b). Either way, mimicry may be useful evidence of learning threshold proximity and it is reasonable to explore educators' experiences of student mimicry. Meyer and Land (2006) identify two forms of mimicry in the liminal state; compensatory mimicry to deceive oneself that something is understood when it is not; and conscious mimicry when the learner realises that what is required is beyond their grasp. Playing the game knowingly requires a level of metacognition. Metacognitive knowledge, skills and experiences (feelings, judgement and estimates) are required of the learner in order to progress.

4.3.9. Entrepreneurship is not as easy as it might at first appear

Metacognition and affect constitute aspects of pre-liminal variation. Efklides (2006, p. 49) explores the relationship between metacognition, affect and conceptual difficulty (see Figure 4-5).

Figure 4-5 Metacognition, affect and learning



Feelings such as "knowing something", familiarity, judgement of learning, difficulty, confidence, solution-correctness and satisfaction are the result of metacognition and affect. People often believe it is easier to start a business than it is, and there is widespread support for this assumption in the media with

examples of successful entrepreneurs who almost boast of their low levels of academic attainment (see "12 of the most successful entrepreneurs who dropped out of college"[5], "9 Billionaires Who Didn't Graduate High School"[6] for some typical examples). In contrast, the difficulty of more conceptual disciplines, with high metacognitive demand such as mathematics are rarely underestimated. The relatively low task processing demands in entrepreneurship may be contrasted with the more significant ontological and epistemological demands required of the learner. Entrepreneurship may be regarded as a "wolf in sheep's clothing" in that learners often experience a misleading metacognitive experience resulting from its relatively low cognitive load but high affective demand. In her study of student reflections on threshold concepts in information literacy, Scott (2017) observed that students did not perceive most of them to be troublesome and suggests this might be due to a superficial understanding. Often, initial over-confidence disappears as learners become disheartened when their first attempts fail and the true difficulty of the practice become apparent. Confidence is linked with persistence in learning and must be quickly restored by the educator in the learner if they are to progress. See section 4.3.6 for further discussion of pre-liminal variation in learners.

Efklides' (2006) proposals help explain why some students with less epistemic knowledge may underestimate the task and its difficulty. This results in overconfidence and lack of further effort, despite their proposed actions being unlikely to succeed.

> For a person with no epistemic knowledge, i.e. criteria for judging the properties of knowledge and of processing outcome, the only cue that is available for building his/her confidence is feeling of difficulty. As a consequence, students who have limited knowledge base and reach an answer quickly and with no experience of difficulty, feel very confident in their

[5]https://mashable.com/2016/09/22/12-entrepreneurs-who-dropped-out-of-college/?europe=true#xXgcMJTYJaqo

[6] https://www.entrepreneur.com/slideshow/308246

> response although it is wrong – this leads to overconfidence and lack of further effort.
>
> (Efklides, 2006, p. 62)

This provides a rationale for introducing threshold concepts only when students have acquired sufficient subject knowledge such that it is feasible for them to attempt to develop and practise an integrated understanding.

> Before a student can grasp a threshold object, they must first acquire pieces of declarative knowledge and understanding that can later be integrated. The power and value of a threshold concept can only be recognised by a student if they can see how it can act in an integrative way.
>
> (P. Davies, 2006, pp. 75-76).

If students of entrepreneurship have misconceptions regarding entrepreneurship, these must be accounted for and/or addressed before the student voice can be integrated into any research into threshold concepts. It also is more challenging for educators to use troublesomeness as an indicator of the proximity of a threshold concept in entrepreneurship, as the students may display misplaced confidence and comfort resulting from their misconceptions.

4.3.10. Complex concepts, webs and networks

"Complex concepts" are concepts which make up an holistic system of single interrelated concepts (Carstensen & Bernhard, 2008, p. 143). They give the example of the confusion experienced by students studying electrical circuits and the highly interrelated concepts of current, voltage, power and energy, arguing that perhaps they cannot be learned one by one but have to form an integrated whole to make sense of each individually. Knowledge is built by both learning the pieces and learning the whole. This integrated whole acts like a "key", a "key concept" to open up learning spaces. Carstensen and Bernhard (2008) note that the more connections made between the interrelated concepts, the more complete the knowledge becomes. Osmond et al. (2008) present the notion of 'Spatial Awareness' as a threshold function in a Transport and Product Design course,

subsequently suggesting a number of threshold concepts within it. Shanahan et al. (2008) suggest that threshold concepts might be better considered in terms of conceptual categories representing a web of concepts, rather than isolated conceptual elements. Kinchin et al. (2011) cite a considerable body of knowledge that shows "student learning does not progress gradually or evenly along set paths or trajectories" (p.210).

P. Davies and Mangan (2007) have proposed transformative learning could be better described as the acquisition of a web of threshold concepts organised into three categories and argue that all must be acquired for a full mastery of the discipline:

- Personal conceptual change; where an individual's common sense understanding is supplanted by a more powerful discipline based mode of thinking and specialist language.
- Discipline based conceptual change; the theoretical aspect of the discipline which integrates and reworks other disciplinary ideas.
- Procedural conceptual change; the ways of practising a subject.

Some authors identify some sort of linear progression of students through threshold concepts, and others emphasise a more organic, non-linear network or web of progression in the students' understanding. Cove, McAdam, and McGonigal (2008) suggest a linear chronological progression of students through a list of potential threshold concepts, differentiating some "that can only emerge over time" (p.207).

4.3.11. Criticism of the threshold concept framework

Wilkinson (2014) eloquently sums up the main criticisms of the threshold concept framework (O'Donnell, 2010; Rowbottom, 2007) when he calls it an "intentionally vague, conceptually muddled, agent-relative and reductionist theory" (para. 1). Criticism of the threshold concept framework falls into five themes; mixed knowledge metaphors with the framework; self-contradictory characteristics of the concepts themselves; political considerations regarding the establishment of knowledge; the nature of a concept; and arguments with the perceived epistemic stance.

The threshold concept framework however, does not purport to be either a theory, or a hypothesis. Rattray (2018) suggests that the notion of threshold concepts is better referred to as a "framework" rather than a "theory". A framework does not imply a particular approach to evaluation of ideas. To call the notion of threshold concepts "a theory" implies a predictive element that was not part of the original work or its intent. Land, Meyer, and Baillie (2010, p. ix) argue that threshold concepts offer a richer way to understand a subject which is a complex web of concepts, some threshold, shrouded in distinctive epistemic modes of reasoning and explanation and refer to the idea of threshold concepts as "an approach" (Land et al., 2010).

Threshold concepts do not stand up to scrutiny when regarded as theoretical constructs or hypotheses. "Clashes with reality" (O'Donnell, 2010, p. 7) result when a positivist perspective is adopted. When the idea of threshold concepts is represented more appropriately as a framework or approach, the criticism can be broadly seen to result from the adoption of opposing epistemological positions.

4.3.11.1. Can a concept be both acquired and socially constructed?

One criticism of the threshold concept framework is that it appears to draw on two different knowledge metaphors (Sfard, 1998); namely knowledge as acquisition and knowledge as participation. It is unclear whether the threshold concept framework is based on behaviourist or socio-cultural, situated theory. Whilst most research into threshold concepts appear to position knowledge as participation (McCormick, 2008), Ashwin (2008), for example, refers to "threshold concept acquisition" (p. 173).

The implication of the participation metaphor is that the classroom is a community where students look to themselves and each other for the answers, rendering the teacher redundant. However as Sfard (1998) points out too great a preference for one particular metaphor can lead to theoretical distortions and undesirable practices.

Savin-Baden (2008) argues that threshold concepts cannot be separated from the identity of the learner, and as such cannot be embedded in the curriculum structure as the ontological shifts required in the learner renders threshold concepts ungeneralizable. Focusing on student "stuck-ness" she argues that threshold concepts are just one of several possible "catalysts" of disjunction which could also include new learning experiences, threats to identity, discipline based pedagogy, troublesome language and past experiences of learning.

According to Cousin (2008a, p. 263) however, "threshold concepts are always epistemologically informed, which is why they are theorised as provisional, contestable and culturally situated [...] We are characterising what some people hold to be threshold concepts in given situations at given moments," putting a greater emphasis on their temporal and transitory nature, and allowing for the necessary ontological shifts in the learner.

4.3.11.2. Can a concept be both bounded and integrative across multiple disciplines?

McCormick (2008) questions the bounded characteristic that is a defining feature of a threshold concept, implying that a concept might be common to a number of subject disciplines and therefore un-bounded within the discipline. He suggests that disciplines such as engineering and business rely on a number of "service" subjects at degree level. For example; maths and science might be regarded as service subjects for engineers, statistics might be regarded as a service subject for physical and social scientists. According to the threshold concept framework and the knowledge as participation metaphor, each specialist educator is aiming to develop a subject specific identity in learners, causing these various service subject identities to clash or compete. The learner, for example, is being required to become both fully a mathematician and fully an engineer.

This apparent paradox has vexed a number of authors (Scott, 2017). Fister (2014, para.3) challenges the idea that threshold concepts can be both integrative across disciplines and "uniquely tied to a particular discipline". She rejects the idea that the transformative concepts she wants her students to grasp might be specific to her discipline (information literacy), arguing that they transcend disciplinary

knowledge and as such are generic; applicable in many contexts (not just in being a librarian). However, whilst not being exclusive to the practice of information literacy, they may be useful in at least partially explaining "how a librarian thinks". Boundedness is offered as a possible characteristic of a threshold concept which may "serve to constitute the demarcation between disciplinary areas, to define academic territories" (Meyer & Land, 2003, p. 5) and it is acknowledged that in some cases a threshold concept in one academic subject may undermine the very existence of another academic subject, without undermining the validity of either. Their apparent contradictory nature underlines their socially constructed development and the importance of context and the relative differences in the epistemology of the different subject areas. One person may believe a pheasant, killed by car at the side at the side of the road, to represent a delicious and economical option for supper, and another may believe it represents a tragic end to a beautiful bird fallen victim to careless driving, but neither is wrong (or right) and indeed both perspectives may be present in the same person.

Two different ways of being integrative within a subject are also evident. For example, in Meyer and Land (2003), the integrative nature of the concept of opportunity cost within the discipline of economics is questioned. Rather than necessarily enabling students to integrate other concepts essential to an understanding of economics, they argue that threshold concepts might distinguish a community of practice rather than a level of understanding, and characterise how an economist (for example) thinks. In this way, they bind together and integrate a community of practice. Meyer and Land (2003, p. 9) suggest that in academic subjects where the body of knowledge is not very clearly defined; 'ways of thinking and practising' may "constitute a crucial threshold function in leading to transformed understanding."

When the integrative characteristic is applied to mean integrative within the discipline, it underpins the characteristic of boundedness. However, when it is taken to mean integrative across disciplines, bounded and integrative appear to be mutually exclusive. How can a concept both bind together and demarcate a discipline, and apply across multiple disciplines?

The research of Paris (2016, p. 333) proposing that 'sustainability' is a threshold concept for tourism education is underpinned by the assumption that it "is an integrative concept that transcends traditional disciplinary boundaries". In their research exploring threshold concepts in financial accounting, Magdziarz, Myers, and Bellamy (2014) suggest that the concept of 'the duality of transactions' goes beyond the content of the accounting discipline and requires students to adapt knowledge and thinking from different disciplines. Rather than highlighting this as a source of potential conflict due to incompatibility (O'Donnell, 2010), they suggest that the interdisciplinary nature of this threshold concept may be used to inform the context of learning and frame how financial accounting is taught.

4.3.11.3. Should disciplines have a unified body of knowledge?

Embedding threshold concepts in the curricula in an epistemic way risks disregarding the importance of learner identities, thereby creating or affirming a dominant narrative and ritualising disciplinary practice (Savin-Baden, 2008). O'Donnell (2010) argues that the approach presumes "a discipline has an established body of fundamental knowledge that is unlikely to change for some time" (p. 9). Wilkinson (2014, point 4 in subsection 'The problem with thresholds') also suggests that the threshold concept framework requires the reduction of disciplines down to a core set of unchanging beliefs and that threshold concepts "reinforce siloing and adversely impact inter-disciplinarity". According to Wilkinson (2014), by asking "what's distinctive about thinking like an entrepreneur?" the threshold concept framework implies there is one best way of thinking like an entrepreneur, thereby discouraging critical thinking. Whilst there is no one best way of doing anything, thinking like a doctor can be differentiated from thinking like a dancer or like an entrepreneur. The challenge of the threshold concept framework is to distil what *might be* distinctive about these specific ways of thinking and practising, without enforcing standardisation or risking monism or indoctrination, and allowing for interpretation, pluralism, critique and development of the discipline.

This facility of demarcating a discipline is desirable, especially in emerging practices, which have yet to establish a clear sense of academic identity. If one

accepts some disciplinary knowledge is a social construct in the first place, one also must accept "that it is not constant and has not been defined absolutely" (Carstensen & Bernhard, 2008, p. 151). If the boundaries of a threshold concept are regarded as permeable, adaptable and socially constructed, then it is argued here that threshold concepts can serve to demarcate a discipline (albeit with fuzzy and negotiable boundaries) in such a way that the development of a curriculum might be enabled. When the beliefs behind any disciplinary boundary are not fixed or rigid, then the disciplinary practice is just as open to argument, debate and change as it ever was. A fuzzy and negotiable boundary, is a boundary never the less.

4.3.11.4. What's a concept?

Another criticism hangs on how the word 'concept' is defined and the "disturbingly elastic" (O'Donnell, 2010, p. 1) interpretations of its meaning in this context. Rowbottom (2007) suggests three ways of defining a concept; as a mental representation, as an ability, and as a non-mental and non-spatiotemporal abstract entity; finding threshold concepts conform to none of these definitions.

Land (2014, p. 12) urges educators to get away from the "potentially trivialising notion" of a concept as a "content-focused curriculum entity" where disciplines become reduced to being merely inventories of discrete concepts, offering "learning experiences" as an alternative to "concepts". A focus on content leads to ritual knowledge, whereas a more nuanced approach will foster the idea of "thinking in the subject" (Ashwin, 2008, p. 183) and the importance of disciplinary contexts is emphasised.

For some, there is a problem in the implication that knowledge and practice are combined in and partly explained by the threshold concept framework (Rowbottom, 2007; Wilkinson, 2014), arguing that knowing about an activity is very different from being able to do it. The ability to do something (know how) is dependent on more (it is argued) than a cognitive understanding of one or any number of concepts (know that). Similarly, an ability to do something does not mean it is done with any understanding. However, if the term 'threshold concept' is considered to incorporate "ways of thinking and practising" then the term can be used to mean an understanding of a way of being. "Teaching pigeons to dance

requires the pigeons to learn a set of skills. The pigeons do not know what it means to be a dancer" (Hannon, 2006, p. 307). Understanding a threshold concept means understanding what it means to think and practise as a dancer as well as knowing how to dance; understanding what it means to think and practise as an entrepreneur as well as knowing how to do entrepreneurship. The learner makes ontological as well as epistemological shifts, they know how to act, and they act knowingly.

4.3.11.5. Positivist or social constructionist?

The nature of any threshold concept will be affected by the relative epistemological position taken. An approach associated with the use of quantitative data and measurement may be termed "techno-rationalist" or "realist" and may result in lists of threshold concepts being developed and used in a similar way to learning goals, objectives, competency frameworks, standards and outcomes. Knowledge (in the form of threshold concepts) is regarded as "monolithic, static and universal" (Delandshere, 2001, p. 127) and the work of the researcher and educator is to go out there and find it. From this perspective, the threshold concepts are independent of the work of the individuals who developed or who are custodians of them. It is implied that there are bodies of knowledge that are universally true, giving power to the teacher and putting faith in the scientific notions of objectivity and reliability. This position lends itself to transparency and consistency and standardisation, qualities which are highly valued and sought after.

In contrast, a socio-cultural, or interpretive perspective emphasises the co-constructed, interpretive nature of knowledge, which cannot exist independently of the individuals using it. From this perspective, a threshold concept must be seen in context, and must be situated to have meaning. From this perspective, threshold concepts cannot be standardised or quantified. A social constructionist approach is interpretive and regards educators and students as active agents in co-creating threshold concepts through local teaching and learning practices and communities. The work of the researcher and educator is to co-create the threshold concepts, together with the students and practitioners.

Most critique of the framework emanates from positivist perspectives insisted upon in an objective reality. For example, Wilkinson (2014) cannot reconcile the probable and defining nature of threshold concepts, and needs to know whether a putative threshold concept is a threshold concept, "yes or no". He argues that the tentative language surrounding the defining characteristics of a threshold concept render every concept potentially a threshold concept (or not) and as a consequence the suggested defining characteristics serve no purpose in categorising concepts. O'Donnell (2010) applies logical analysis to conclude the identification of any threshold concept by dint of their likely defining characteristics impossible or arbitrary, Rowbottom (2007, p. 263) claims to show threshold concepts are unidentifiable "even in principle". If we cannot objectively define the characteristics of a threshold concept, then we cannot claim they are knowable or even exist at all.

On the other hand, if, by understanding a concept, an individual is transformed and sees things in a new way, it can be argued that that concept is a candidate threshold concept for them in that context at that time. Threshold concepts have 'agent-relative characteristics" (O'Donnell, 2010, p. 4). If a concept is similarly transformational for others in their own contexts and timeframes, then it might be fair to start calling it a threshold concept. Wilkinson (2014, point 3 in subsection 'The problem with thresholds') argues that the threshold concept framework has "a way of reducing all of our students to a single idealised student who learns in a particular way." A socially constructed perspective does not require concepts to be categorised absolutely in all contexts and all times for all people as either threshold or not. If they are likely to be for most, in the here and now, that is enough. Ironically, O'Donnell (2010, p. 7) distinguishes these two perspectives very clearly, "We now have a situation where both the existence and the identification depend on a complicated set of relationships between three groups – experts, teachers and learners." A summary of these two perspectives is shown in Table 4-2.

Table 4-2 Two knowledge metaphors contrasted

Knowledge metaphor	Acquisition Metaphor	Participation Metaphor

Research paradigm	Cognitive constructivism	Social constructionism
Learning process	Learning results from a conflict in the head of the learner akin to counter-intuitive troublesome knowledge (Perkins, 1999)	Learning occurs through the shared construction of knowledge.
Epistemology	Knowledge as an object that has to be acquired by the learner (by active means) Knowledge is monolithic, static, universal, objective and reliable	Learning is about becoming and identity creation. Knowledge is bound to the situation (context) within which it is learned. Knowledge is shifting, socially constructed, subjective and situated
Nature of learning	Learning is the replication of the conceptual framework in the head of the expert, in the head of the students	Learning is learning to participate in a community of practice (Wenger, 1998)
Inherent challenges in perspective	Leads to issues around variation in the learner	Leads to issues around the transferability of knowledge
Standardisation	Threshold concepts can be documented explicitly and can be transparent and consistent	Threshold concepts are internalised and standardisation is tacit; socially mediated
Assessment of threshold concept understanding	Possible against established criterion using analytical judgement processes and quantitative data	Possible using norm referenced, holistic, professional judgement
Level of consensus	Broad consensus on Threshold concepts possible	Individual perspectives or localised consensus possible
Power base	Centralised in the expert	Shared in the community
Role of educator	To identify and apply the threshold concepts	To be active agents in the construction, co-construction and re-

	in their teaching practice	construction of threshold concepts as members of the community

4.3.12. Facilitating threshold concept understanding

Engagement and ownership of the topic enable students to see the relevance of the issues associated with a topic and therefore navigate the liminal space more successfully (Rattray, 2016), facilitating threshold concept understanding. Others emphasise the importance of constant dialogue, reflection and feedback from peers and educators in overcoming negative emotions and supporting learner processes (S. Jones & Underwood, 2013; Lackéus, 2015a; Land, Rattray, & Vivian, 2014; Pekrun, Goetz, Titz, & Perry, 2002). Perkins (2006, p. 37) suggests a number of ways to address troublesome knowledge. Knowledge should be made meaningful and connect to the learners' lived experience, drawing out discrepancies in the existing theories of the learners. Additionally it is helpful to invite learners to consider alternative perspectives and make tacit knowledge explicit and animated.

Baillie and Johnson (2008) recommend conversation as an important pathway through the barriers presented by learning thresholds. Conversations, refutations, questions and confronting avoidances are all positive ways to support students' learning, with opportunities for dialogue designed in. Discourse is also a useful indicator of student progression. Trafford (2008) highlights the importance of social mediation for the provision of coping strategies, scaffolding support and encouragement in doctoral students, in the understanding of a threshold concept.

The value of student centred activities that allow students to engage in individual and collective reflection on the troublesome knowledge encountered is recognised in helping students to understand threshold concepts (Orsini-Jones, 2008). Sibbett and Thompson (2008) talk of creating spaces for transformation and designing in accommodation for the navigation of liminality, using arts-based approaches, which may be regarded as another form of reflective practice.

Smaller groups allow the educator to "hold" the anxiety of students experiencing a learning threshold and support the development of empathy and humility necessary for learning. Group work was found to facilitate the development of the pre-requisite attitudes for learning (Baillie & Johnson, 2008). Fear of uncertainty and intolerance of ambiguity can present important obstacles to student progress. Cousin (2008a) also states the need to create some sort of holding environment where it may be conveyed to the learner that discomfort and uncertainty are normal and usually unavoidable dimensions of learning (Cousin, 2006a, p. 263).

Orsini-Jones (2008) quoting Ackerman (1996, p.32) notes that both individual and group work have a fundamental role in curriculum design, "Without connection people cannot grow, yet without separation they cannot relate."

In their summary, Land, Cousin, Meyer, and Davies (2006b) maintain that educational programmes should be systematically reviewed to ensure the appropriate sequence of content; the process through which learners are made ready for, approach, recognise and internalise threshold concepts; and the ways in which learners and teachers recognise when threshold concepts have been internalised using appropriate assessments. They go on to suggest nine considerations in the design and evaluation of the higher education curriculum:

1. The jewels in the curriculum
2. The important of engagement and structuring a "framework for engagement" (Wenger, 1998), the appropriate forms of engagement and appropriate provocations
3. Listening for understanding to address pre-liminal variation
4. Reconstitution of self
5. Tolerating uncertainty and cultivating metacognitive skills especially through peer assessment, discovering common difficulties and anxieties, acknowledging that it will all make sense in the end
6. Recursiveness and discursiveness, taking into account post-liminal variation. Acknowledging that learning is a journey with a rhizomorphic

structure (like a root) branching out in all directions with multiple points of entry and exit

7. Pre-liminal variation
8. Unintended consequences of generic "good pedagogy"
9. The underlying game (episteme)

In parallel to the design of the curriculum, Perkins (2008) recommends more attention is given to the cultivation of appropriate learner dispositions in the classroom. Students need to understand the relevance of knowledge to them and why it could prove useful. They need to know what they need to know and how to understand it, and they need to be able to identify occasions where it would be appropriate to apply their knowledge. This can be summarised as having the necessary attitude, ability and alertness. He recommends an approach which promotes reflective abstraction and connection making, and provides practise in a deliberately disparate collection of cases. He insists that transfer must take account of the subject's engagement with the content too.

4.4. Transactional Curriculum Inquiry and Staged Stakeholder Curriculum Inquiry

Transactional curriculum inquiry has been identified as an important method for the identification of threshold concepts. The involvement of participants from beyond the educational domain has been described as worthy of further exploration to ensure an important perspective is not missed (Barradell, 2013). At the core of transactional curriculum inquiry lie "negotiations between key actors in pursuit of shared understandings of difficulties and shared ways of mastering them" (Cousin, 2008, p.270). This study builds on elements of transactional curriculum inquiry (Cousin, 2009a) developing it into what can be subsequently termed 'staged stakeholder curriculum inquiry'. In transactional curriculum inquiry, discussion amongst stakeholder groups is important so that participants have a shared understanding of threshold concepts and their essential characteristics (Barradell, 2013). Transactional curriculum inquiry usually involves dialogue amongst lecturers and/or students with the inclusion of educational

developers (Cousin, 2009a). Educational developers are usually based in Centres of Learning and Teaching and are primarily occupied with the development and improvement of courses through design, assessment and research (Kim, 2018; Shay, 2012). Eliciting the knowledge of educators may be a more robust and reliable way of identifying candidate threshold concepts in a particular discipline than attempting to do so by drawing on a sample of entrepreneurs or students of entrepreneurship programmes in isolation (Shinners-Kennedy & Fincher, 2013).

In a staged stakeholder curriculum inquiry, data has been generated from three different stakeholder groups so findings are as robust and reliable as possible. The respective stakeholder groups have not interacted with each other so that the distinctive aspects of their perspective may be maintained, whilst also allowing the different, respective perspectives to be considered together. Whilst entrepreneurs are the best source of data regarding entrepreneurship, educators are the best source of data on teaching entrepreneurship and the troublesomeness of entrepreneurship threshold concepts in an educational context. Students are the best source of data on experiences of learning. In seeking the perspectives of the three stakeholder groups separately, I have been able to go through a process of amendment and synthesis of their relative perspectives. A group of external stakeholders (entrepreneurs) has been added to the more usual groups of educators and students. By adding the entrepreneur stakeholder group, I have included the external practitioner perspective, which is key to this study but has been lacking hitherto in threshold concept research. My task has been to combine these three perspectives and develop recommendations from them in order to enhance entrepreneurship curricula.

In her transactional curriculum inquiry approach, Cousin (2009b) uses the terms 'academics' and 'subject specialists' interchangeably. However, many entrepreneurship scholars have no direct personal experience of being an entrepreneur. I have consequently regarded academics in my research as subject specialists in *entrepreneurship education*, and entrepreneurs as subject specialists in *entrepreneurship*. This further justifies the inclusion of entrepreneurs in this research, and the term 'subject specialist' in this staged stakeholder curriculum

inquiry has been broadened to include those beyond the educational domain, and is no longer synonymous with the term 'academic'.

The staged design has also permitted the use of different research methods matched to each stakeholder group. As an insider in this research I knew that different approaches would be necessary with each stakeholder group. One to one semi-structured interviews and a Delphi survey have been used with the entrepreneurs as it was not felt to be practicable to gather a physical group together given the nature of the sample. Semi-structured individual and group interviews (by institution) have been undertaken with the educators in order to gather the richest possible data, as considerations of access and engagement were less pertinent with this group. Concept mapping workshops have been undertaken with the students as they were likely to be potentially less intimidating than interviews, and participation and engagement were more likely with this method. The workshop format also permitted an additional beneficial educational aspect for the participating students.

By eliciting the data from the entrepreneur stakeholder group first, data has been gathered from those with first-hand experience of entrepreneurship, those who think and practise as entrepreneurs. Analysis of this data has informed the nature of the questions posed to the entrepreneurship educators and has allowed their relevant responses to be compared to those of the entrepreneurs. Entrepreneurship educators have been the best source of data concerning how best to teach entrepreneurship and the degree of troublesomeness of candidate entrepreneurship threshold concepts, recognising that the threshold concept framework was developed to enhance learning. Educators have been able to translate entrepreneurship threshold concepts into learning thresholds in an educational context and have had informed perspectives on effective approaches to entrepreneurship education. Integrated findings from the first two stages of the research have been used to analyse the data generated from the student stakeholder group in the third stage of the study. The student voice was important to develop an understanding of experiences of learning and experiences of troublesomeness. In this way, the stages of the research have built on each other and have enabled me to make the most of the data gathered at each stage.

4.5. Ethics

All educational research should be ethical (Wellington, 2015b) not least because being an educator involves a similar moral approach (Atkins & Wallace, 2012). Drawing on the ethical guidelines of the British Educational Research Association (*Ethical Guidelines for Educational Research*, 2018), Northumbria University ("Ethics in Research Policy Statement," 2017), Durham University ("Durham University Ethics Policy," 2019) and the University of Durham School of Education ("Department Code of Practice on Research Ethics," 2018), the following principles have been used to inform the ethical approach taken in this research:

- Maximise benefit and minimise harm. This is demonstrated by due consideration in applications for ethical approval and the justification of the research rationale as worthwhile as well as my efforts to employ the most appropriate methods for the research purpose. Applications for ethical approval cannot be included for reasons of privacy but proof of ethical approvals granted have been included (see Appendices 2, 5 and 8).
- Inclusivity and respect for the rights of others including respect for privacy, autonomy, diversity, values, and dignity. This is demonstrated by evidence that fully informed consent was secured and the right to confidentiality respected, a respect for equality and diversity in the management, design and conduct of the research activity, and effective systems and processes to ensure adequate protection and security of data (see Appendices 2 - 10).
- Integrity and fair treatment of others. This is demonstrated by the due consideration I have given to the competing interests of those directly and indirectly involved in the research, regardless of my vested interests in the research, the right of the participants to withdraw from the research at any time, and the justification of the research rationale as worthwhile as well as my efforts to employ the most appropriate methods for the research purpose.

4.5.1. Informed consent

As it is unlikely in any research project that research participants have the same understanding of it as the researcher, it is incumbent on the researcher to try and anticipate any possible harm, distress or change that might be experienced by the research participants (Atkins & Wallace, 2012).

Before approaching the entrepreneurs, I considered that there was a small risk they may unintentionally disclose compromising information, perhaps when discussing attitude to risk for example. I addressed this risk by making it clear to the participants that I would exclude information that could later prove harmful to anyone, excepting their engagement in illegal activity. The built-in member checking aspect of Delphi surveys also mitigated this risk.

Before approaching the educator sample, I considered there was a small risk that participants may unintentionally disclose compromising information such as infringements of quality standards. I addressed this risk by making it clear to the participants that I would exclude information which could later prove harmful to anyone. There was also a risk that educators would give me access to information that may be regarded as competitively sensitive between higher education institutions, and which could potentially be used to give an unfair advantage to my institution and the degree programme I am responsible for. To mitigate this risk, I ensured that I used the information I gathered exclusively in this research project and collated findings were shared with all research participants so all might benefit equally from participation.

Before running the concept mapping workshops with students, I considered there was a small risk that participants may feel the nature of their participation in the workshops might have some bearing on the evaluation of their performance on their degree programme. To mitigate this risk, I did not identify any individual student but coded the student groups and gave written and verbal assurance to the students before and during the workshops.

4.5.2. Privacy

The rights of individual research participants to privacy must be reconciled with the fact that this thesis documenting their participation will be in the public domain when published. Privacy is more challenging in Delphi surveys and where purposive snowball sampling techniques have been used as participants will know each other if they have been referred by each other. However, in order to protect the privacy of individuals from any further avoidable exposure I used pseudonyms throughout for Delphi panel members and the educators and higher education institutions involved in the second and third stages of this research inquiry (Orb, Eisenhauer, & Wynaden, 2001). Quotes which might have enabled the identification of the contributors were not used, and potentially identifying details of the higher educational institutions were omitted.

I downloaded password protected digital files of interview recordings from my recording device and stored them in a dedicated, personal, protected, secure university data storage area in preparation for analysis. Contemporaneous notes were also made and stored securely during the study when not being analysed. The data will be kept securely until the successful completion of the research and following a period of five years, when I will destroy it.

4.5.3. Power relationships

I also considered the impact of the power differential between the various stakeholder groups in the research, and me. As a programme leader of an undergraduate entrepreneurship degree programme, I was concerned to develop and maintain strong working relationships with the individuals I approached to participate in the Delphi panel, as they potentially had much to offer both my students and my university in the future. Some panel members were of very high net worth and had considerable power and influence in their region and nationally. I did not feel that their status would have an impact on the honesty and integrity of the eventual research conducted, but it did affect the extent of due diligence which I felt able to engage in with target participants prior to the commencement of the interviews. Consequently, some participants revealed information which put them outside my defined criteria for inclusion in the course of the research and

their contribution to later stages of the Delphi survey had to be omitted. Individual relationships were managed very sensitively in order not to incur any reputational damage for me, my employer or my research institution. For Stage 2 of the research, with the entrepreneurship educators, power differential was not a significant factor as the sample group came from my peer group where I experience friendly, collegial working relationships for which I am very grateful. For Stage 3 of the research with students, I chose to conduct workshops outside my own university to minimise the risk of perceived coercion which might have arisen had the workshops been conducted in my own institution.

4.6. Sampling approach

Accessibility of the participants was an important consideration in my sampling strategy and consequently I have used non-probability sampling in all stages of this research. I have targeted particular groups in the full knowledge that they do not represent the wider population, they simply represent themselves (Cohen et al., 2018). I handpicked participants based on my judgement of their typicality and the specific characteristics I was looking for. My concern was to acquire in-depth information from those in a position to give it. In Stage 1 and Stage 2, participants were either known to me personally and by reputation (reputational sampling) (Farquharson, 2005) or were known to each other and referred to me (respondent driven sampling) (Teddlie & Tashakkori, 2009).

This type of snowball sampling is often pre-eminent in qualitative research (Noy, 2008). It is characterised by a reliance on interpersonal relations and social networks and can be said to reduce or dissolve power relations between the researcher and the participants as the contacts are built on peer group membership and personal contacts, with participants acting as gatekeepers to other participants. Participants exercised control over who else to involve and refer (Cohen et al., 2018), not only identifying further contacts for me but actively recruiting them to be involved in the research (Heckathorn, 1997).

I determined the sample size in terms of "fitness for purpose"; seeking a balance between the number of participants which would generate 'thick

descriptions' (Geertz, 1973) and rich data, whilst pragmatically considering how much data I could deal with.

Details of the samples used in each stage of this research are included in Chapter 5.

4.6.1. Involving students in identifying threshold concepts

There is an inherent contradiction and methodological challenge in the involvement of student participants in the gathering of valid and reliable perspectives in curriculum inquiry using the threshold concept framework, and the student voice has been largely absent from threshold concept literature (Felten, 2016). Some criticise threshold concept research for failing to seek the student voice adequately and privileging the perspective of teachers (Barradell, 2013; Neve, Lloyd, & Collett, 2017), but others regard the student voice as unreliable (Shinners-Kennedy & Fincher, 2013).

Threshold concepts give shape and structure to the subject but are by definition inaccessible to the novice. This suggests that using student participants in studies to identify threshold concepts is unlikely to prove very useful. Shinners-Kennedy and Fincher (2013) modified the focus of their research into threshold concepts in computer science from learners to educators due to concerns regarding accuracy of recall and potential hindsight bias. Scott (2017), although broadly in favour of studying student responses, acknowledges that it involves many challenges and "may generate results that are not reproducible" (p.287). According to Quinlan et al. (2013) any study of the student perspective framed in terms of seeking to identify threshold concepts would be unlikely to be productive, and their own experience of seeking to identify perceptions of concepts proved more fruitful. Students do not know what they do not know, and therefore cannot articulate where the threshold concepts might lie in any subject discipline. Kinchin (2016) also does not appear to support the involvement of students in identifying what the threshold concepts might be in the subject they are studying. C. Taylor (2006) contrasts the perception of threshold concepts by students and graduates with those of teachers, demonstrating that most students and graduates

"didn't get it" and there was an apparent separation of knowledge. "Students may not consider something they have yet to understand as being difficult" (Carstensen & Bernhard, 2008, p. 150). Cove et al. (2008) also noticed that some more complex thresholds in their study were misunderstood and underestimated at first suggesting that there might have been some instances of over-confidence in the students. For further discussion of this point, please see section 4.3.9.

There is more support for using student data to understand how it feels to experience a threshold concept and to use interactions with students to validate and verify threshold concepts (Barradell, 2013). Student responses are more useful in informing curriculum development and to highlight the extent to which "skills-based instruction can potentially preclude, and not necessarily complement, larger concept recognition and understanding" (Scott, 2017, p. 298). The threshold concept framework enables students to offer a novice perspective, which, due to the irreversible nature of threshold concepts, has become inaccessible to the subject expert (Kinchin et al., 2011). Entrepreneurship educators are assumed to have understood the necessary threshold concepts as part of their journey to becoming an expert in their subject; however, this may not be the case (Barradell & Peseta, 2016). They are more likely however, to have first-hand insight into how students are learning and grasping these concepts (Barradell, 2013). Students do not always know what they need to learn but they are able to report what the learning experience was like and can provide an alternative perspective to the educators. Student views of what is difficult in a subject may not align with those of an expert educator (Quinlan et al., 2013). It is also acknowledged that students are able to identify areas of troublesome knowledge, which then serve as useful proxy indicators to draw attention to possible threshold concepts (Quinlan et al., 2013).

Felten (2016) suggests that, "Inviting students to partner with us in our research and practice would be a major step toward enhancing our understanding and teaching of threshold concepts" (p. 7) and urges scholars to take the insights and experiences of students as learners seriously. Others also call for more research which includes the student voice, arguing it would go some way to address frequent disconnections between the student and teacher perspectives and

provides insight into the "usefulness and appropriateness of practitioner and expert-generated threshold concepts" (Scott, 2017, p. 287). In this research the student voice has been incorporated not to identify threshold concepts, but to explore the students' awareness and perception of candidate threshold concepts.

4.7. Conclusion

The threshold concept framework has been used here as a lens to demarcate entrepreneurship, making a case for entrepreneurship as an academic subject in its own right, as well as to improve the effectiveness of entrepreneurship curriculum. "A threshold concept necessarily helps to define the boundaries of a subject area because it clarifies the scope of a subject community" (P. Davies, 2006, p. 74). Research using the threshold concept approach promotes the development of discipline and subject specific pedagogies and situates learning, acknowledging contextual considerations (Cousin, 2008a).

Despite the promise of being able to use the identification of threshold concepts to set the boundaries of an academic subject there is little research in this area. Even the strongest critics of the approach admit that when candidate threshold concepts are identified in a discipline it is "a good start and they make sense" (Wilkinson, 2014, para 3, Rethinking threshold concepts for information literacy). If candidate threshold concepts in entrepreneurship can be suggested, the boundaries of entrepreneurship may be set. Then an understanding of the student perspective of what it is to think like an entrepreneur may be sought and ways to educate students in how to think like entrepreneurs may be developed.

This chapter has presented the methodological approach to the research and its design in general. Specifically the research paradigm has been presented to offer a rationale for research design choices, see Table 4.1, together with a review of the ethical considerations in the research and evidence of the relevant approvals. The threshold concept framework is being used here as a lens through which to approach entrepreneurship education and inform an augmented transactional curriculum inquiry, termed staged stakeholder curriculum inquiry, which was used collect data, details of which are set out in the next chapter. The features and benefits of the staged design have been set out, enabling the data at each stage to

inform the next and allowing for appropriate research methods to be used with each stakeholder group. The sampling approach was explained and the particular value and challenges associated with the use of the threshold concept framework as a lens were considered. In the next chapter, details of the research methods adopted in each stage of this staged stakeholder curriculum inquiry are set out. Methodological considerations and the research design have been separated into two chapters to allow the distinctiveness of the staged design of the research study to be explained fully.

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Chapter 5. Research Design

5.1. Introduction

As set out in the preceding chapter, a staged design with a different research method was employed at each stage. Building on elements of transactional curriculum inquiry (Cousin, 2009a), the concept of staged stakeholder curriculum inquiry has been set out, together with the rationale for the research design as a whole. This chapter presents the respective and distinct research methods used and built upon at each stage along with the rationale for their choice.

The research design is set out again for ease of reference graphically in Figure 5-1. and in Table 5-1.

Figure 5-1 Research Design

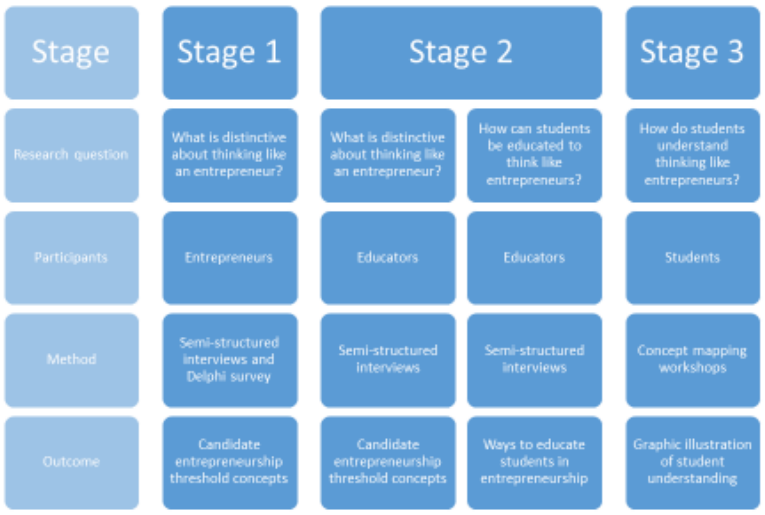


Table 5-1 Research Design

Stage	Relevant Research Question	Participants	Method	Data	Relevant Research Objective
1	What is distinctive about thinking like an entrepreneur?	Entrepreneurs	Semi-structured interviews and Delphi survey	Interview transcripts *17 x 1:1 interviews* Response to Delphi survey *10 fully participating panel members*	To identify candidate threshold concepts in entrepreneurship
2	What is distinctive about thinking like an entrepreneur? How can students be educated to think like entrepreneurs?	Entrepreneurship educators	Semi-structured interviews (individual and group)	Interview transcripts *3 x group interviews* *8 x 1:1 interviews* *18 interviewees in total*	To identify candidate threshold concepts in entrepreneurship To explore educators' views on the effectiveness of approaches to entrepreneurship education
3	How do students understand thinking like entrepreneurs?	Students of an entrepreneurship programme	Concept mapping workshops	Concept maps *2 x concept mapping workshops* *11 x concept maps* *48 participants in total*	To explore how students understand entrepreneurship

5.2. Stage 1 Delphi survey with entrepreneurs

This stage of the research was designed to explore, from the entrepreneurs' perspective, what it means to think like an entrepreneur and to suggest CTCs in entrepreneurship. The outputs of this stage of the research were interview transcripts and interim and final outcomes of a Delphi survey.

5.2.1. Asking entrepreneurs about entrepreneurship

> [Entrepreneurs are] enlightened practitioners who progressively learn by doing well, as vicariously; they revise their theories based on the facts they uncover and the feedback they receive, discarding hunches that did not work, improving their predictions. Entrepreneurs' views and accumulated experiences can provide a rich foundation for building theories useful for the study and practice of entrepreneurship.
>
> (Wiklund et al., 2018, p. 12)

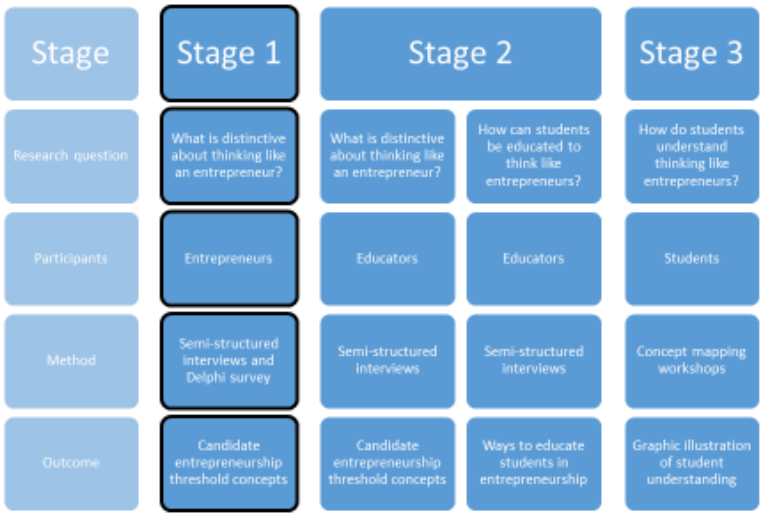
My decision to engage entrepreneurs in this research was founded on the premise that entrepreneurs were "enlightened practitioners" and would therefore be able to articulate what it was that differentiated their ways of thinking and practising. Despite the fact that they would be unlikely to be able to identify threshold concepts as such, I expected that entrepreneurs would be able to identify what was critical to thinking and practising as an entrepreneur from which I could develop CTCs in entrepreneurship.

In this section I have presented the research method used in this first stage of the staged stakeholder curriculum inquiry (Table 5-2) and highlighted in Figure 5-2.

Table 5-2 Research Design Stage 1 - Delphi survey

Stage	Relevant Research Question	Participants	Method	Data	Relevant Research Objective
1	What is distinctive about thinking like an entrepreneur?	Entrepreneurs	Semi-structured interviews and Delphi survey	Interview transcripts *17 x 1:1 interviews* Response to Delphi survey *10 fully participating panel members*	To identify candidate threshold concepts in entrepreneurship

Figure 5-2 Research Design Stage 1 – Delphi survey



5.2.2. The Delphi survey

It is argued that a shared understanding of threshold concepts is critical and therefore a level of consensus is invaluable to the identification of threshold concepts in any field or discipline (Barradell, 2013). The Delphi survey was chosen for this stage of the research, as its main purpose is to achieve reliable consensus

among experts. Taking its name from the Delphic oracle's skills of interpretation and foresight, it was conceived as a way of forecasting and attempting to make accurate predictions about the future. The objective of the first Delphi study was to "obtain the more reliable consensus of opinion of a group of experts…by a series of intensive questionnaires interspersed with controlled opinion feedback" (Linstone & Turoff, 1975, p. 10), and there are now a wide variety of other application areas. The Delphi approach has been criticised as an unscientific method of inquiry due to the subjective, intuitive nature of the input and the lack of any universal guidelines (Keeney, Hasson, & McKenna, 2011), but the Delphi survey is by no means unordered or unsystematic. The researcher's role is critical in the decision process. They are responsible for; defining what constitutes an 'expert'; choosing the panel; making modifications from respondent comments and selecting what is presented to the panel; as well as deciding what constitutes consensus. The extensive involvement of the researcher in the process has attracted criticism, therefore transparency is very important to demonstrate rigour in the procedures selected (C. F. Smith, Finn, Stewart, & McHanwell, 2016).

The term "Delphi" has been extended over the years to cover a wide variety of types of group interaction (Linstone & Turoff, 1975). Most Delphi surveys involve a group of experts or subject specialists and form an inquiry with the objective of sourcing information which is uncertain the minds of the group. Some pre-formulated systematic procedure is followed in obtaining the group output. Opinion is gathered over several rounds interspersed with controlled feedback until the results become stable or consensus is achieved. The Delphi survey typically uses one panel with a number of rounds (Amos & Pearse, 2008). The researcher alternates between discovering and interpreting the data with the aim of approaching a consensus of opinion which is more informed and sophisticated than any of the preceding constructions including that of the researcher (Guba & Lincoln, 1994). "Delphi may be characterised as a method for structuring a group communication process so that the process is effective in allowing a group of individuals as a whole, to deal with a complex problem" (Linstone & Turoff, 1975, p. 3). Within a great deal of variety in the detail of the method, there is an implication in all studies using the Delphi survey that there is some feedback of

individual contribution of information and knowledge, some assessment of the group judgement or view, some opportunity for individuals to revise views and some degree of anonymity for individual response.

A Delphi survey is a type of remote group interview or focus group particularly suited to gathering expert opinion, where the participants are aware of the perspectives of each other but are not aware which participant has which perspective. The Delphi survey was developed in response to the three main shortcomings of existing forecasting methods (at the time). These were the influence of dominant personalities, noise and group pressure (Keeney et al., 2011). The intention is that participants are influenced by each other's perspectives according to the content and not the author, in other words attention is paid to what is said rather than who said it. The technique allows the heterogeneity of the participants to be preserved assuring greater validity of results, as the group is not open to domination by quantity or by strength of personality from any particular individual or group of individuals (Linstone & Turoff, 1975). The benefits of the approach are very relevant to this research. The Delphi survey is appropriate if the problem does not lend itself to precise analytical techniques but can benefit from subjective judgements on a collective basis and more individuals are needed than can effectively or realistically (from a logistical perspective) interact in a face to face exchange. The value of this approach lies in the transposition of professional understanding that is not necessarily discussed but still known, held by experts within a field or discipline, from its natural implicit state to an explicit state (Eraut, 1994). The Delphi survey is particularly appropriate to explore, generate or correlate judgements, and expose diverse views (Turoff, 1970). It is also useful when the population is professionally and geographically diverse, and logistical reasons (such as time and costs) would make frequent meetings unfeasible (Linstone & Turoff, 1975). The Delphi survey is useful when there is a lack of empirical data (Farrell & Scherer, 1982), instant decisions are not required (Beech, 1999) and where knowledge is incomplete (Amos & Pearse, 2008). Fuller, Henderson, and Bustamante (2015) propose the Delphi survey as useful for theory building, helping researchers identify important aspects of emerging theory (Okoli & Pawlowski, 2004).

A number of studies concerned with entrepreneurship have used the Delphi survey to collect research data (Amos & Pearse, 2008; Gartner, 1990; Morris, Webb, Fu, & Singhal, 2013; Robles & Zárraga-Rodríguez, 2015). Amos and Pearse (2008) used the Delphi survey to research how to educate students for entrepreneurship and to develop them to be entrepreneurial in the future. They used the Delphi survey with a panel of experts to define what should be taught and how it should be taught, arguing that the method allowed them to move away from a backward looking and historical bias in entrepreneurship education which does not adequately prepare students for the future.

Gartner (1990) used the Delphi survey to identify themes of entrepreneurship and to make underlying meanings of entrepreneurship held by researchers and practitioners explicit. Termed a "Policy Delphi", in the survey the panel was asked to define entrepreneurship and identify entrepreneurship attributes. The panel identified and rated the importance of ninety attributes. Factor analysis was then used to cluster them into eight factors or themes. Robles and Zárraga-Rodríguez (2015) used a Delphi survey to identify key individual competencies that could be used to determine if a person was an entrepreneur. They reviewed the literature to obtain a list of twenty entrepreneurship related individual competencies and then conducted two Delphi rounds before consensus was claimed.

The Delphi survey has been used in a number of other higher educational settings (Murry Jr & Hammons, 1995; Williams & Webb, 1994) including research to develop and validate frameworks of teaching competencies in higher education (K. S. Smith & Simpson, 1995; Tigelaar, Dolmans, Wolfhagen, & Van der Vleuten, 2004). Fuller et al. (2015) used a Delphi survey to explore ten higher education assessment leaders' attitudes and theoretical perspectives regarding cultures of assessment. Nicola-Richmond, Pepin, and Larkin (2016) used a Delphi survey to identify threshold concepts in occupational therapy, and they asked participants about concepts and capabilities that were most troublesome, integrative and transformative.

I have used the consensus methodology of the Delphi survey as a very structured way of performing the first stage of a staged stakeholder curriculum inquiry.

The Delphi survey can be situated in a constructivist paradigm, offering a pragmatic approach (Amos & Pearse, 2008) where many realities are constructed from social and experiential bases that are local and specific in nature. The aim of this inquiry, adapted from Guba and Lincoln (1994), was to understand and reconstruct concepts that are critical to thinking as an entrepreneur, regarding reality as relative and socially constructed. Some researchers position the Delphi survey within an interpretative paradigm, particularly social constructivism, viewing it as subjective and qualitative in nature (Keeney et al., 2011). From a more positivist perspective, they may also offer the pre-requisite reliability and validity criteria required for quantitative research (Hanafin, 2004).

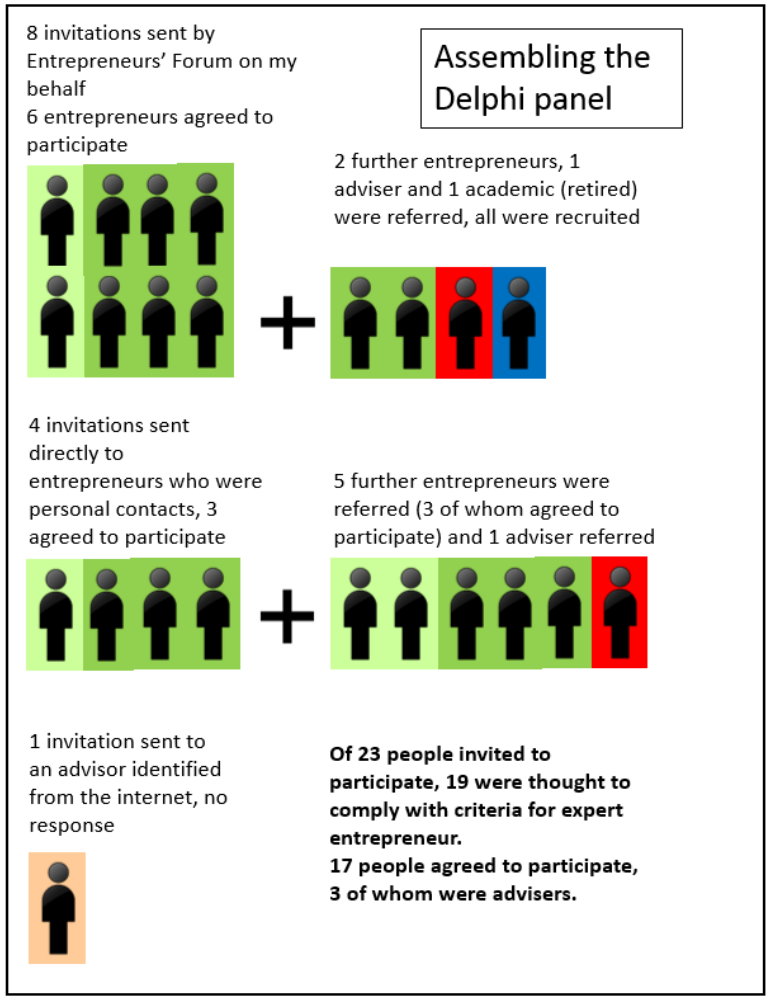
The Delphi survey may be seen both as a means of validating truth through human experience and a means of viewing truth as pragmatic and directly linked to the context-dependent nature of the participants' knowledge (Keeney et al., 2011). In using the Delphi survey, the researcher performs an iterative dance of discovery and interpretation with a final aim of distilling a consensus construction (Keeney et al., 2011).

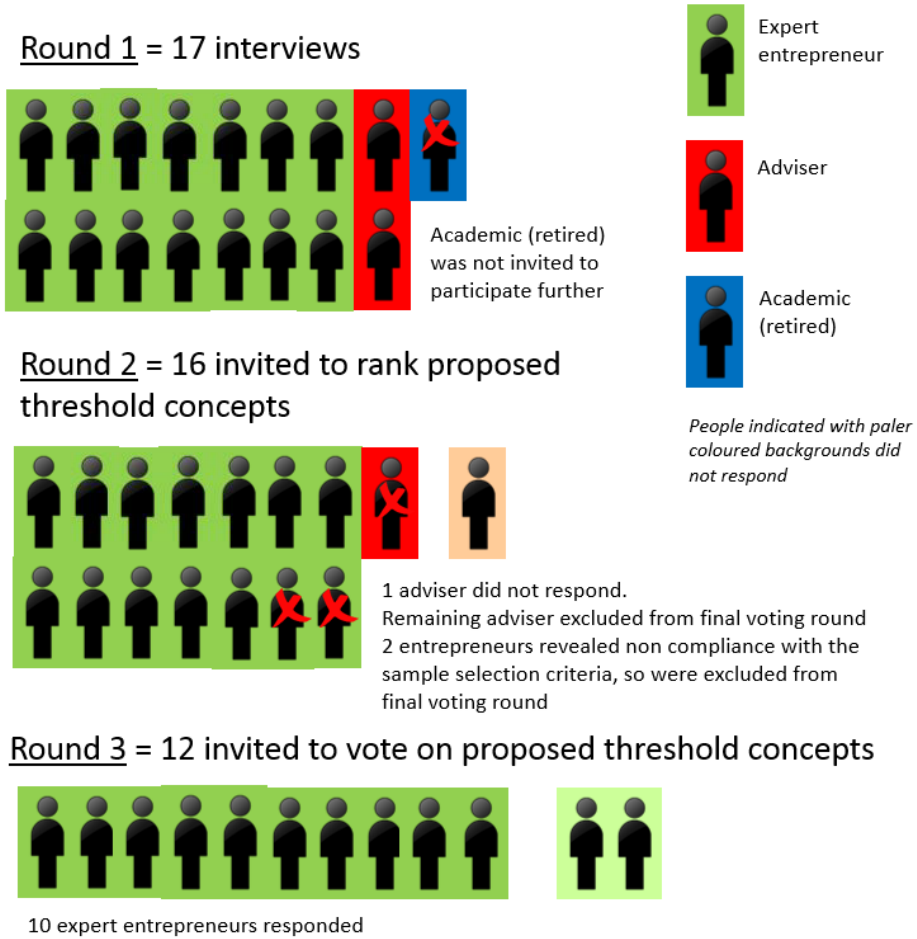
5.2.3. The Delphi survey adapted in this study

According to Linstone and Turoff (1975) there are usually four distinct phases in a study using a Delphi survey. Firstly, the subject under discussion is explored and each individual contributes information he or she feels is pertinent to the issue. Then there is a process to enable an understanding of how the group views the issue, where the members agree and disagree and what they mean by relative terms such as 'important'. If there is significant disagreement then this is explored to bring out the underlying reasons for the differences and possibly, to evaluate them, and finally all previously gathered information which has been analysed is fed back for consideration.

A schema showing how I assembled the Delphi panel for this research is shown in Figure 5-3.

Figure 5-3 Delphi survey panel evolution





I developed a three round Delphi survey format to identify and obtain expert consensus on CTCs in entrepreneurship. The first round consisted of semi-structured interviews, the second consisted of a ranking exercise and the third round was a vote. Details of the research choices made in each round are set out in the following sections.

5.2.4. Round One

Before I could identify a target group from which to assemble a panel of specialists in the subject of entrepreneurship (expert entrepreneurs), I had to decide how I would define an 'expert' entrepreneur. The nature of what constitutes an 'expert' is the subject of much debate, and the definition often unclear and inconsistently applied. The likelihood of any "expert" agreeing to take part in the process may mean they are by definition not impartial respondents, and any information provided may not therefore be regarded as an authentic reflection of current knowledge or perceptions (Keeney et al., 2011). However, it was my intention to treat the data generated in this process as stories and narratives through which the interviewees described their world and not as "potentially 'true' pictures of 'reality'" (Silverman, 2013, p. 238). Entrepreneurs are contributing as practitioners and subject experts in this research and the formation of the panel is regarded as the lynch pin of the Delphi survey method (Keeney et al., 2011). An expert has been defined by Benner (1984, p. 32) as, "[An individual with] an enormous background of experience, who has an intuitive grasp of each situation and zeroes in on the accurate region of the problem without wasteful consideration of a large range of [...] alternative [...] solutions." However, whilst communicating the sense of the sort of person an expert might be, this definition includes many subjective descriptors, which render it less useful in making real choices between research participants. Sarasvathy (2008), researching entrepreneurship, defines an expert as "someone who has attained a high level of performance in the domain as a result of years of experience and deliberate practice" (p.12). She defines an expert entrepreneur as someone who "either individually or as part of a team, had founded one or more companies, remained a full-time founder/entrepreneur for ten years or more, and participated in taking at least one company public" (p. 21). I also chose to define an expert entrepreneur objectively as;

- an individual who had founded one or more companies of a substantial size
- and remained working in one as a full time founder for at least ten years

I defined 'a substantial size' as having a turnover of at least two million pounds (Sterling), and employing at least twenty people. I chose not to include Sarasvathy's (2008) requirement for flotation, as it is not consistently regarded as a defining feature of a successful new venture in the UK. Many other people who do not comply with the criteria set out here may also be argued to be entrepreneurs, or even expert entrepreneurs, but it would be hard to argue that any individual complying with the criteria set out above was not an expert entrepreneur. The ten expert entrepreneurs who ultimately responded to all three rounds of the Delphi survey had founded companies with a peak financial turnover ranging from nearly two and a half million to over one billion pounds sterling. Five had in fact floated the companies they had founded on the London Stock Exchange.

I sought advice and feedback on the method from two researchers who had experience of the Delphi survey method, and one researcher who had used a Delphi survey to identify threshold concepts. In order to generate panel members, I approached four entrepreneurs known personally to me, a start-up business adviser identified from their blog site and the Entrepreneurs' Forum in order to supplement my own personal contacts. I felt that individuals would be much more likely to respond to a request to participate from a known and trusted member of their personal network. The invitation asked participants to be interviewed by telephone or face-to face and then to complete a series of quick evaluative tasks via email, with an estimated total time commitment of no more than two hours.

The Entrepreneurs' Forum is a not-for-profit member's organization founded in 2002 with the mission of supporting entrepreneurs based in the north east of England, helping them to develop, create new opportunities and grow their businesses. It has over three hundred members who are all owner-managers ("About Us - Entrepreneurs' Forum," 2017) and who work full-time on their businesses, which must have an annual turnover in excess of one quarter of one

million pounds. The Entrepreneurs' Forum kindly agreed to identify members they felt were likely to meet my sample criteria and contacted eight on my behalf. The business adviser did not respond. The purpose of the interviews was described as research to define what it means to think "as an entrepreneur" in order that entrepreneurship might be more effectively developed in students of entrepreneurship programmes in higher education. The individuals who responded to the initial invitation referred ten other potential panel members in a snowball fashion. The advisers, whom I approached for additional context, consisted of a lawyer, an accountant, a venture capital provider and a retired academic. I felt it would be valuable to gather perspectives from people who regularly dealt with entrepreneurs on a professional level regarding the distinctiveness of entrepreneurs and what it means to think like an entrepreneur. This was in order to address any potential lack of self-awareness on the part of the entrepreneurs themselves.

Two additional participants known to me personally served to pilot the research communication and interview questions. One limitation of the Delphi survey approach is that complete anonymity is not possible. In the context of this research, I knew the identity of all the panel members and their individual responses, and some of the panel members knew each other, as they had been referred to me by each other. However, as the participants were not able to attribute any response to any particular person I deemed this quasi-anonymity to be acceptable (Keeney et al., 2011). The demanding nature of a Delphi survey is often underestimated, and I made every effort to ensure my participants were fully aware of the commitment required in participating at the outset.

In all, twenty-three individuals were approached to participate in the interview round, nineteen of whom were thought to comply with the criteria for expert entrepreneur, and four who were included for additional informed perspective as previously mentioned. The optimum number of panel members, and the appropriate means to select them is a matter of debate in Delphi surveys (Keeney, Hasson, & McKenna, 2001). However, the findings of others suggest that it is the knowledge the experts hold with regard to the subject under investigation that is more important than the size of the panel (Akins, Tolson, & Cole, 2005).

Seventeen agreed to participate, of whom fourteen were eventually found to comply with my criteria for expert entrepreneur, and nine face-to-face and eight telephone interviews of an average of forty minutes each (ranging from twenty six minutes to sixty two minutes long) were conducted between April and September 2016 (see Figure 5-3).

The overarching aim of the interviews was to answer the question, "what is distinctive about thinking like an entrepreneur?" I constructed the interview questions to explore this and elicit as much relevant supporting interview data as possible. In both the wording of the invitation and the interview questions, it was made clear to participants that the focus of the research was on the distinctiveness of the way entrepreneurs think. The threshold concept framework was not explained as I felt this might alienate the participants. For details of the interview questions and the rationale for asking each see Appendix 12. I recorded the interviews using a voice-recording device and a telephone microphone extension where necessary to enable the recording of both sides of telephone interviews. These recordings were then transcribed using a professional transcription service and checked by me. For more about interviews as a research method, please refer to section 5.3.2.

After reading through the transcripts whilst listening to the recordings, I made some initial hand written coding memos on hard copies of the interview transcripts and highlighted sections of text that I felt were particularly significant in light of the research question. As I was taking a social constructivist approach, I analysed the data thematically, and took an iterative approach to coding and identification of themes. Thematic analysis is a method for identifying and analysing patterns of meaning in a dataset (Braun & Clarke, 2006), and the end result highlights the most salient clusters of meanings present in the dataset (Joffe, 2012). It serves as a useful tool to illuminate the process of social construction, is suited to elucidating the specific nature of a given group's conceptualisation of the phenomena under study and is often used as a method of analysing verbal interview data collected via semi-structured interviews (Joffe, 2012). Boyatzis (1998, p. 161) defines a theme as "a pattern in the information that at minimum

describes and organises the possible observations and at maximum interprets aspects of the phenomenon".

I slightly adapted a framework for the content analysis of open-ended data proposed by Brenner, Brown, and Canter (1985, p. 144) and Wellington (2015a, p. 267). Thematic analysis is rooted in content analysis and was developed in part to go beyond observable material to more implicit, tacit themes and thematic structures (Joffe, 2012). As suggested by Hycner (1985) in his guidelines for conducting phenomenological interviews, I listened to the entire recording of each interview for a sense of the whole and read the transcription a number of times in order to provide a context for the emergence of themes. Searching for themes is an active process, they are generated or constructed rather than discovered (Braun & Clarke, 2012). I was searching for themes that were distinctive but able to work together as a whole.

I then uploaded the transcripts on to NVivo10 software and started to develop and apply codes to the emerging themes. I created a codebook with which to classify, understand and examine the data (Joffe, 2012), and then transferred this coding framework to NVivo10 after uploading the transcripts. A codebook sets out how the code labels can be applied, by giving a more detailed description of the code than can be derived from the label on its own. I developed this iteratively as the list of codes and my use of them developed during the coding process.

The NVivo10 software allowed me to avoid data overload and facilitated data retrieval (Cohen et al., 2011). Flick (2009) expresses concern that the practicalities of data entry, coding and retrieval with software might distract researchers from the real task of understanding, thinking about and explaining meanings of the research and the texts but I found I had no such issues. Some researchers may also feel distanced from their data through the use of software (Gibbs, 2002) but I felt that my initial reading and re-reading of the transcriptions, alongside listening to the audio data mitigated this risk. I remained aware that software would be no substitute for the requirement of and my capability to assign meaning, identify similarities and differences, and establish relations between data (Linneberg & Korsgaard, 2019).

I sought to develop a code for every part of each interview, and coded the majority of sentences and paragraphs. The aim was to generate themes that served as propositions theoretically describing the constructs in every sentence of the interviews. The labels I developed for the themes I coded at first were very broad, such as "candidate threshold concept", and I gradually introduced sub-themes within the broader ones.

Although I was iteratively coding, developing themes and analysing the transcripts I recognised that these are related but separate activities (Saldaña, 2009). The process of coding led from the data to the idea for the theme, and from the theme to all the data connected to the theme (Richards & Morse, 2007). I developed a small number of broad themes, most with a proliferating number of narrower sub-themes at first. As I coded more interview transcripts I found the number of themes overall plateaued, indicating that I had achieved data saturation. Under the broad theme 'Candidate threshold concept', I gradually started to group the sub-themes together and the individual candidate threshold concepts emerged. For example, "Focus" was developed from sub-themes which included 'focus', 'persuasive', 'prioritisation', 'seeing the big picture', 'stubborn' and 'vision'. I labelled each candidate threshold concept in my best attempt to communicate its meaning, but the longer descriptors of each candidate threshold concept ultimately gave me the opportunity to communicate a more comprehensive meaning encompassing the associated sub-themes that had emerged from the transcriptions. For example, I developed the descriptor of 'Focus' to read; 'Focus is about [making choices], having a clear [vision] and [passion]ately [drive]ing towards it. It implies effective [prioritisation], appropriate [delegation] and [never switching off]. Focus means [intense], [single-minded] [determination]'. Sub-themes are indicated here by the words in square brackets. For a complete list of the coded sub-themes associated with each candidate threshold concept, please see Appendix 13. I developed nine candidate threshold concepts together with brief descriptors for each from the first round of the Delphi survey.

5.2.5. Round Two

Of the seventeen individuals participating in the interviews for round one, I invited sixteen to participate in the rating round two. I decided to exclude the retired academic from further rounds of the Delphi survey at this point, as their perspective appeared to be more relevant to the next stage of the study; researching the perspective of entrepreneurship educators. Issues of power were also relevant here as the individual was of high status and it did not feel appropriate to explore the nature of their entrepreneurial experience in depth prior to the round one interview. It was only during the interview did their unsuitability for the second stage of the research become apparent, and their data was excluded from Round 1.

I used online survey software (Bristol Online Survey) for the second round of the Delphi inviting participants to rate each of the nine proposed candidate threshold concepts in terms of importance to thinking as an entrepreneur. I also asked participants to comment on each candidate threshold concept and its descriptor, to rank each candidate threshold concept according to its importance to thinking as an entrepreneur and to rank each candidate threshold concept according to how well each distinguished between thinking and not thinking as an entrepreneur. For details of all the questions included in the second stage of the Delphi survey, please Appendix 14.

Fifteen responses were received. Of the sixteen individuals invited to participate in the ranking exercise of round two, one adviser declined to respond. One way in which Delphi surveys can fail is by glossing over disagreements, so that discouraged dissenters drop out resulting in an artificial consensus (Linstone & Turoff, 1975). However, I was satisfied that this rate of attrition would not compromise the integrity of my findings.

There is inconsistency in the literature regarding the renewal of invitations to non-participating panel members in later stages of the Delphi survey (Nicola-Richmond et al., 2016; C. F. Smith et al., 2016). Bardecki (1984) found that respondents who completed the final rounds of a Delphi survey may not represent the same ones who began it and that the impression of consensus may be partly due to attrition. This would justify the choice to include invitations to all panel

members for all subsequent rounds, even to those that did not contribute to the preceding round. However as all the expert entrepreneurs invited to participate in round two responded, this was not an issue here. The wording of the descriptions of two of the candidate threshold concepts were modified slightly in response to the qualitative comments given by the panel in this round.

After round two had been completed, I provided participants with details of how their rating/ranking of each concept compared with those of the rest of the group (see Appendix 15).

5.2.6. Round Three

Although I had originally planned to conduct two rating/ranking rounds I become concerned about the tolerance limits of panel members. Gordon & Helmer (1964) noted that the point of diminishing returns in Delphi surveys is reached after a few rounds and argued three rounds usually proved sufficient to attain stability in responses. There was a risk in any case that the group dynamics of the panel may have resulted in individuals coming into line with the opinion of the group, despite the individual anonymity of the responses and there may have been a tendency for the group opinion to converge on consensus (Keeney et al., 2011). Little comment has been made in the literature on the required levels of tolerance of a Delphi panel. Repeatedly being asked the same question, albeit with new information regarding how everybody else answered it last time could become tiresome, especially for respondents with strongly held opinions that are relatively fixed and not easily influenced by others, as was likely in this case. It was also difficult to see how any consensus could be claimed that was not in fact unanimity in participant rating and ranking. As further rating/ ranking rounds were likely to show little change and excessive repetition was likely to prove unacceptable to participants, I devised a final round which required participants to vote on the candidate threshold concepts, rather than to repeat a rating/ ranking round, in order to drive consensus. In round three, I asked participants to indicate whether or not they thought each candidate threshold concept was critical to thinking as an entrepreneur. As the questionnaire was simpler in this round, I chose to send it in the form of a document attached to an email (see Appendix 16)

Having developed the candidate threshold concepts with the inclusion of adviser data, I felt consensus would be more likely achieved in the final round with a homogeneous sample. For the final round, I chose to exclude the last remaining adviser and two of the entrepreneurs who had revealed they did not meet the criteria for expert entrepreneur in the previous round. Consequently, I invited twelve expert entrepreneurs to vote in the third and final round. Two declined to respond, however a declining response rate in latter rounds of Delphi surveys does not undermine findings to a point of non-usability (Boulkedid, Abdoul, Loustau, Sibony, & Alberti, 2011).

I then had to decide what I would define as 'consensus' in the voting responses of the panel (Linstone & Turoff, 1975). Researchers disagree on the minimum number and proportion of experts on a panel in a Delphi survey required to claim consensus (G. Rowe & Wright, 1999). However, Delbecq, Van de Ven, and Gustafson (1975) state that a group of ten to fifteen experts is usually enough to reach consensus, without specifying the proportion to be in agreement. As a consequence, the number of participants in studies employing this technique varies significantly from under fifteen, to hundreds or even thousands. In general however, the sample size for homogeneous samples may be small with authors suggesting sample sizes of between eight and twelve (Keeney et al., 2011), fifteen to thirty (De Villiers, De Villiers, & Kent, 2005) and ten to fifteen (Delbecq et al., 1975) would be adequate.

Consensus is defined very broadly in the literature and Williams and Webb (1994) are typical in offering a definition which encompasses unanimity and the majority view. In my study, this would mean that any candidate threshold concept signified as critical to thinking as an entrepreneur by six or more of the panel of ten could be regarded as having achieved consensus. It is acknowledged that a degree of subjectivity is required in making judgements concerning the point at which consensus may be claimed (Ellis, 1988). Keeney, Hasson, and McKenna (2006) argue that setting the goal for consensus before the commencement of the study is good practice, with a 75% minimum agreement required. They point out that the definition of an acceptable level of consensus is contentious and is often an arbitrary figure which may not be stated at all. It has been suggested that the

stability of response through a series of rounds is a more reliable indicator of consensus (G. Rowe & Wright, 1999), as less variance is argued as indicating a greater degree of consensus. Respondents, in this instance however, could very consistently be in complete opposition to each other; hardly an indication of a collective opinion. This definition has also been criticised on the grounds that a decrease in variance could be explained by attrition in the number of participants. Seeking to strike a balance between achieving optimal consensus or even unanimity and risking driving panel member attrition higher, I set a level of at least 80% agreement in this Delphi survey as an indication of consensus in round three, being toward the upper end stated in other studies, but falling short of the unrealistically high goal of unanimity. Over 88% agreement was achieved for five of the nine CTCs in entrepreneurship in round three, and consequently consensus was judged to have been achieved for these five concepts. Findings are reported in Chapter 6.

I have set out in this section the method I used to conduct the first stage of the staged stakeholder curriculum inquiry; a Delphi survey with entrepreneurs. In the next part of this chapter, I will explain the second stage of the inquiry, which generated data from entrepreneurship educators.

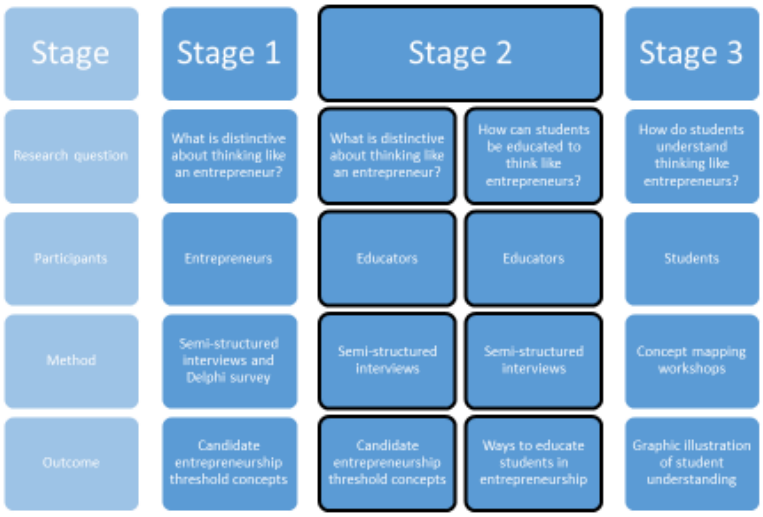
5.3. Stage 2 Semi-structured interviews with entrepreneurship educators

This second stage of the research was designed to identify from the entrepreneurship educators' perspective what is distinctive about thinking like an entrepreneur, to identify CTCs in entrepreneurship, and how students might be educated to think like entrepreneurs. The research objectives were; to suggest CTCs in entrepreneurship from the combined perspective of educators and entrepreneurs; and to suggest effective approaches to entrepreneurship education. See Table 5-3 and Figure 5-4.

Table 5-3 Research Design Stage 2 - Semi-structured Interviews

Stage	Relevant Research Question	Participants	Method	Data	Relevant Research Objective
2	What is distinctive about thinking like an entrepreneur? How can students be educated to think like entrepreneurs?	Entrepreneur-ship educators	Semi-structured interviews (individual and group)	Interview transcripts *3 x group interviews* *8 x 1:1 interviews* *18 interviewees in total*	To identify candidate threshold concepts in entrepreneurship To explore educators' views on the effectiveness of approaches to entrepreneurship education

Figure 5-4 Research Design Stage 2 – Semi-structured Interviews



Taking a purposive sampling approach, I targeted participants from a group of entrepreneurship educators working in universities across the United Kingdom generated from a number of sources as listed below.

- Winners of the 'Entrepreneurial University of the Year' category in the Times Higher Education Awards, sponsored by the National Centre for Entrepreneurship Education. I then used their websites to identify

programmes specialising in entrepreneurship, and identified their programme leaders.

- Recommendations by others in response to request for recommendations of the "best" entrepreneurship programmes via Twitter, again using publicly available information to identify the respective programme leaders.
- Members of the Quality Assurance Association (QAA) Graduate Enterprise and Entrepreneurship Group, who acted as advisors in the development of the publication "Enterprise and entrepreneurship education: Guidance for UK higher education providers September 2012".
- My personal contacts.
- Entrepreneurship educators known to me by reputation.

I sought participants from a wide range of universities and programme types to achieve a representative sample of UK entrepreneurship educators with a high level of expertise and significant depth of experience.

In a staged stakeholder curriculum inquiry, as in a transactional curriculum inquiry, it is important that all participants have specialist knowledge and at least a minimum level of expertise in their specialist area. For the purposes of this study, I defined an entrepreneurship educator as a person who was employed by an institution of higher education, and was primarily occupied with the teaching and learning of entrepreneurship.

Of the twelve individuals I contacted via email, only one declined to participate, but others extended the invitations to colleagues who were also entrepreneurship educators, leading to a sample of eighteen people. See Table 5-4 for broad descriptions (with pseudonyms) of the participants and their employing organisations. I changed all the names of the institutions and participants to protect their identities, and all other potentially identifying information has been removed.

Participants were employed in three large pre-1992 universities (including two Russell Group universities), four large post-1992 Universities, two small post-1992 Universities and one small pre-1992 University. The sample was selected purposively in accordance with the research questions to enhance potential group differences and similarities as well as intra group variation (Joffe, 2012).

The Russell Group, established in 1994, is a self-selected association of twenty-four public research universities in the United Kingdom sometimes perceived as representing the 'best' universities in the country. In 1992 there was a major change to higher education in the UK when the differentiation between universities and polytechnic colleges was abolished, and all the polytechnic colleges became universities. The new or post-1992 institutions nearly doubled the number of universities in the UK. All the post-1992 universities included in the research had been polytechnic colleges prior to that date.

Seventeen of the eighteen educators were working on academic contracts, one was on a professional support contract. Eleven participants had personal experience of new venture creation, three had had purely academic careers and four had some related practitioner experience. The participants had between two and twenty nine years' experience, giving a combined experience in the sample of over one hundred and fifty years of entrepreneurship education. The UK focus of the educators is an acknowledged limitation of this research.

See Table 5-4 for details of the entrepreneurship educator participant sample and Appendix 17 for further information shared with the participants prior to the interviews. Eleven semi-structured interviews (group and individual) were conducted across ten higher education institutions across the United Kingdom from June to November 2017.

5.3.1. Entrepreneurship educator sample detail

Table 5-4 Sample of educational institutions and interviewees

Institution name (pseudonym)	Overview of University and arrangements for enterprise and entrepreneurship education	Names of interviewee (pseudonym)	Summary description – year experience, personal start up experience, academic/prof support, TA programme or not	Face to Face/ Telephone	Date/time/ Duration
Ironwell University	Small pre-1992 university (~2,000 students). Business School Department responsible for all entrepreneurship and enterprise activities across the University including the accredited offer (including a Venture Creation programme)	Nicholas Reese	(academic) Professor with nine years' entrepreneurship and enterprise education experience, following practitioner experience including new venture creation	Face to Face (group)	11/07/2017 14:21 2h 11m
		Tim Lowe	(professional support) Enterprise Support Specialist with two years' entrepreneurship and enterprise education experience, following practitioner experience including new venture creation		
Southwood University	Large post-1992 (Polytechnic roots) university (~27,000 students). Specialist Centre, responsible for wide range of curricular and extra-curricular enterprise and entrepreneurship activities including accredited offer	Chelsea Stevens	(academic) Lecturer with four years' entrepreneurship and enterprise education experience	Face to Face (individual)	12/07/2017 11:25 1h 4m
		Kelsey Caldwell	(academic) Senior Lecturer with sixteen years' entrepreneurship and enterprise education experience	Face to Face (group)	12/07/2017 09:07 1h 23m
		Jocelyn Knight	(academic) Assistant Director with fourteen years' entrepreneurship and enterprise education experience alongside new venture creation		
		Percy Mendez	(academic) Assistant Professor with twelve years' entrepreneurship and enterprise education experience alongside new venture creation		
		Shirley Richards	(academic)		

			Senior Lecturer with five years' entrepreneurship and enterprise education experience following practitioner experience including working with new ventures and family businesses		
Wheatshore University	Small post-1992 university (~2,000 students) Professional Support Team offering business start-up support across the University together with Academic Team in the Faculty of Humanities responsible for the entrepreneurship and enterprise accredited offer (including Team Academy style programme)	Ella Parsons	(academic) Senior Lecturer with two years' entrepreneurship and enterprise education experience, following practitioner experience including new venture creation	Face to Face (individual)	21/06/2017 10:44 1h 25m
Havenesse University	Large post-1992 (Polytechnic roots) university (~27,000 students) Professional Support Team offering extra-curricular activities (non-accredited) and business start-up support across the University, together with Academic Department in the Business School delivering specialist accredited programmes and modules (including Team Academy style programme)	Kendall Ortega	(academic) Lecturer with six years' entrepreneurship and enterprise educations experience.	Face to Face (group)	08/06/2017 10:07 1h 49m
		Naomi Lamb	(academic) Senior Lecturer with two years' entrepreneurship and enterprise education experience, following practitioner experience working with new ventures		
		Andrew Hutchinson	(academic) Senior Lecturer with three years' entrepreneurship and enterprise education experience following practitioner experience working in new ventures		
		Perry Conner	(academic) Senior Lecturer with twenty-nine years' entrepreneurship and enterprise education experience including practitioner experience and new venture creation		

Institution name (pseudonym)	Overview of University and arrangements for enterprise and entrepreneurship education	Names of interviewee (pseudonym)	Summary description – year experience, personal start up experience, academic/prof support, TA programme or not	Face to Face/ Telephone	Date/time/ Duration
Newmarsh University	Large post-1992 (Polytechnic roots) university (~20,000 students) Professional Support Team offering extra-curricular activities (non-accredited) and business start-up support across the University, together with specialist accredited modules delivered in the Business School (including Team Academy style modules)	Sophia Gutierrez	(academic) Senior Lecturer with twelve years' entrepreneurship and enterprise education experience, following practitioner experience	Face to Face (individual)	27/06/2017 14:27 1h 17m
Rosemeadow University	Large post-1992 (Polytechnic roots) university (~29,000 students) Professional Support Team offering extra-curricular activities (non-accredited) and business start-up support across the University, together with specialist accredited programmes and modules delivered in the Business School (including Team Academy style programme)	Aubrey Gilbert	(academic) Senior Lecturer with six years' entrepreneurship and enterprise education experience, following practitioner experience including new venture creation	Telephone (individual)	13/10/2017 11:08 1h 19m

Institution name (pseudonym)	Overview of University and arrangements for enterprise and entrepreneurship education	Names of interviewee (pseudonym)	Summary description – year experience, personal start up experience, academic/prof support, TA programme or not	Face to Face/ Telephone	Date/time/ Duration
Fieldmill University	Medium university (~10,000 students). Academic interdisciplinary Institute responsible for wide range of curricular and extra-curricular enterprise and entrepreneurship activities including accredited offer.	Anthony Colon	(academic) Professor with thirteen years' entrepreneurship and enterprise education experience, following practitioner experience including new venture creation	Telephone (individual)	13/10/2017 13:59 1h 11m
Blackoak University	Small post-1992 small university (~5,000 students). Academic Department responsible for the entrepreneurship and enterprise accredited offer (including Team Academy style programme)	Jeff Dickinson	(academic) Senior Lecturer with five years' entrepreneurship and enterprise education experience following practitioner experience working with new ventures	Telephone (individual)	13/10/2017 08:32 1h 2m
Mallowcoast University	Large Russell Group university (~38,000 students). Professional support team dedicated to extra-curricular activities and business start-up support across the University together with an Academic Centre within the Business School, responsible for accredited enterprise and entrepreneurship activities across the University	Sacha Lawson	(academic) Associate Professor with ten years' entrepreneurship and enterprise education experience, alongside some personal new venture creation experience	Telephone (individual)	03/10/2017 21:31 58m

Institution name (pseudonym)	Overview of University and arrangements for enterprise and entrepreneurship education	Names of interviewee (pseudonym)	Summary description – year experience, personal start up experience, academic/prof support, TA programme or not	Face to Face/ Telephone	Date/time/ Duration
Westerby University	Large Russell Group university (~29,000 students). Professional Support Team offering enterprise and entrepreneurship education within the curriculum (supporting educators), extra-curricular activities (non-accredited) and business start-up support across the University, together with optional accredited modules delivered in the Business School.	Gavin Wilcher	(professional support) Enterprise Education Developer with twelve years' entrepreneurship and enterprise education experience, in a mix of academic and support roles alongside some personal new venture creation experience	Telephone (individual)	03/11/2017 10:00 1h 9m

5.3.2. Interviews

An interview is an interchange of views between two or more people on a topic of mutual interest, and assumes the centrality of human interaction for knowledge production, emphasising the social situatedness of research data (Cohen et al., 2018). I adopted the approach of a 'traveller' in this research who is concerned to travel with the interviewee as a partner into an unknown country, co-constructing knowledge (Kyvale, 1996).

Interviews are an effective way to gather in depth data and are useful for explaining and clarifying terms and exploring complex issues. However, they are resource intensive, difficult to standardise and do not give respondents much time to think about or reflect on their answers. The structured interview is useful when the researcher is aware of what they do not know and can frame the relevant questions to elicit that knowledge, whereas the unstructured interview is useful when the researcher is not aware of what they do not know. I chose to conduct semi-structured interviews, as I knew I was seeking data relevant to the identification of CTCs in entrepreneurship, but I did not know what those concepts were from the educators' perspective. Similarly, I wanted data regarding the most effective ways of educating students in those CTCs, but did not know what the educators' perspective was on the most effective ways.

In semi-structured interviews, the topics and issues to be covered are specified in advance and the interviewer decides the sequence and format of questions during the interview (Cohen et al., 2018). This has the advantage of making the data collection somewhat systematic whilst allowing a conversational tone and other unanticipated data to emerge. However, it does not make for a high level of consistency between interviews and may render the interview data less comparable.

In total, I conducted eleven semi-structured interviews with eighteen educators in three group face-to face interviews, three individual face-to-face interviews and five individual telephone interviews. Initially I had planned to only conduct group interviews, with whole teaching teams specialising in entrepreneurship programmes and/modules. However, this proved to be too

challenging to arrange in all cases, and so individual interviews were conducted according to the availability of the interviewees. This gave me an opportunity to capitalise on the benefits of each type of interview, acknowledging also the limitations of each approach.

Telephone interviews offer an apparently more protected, impersonal and private space, which can elicit greater degrees of honesty and dishonesty from participants. However as the interview topic was not 'high stakes' from the perspective of the interviewees, I felt the possibility of the interviewees being dishonest were minimal. Telephone interviews are more convenient both for interviewee and interviewer, and permit access to participants who are geographically dispersed but do not allow for the researcher to gather any non-verbal clues (Glogowska, Young, & Lockyer, 2011).

Group interviews offer the potential for discussions to develop and the generation of a wider range of responses than individual interviews (V. Wilson, 1997). This is of particular relevance in curriculum inquiry as discussion amongst participants is regarded as important (Barradell, 2013). Group interviews can be more practical and have organisational advantages too, theoretically causing minimal disruption and saving time, however I found that finding a time when all interviewees were available in some institutions was prohibitively challenging. In addition, I was reluctant to ask my initial point of contact in some cases to go to the considerable trouble of arranging a group interview and risk alienating the person who had already agreed to give generously of their time. However, three of my points of contact were kind enough to arrange group interviews for the purposes of my research. Having more than one interviewee present can provide more than one version of events, a cross check, and one can complement another with additional points leading to a more complete and reliable record (Cohen et al., 2011). However, one member of the group may dominate, and some individuals might be reticent in front of others. To mitigate this, I paused regularly during the group interviews to check all participants had had an opportunity to speak and encouraged a relaxed and informal atmosphere. There are also potentially more problems in coding the responses from group interviews (V. Wilson, 1997) although I found I could recognise the voices of the individuals on the recordings

fairly easily and latterly added an indication of the identity of the speaker to the transcriptions. This was not a significant issue in any case as I had not planned to differentiate individual contributions but to treat the group response as a whole.

During the interviews I noted that there was an awareness across the participants of variable and loaded meaning of some of words very pertinent to this research, in particular 'enterprise', 'entrepreneurship' and 'teach/er/ing'. The problems with the terms 'enterprise' and 'entrepreneurship' can be attributed to two main causes. Firstly, whether or not entrepreneurship is a phenomenon narrowly defined as only relating to new business venture creation for economic gain, or defined more broadly to include other forms of value creation and other contexts, or anywhere on a scale between the two. This is further complicated by the word 'entrepreneur' having such varied and widespread meaning in everyday discourse. As noted by Liguori et al. (2019, p. 184), "What we mean with a collection of five common "ent-terms" (i.e. entrepreneur, entrepreneurial, entrepreneurship, enterprise and enterprising) in relation to education is a key source of confusion perhaps significantly hampering scholarly progress".

Secondly, because the terms 'enterprise' and 'entrepreneurship' are often used interchangeably in the literature and the media, there is uncertainty regarding the distinction between the two (QAA, 2012), particularly as 'enterprise' skills and behaviours can be understood as a subset of employability skills and behaviours, applicable to all students of higher education in any subject discipline. Many educators interviewed were very aware of the problems associated with the words "enterprise" and "entrepreneurship" and felt it appropriate to define them according to context. An entrepreneur for some was a self-defining term, and anyone could claim to be an entrepreneur.

The word 'teach' and its associated stemmed words such as 'teaching' and 'taught' and 'teacher' were also problematic as they were seen to imply a didactic approach involving the teacher-focused transmission of information. This was generally regarded as less effective by the educators than more student focused or led experiential learning approaches. Many of the educators sought to use other terminology in place of 'teaching' such as 'coaching', 'facilitating' and 'enabling'.

5.3.3. The interview questions

The interview questions were informed by the work of Béchard and Grégoire (2007) and Béchard, Grégoire, Kyrö, and Carrier (2005) on archetypes and models of pedagogical innovation in entrepreneurship; Kozlinska (2016) on ways to evaluate the outcomes of such programmes, and drew chiefly on the work of Cousin (2008b) in her research into the use of transactional curriculum inquiry to uncover threshold concepts in higher education. See Chapter 4, section 4.4, for more context in this area. The troublesomeness often associated with understanding a threshold concept was used as a prompt to help both educators and entrepreneurs (in stage 1) identify candidate threshold concepts, both troublesomeness associated with knowledge and troublesomeness associated with affect (Felten, 2016). The integrative and transformative features of threshold concepts were also being relied upon to enable educators to identify them (Kinchin et al., 2011). As suggested by P. Davies and Mangan (2007), the more transformative a concept, the more troublesome students are likely to find it. Please see Appendix 17 for the questions I used in the interviews with the entrepreneurship educators.

The order of the questions was given serious consideration and I was concerned to find the optimum order. For example, I asked participants for their favourite definition of entrepreneurship, and then for their favourite definition of an entrepreneur. It is likely that the answer to the first question will have affected the answer to the second. Participants may have defined an entrepreneur differently had they been asked to do that first. As my focus was on the ways that entrepreneurs think and practise, I chose to ask first about entrepreneurship. The questions were piloted with a group of entrepreneurship educators in my own institution.

I shared the proposed broad interview questions with the educators by email in advance, along with a list of the candidate entrepreneurship threshold concepts identified by the entrepreneurs. I felt that allowing them the opportunity to review the interview questions and the candidate threshold concepts in advance of the call or meeting would enable fully informed consent, build trust with the interviewees, elicit more considered responses and enable the collection of richer

research data. According to ResearchGate comments (personal correspondance, N. E. Rowe, 2015), although some argue that giving someone time to think through an answer will lead to less spontaneous responses and by implication responses that are potentially more biased or desirable, there is little research to back up the potential limitations of this approach. It is important to note that few of the educators interviewed had had time to review this information before the interview and apologised for this, so it is impossible to say whether or how much access to this information affected their responses.

The interviews were recorded and transcribed as in Stage 1.

5.3.4. Interview data analysis

As in Stage 1 of the research, I analysed the data gathered from the entrepreneurship educator interviews thematically in several stages, taking a social constructivist approach (Cohen et al., 2011). A new version of NVivo (NVivo11) became available at this stage of the research. Please refer to section 5.2.4. for further context of the method used to analyse the educator interview data which was comparable to that used in the analysis of the entrepreneur interview data. Having learnt from my previous coding experience, I took the additional step with the entrepreneurship educator data of creating a coding memo document for each interview capturing my thoughts as I read and re-read each interview transcript.

The initial codes relating to CTCs were highly influenced by the CTCs developed in the first stage of the research study with the entrepreneurs. I constantly compared data during analysis, examining newly acquired data in light of existing data and themes that had been coded and which were emerging, in order to achieve a perfect fit between these and the data (Cohen et al., 2011). As suggested by Cohen et al. (2018) negative cases and data which challenged existing themes and codes led to their modification until they could fully accommodate all the data. When codes developed from the entrepreneurship educators resulted in the modification of a CTC, or the development of a new CTC, the entrepreneur data were revisited to see if there was in fact evidence that would support the change.

The codes relating to ways in which students can be educated to think like entrepreneurs were developed solely from the educator data.

I employed a combination of inductive and deductive thematic analysis, drawing themes deductively from the CTCs identified in Stage 1 with the entrepreneurs and inductively from the raw data generated by the entrepreneurship educators. The two sources of themes could then be used together as "one goes to the data with certain preconceived categories derived from the theories, yet one also remains open to new concepts that emerge" (Joffe, 2012, p. 210). A combination of inductive and deductive coding is the most commonly used approach in qualitative research, and is sometimes referred to a blended or abductive approach (Linneberg & Korsgaard, 2019).

I was conscious that there was a risk I may be tempted to over emphasise confirming data, ignore contradictory data, and fail to give data that was unusual, unexpected or novel due attention. I have made every effort to avoid these potential pitfalls but I am mindful that the analysis and the findings may still say more about me than about the data (Cohen et al., 2011) and my findings from the educator data may have been overly affected by my awareness of the findings from the preceding stage of the research study. However, the aim as before was to develop themes that served as propositions theoretically describing the constructs in every sentence of the interviews.

For a complete list of the themes and sub-themes emerging from the educator data, please see Appendix 18.

I have set out here the method I used to conduct the second stage of the staged stakeholder curriculum inquiry; semi-structured interviews with entrepreneurship educators. I conducted this part of the study to generate further data in response to the research questions, "What is distinctive about thinking like an entrepreneur?" and, "How can students be educated to think like entrepreneurs?" In the next part of this chapter, I will explain the research method I used in the third stage of the inquiry, to generate data from students of an entrepreneurship programme in response to the question, "How do students understand thinking like entrepreneurs?"

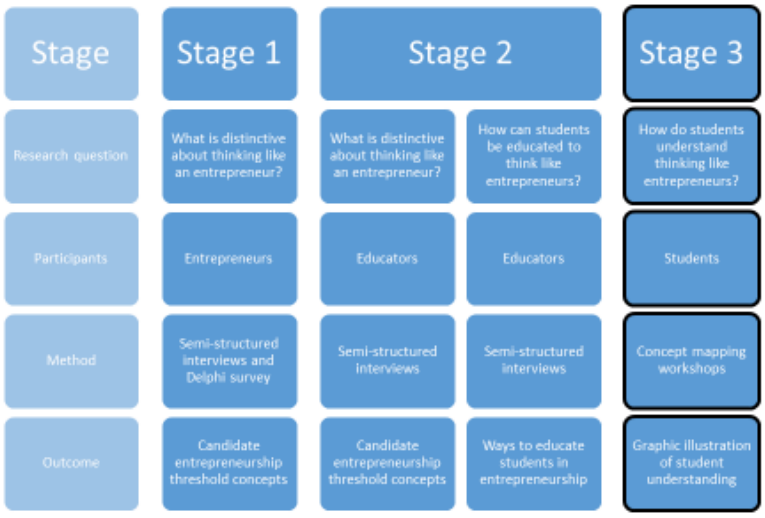
5.4. Stage 3 Concept Mapping workshops with students

The third stage of the research was designed to explore how students understand entrepreneurship and thinking like entrepreneurs. Two concept-mapping workshops were conducted with forty-eight students across three years of an undergraduate entrepreneurship programme. Business School students from all three years of one undergraduate entrepreneurship programme attended the workshops. See Table 5-5 and Figure 5-5.

Table 5-5 Research Design Stage 3 - Concept Mapping Workshops

Stage	Relevant Research Question	Participants	Method	Data	Relevant Research Objective
3	How do students understand thinking like entrepreneurs?	Students of an entrepreneurship programme	Concept mapping workshops	Concept maps *2 x concept mapping workshops* *11 x concept maps* *48 participants in total*	To explore how students understand entrepreneurship

Figure 5-5 Research Design Stage 3 – Concept Mapping Workshops



5.4.1. Concept Mapping

Concept mapping is a tool for visualising the interrelationships between concepts in an integrated, hierarchical manner and requires the identification and prioritisation of key concepts and principles. It allows issues of integration, and tacit knowledge and understanding to be made explicit (Kinchin et al., 2011). It is informed by assimilation theory (Ausubel, Novak, & Hanesian, 1968) and constructivist epistemology. Concept mapping allows attention to be paid to both how material is taught and how it will be learned, enables a conceptually transparent curriculum (Novak, 1991) and supports learning (Kinchin et al., 2011). It has been highlighted as a particularly useful approach to interdisciplinary and multidimensional curricula development as it can facilitate the integration of content from several disciplines (Edmondson, 1995). "Concept maps facilitate meaningful learning by making conceptual relationships explicit, serving as advance organisers to subsequent learning and highlighting misconceptions and alternative frameworks" (Edmondson, 1995, p. 4). Concept mapping has previously been used in both research and teaching applications in education in order to make tacit and abstract knowledge visible and to assess conceptual development over time (Reimann & Sadler, 2017). It is also useful in enhancing teaching quality (Hay, Kinchin, & Lygo-Baker, 2008). I was attracted to the method as not only did concept mapping appear to suit the research question at this stage of the research study but the act of mapping has particular benefits to participants as it allows individuals to examine and reflect on their own beliefs and assumptions. I was keen to use a method with students that offered clear benefits to them as well as to my research. I chose to use groups rather than individuals to generate concept maps for a number of reasons. I felt that a group context would be less intimidating for the students, and would encourage a more relaxed and open approach, whilst enabling me to involve a larger number of students than would have be possible otherwise given the time I had available. It also allowed me to gather research data whilst delivering an educational workshop to the students which was of benefit to them, and allowed discussion which facilitated a shared understanding.

I planned to ask students to generate concept maps to show their understanding of entrepreneurship. However, as it was likely that the students

would have no prior knowledge of the concept mapping technique, I needed to design workshops that would both introduce them to concept mapping and facilitate the development of concept maps.

For the purpose of this research, I defined a student of entrepreneurship as a full time enrolled student on a specialist entrepreneurship programme. A specialist entrepreneurship programme was defined as an accredited programme in an institution of higher education in the United Kingdom, primarily concerned with learning new venture creation and leading to the award of a Batchelor's degree.

For details of the information the participants received prior to their attendance at the workshops please see Appendix 9.

5.4.2. Workshops

Gaining access to students is extremely difficult and there are a limited number of programmes specialising in entrepreneurship in the UK of a size from which to expect to draw a useable voluntary sample. I used my own students to pilot the workshop design but did not gather the data as I felt the power differential in our relationship could have had a significant impact on the findings. Using a generous contact from my personal network, I secured access to a single sample of undergraduate students on a specialist entrepreneurship programme at another university, also using the Team Academy approach (see Chapter 1, section 1.1). As I am a Programme Leader for a similar undergraduate entrepreneurship programme, there was a risk that the student responses in the workshops might be affected by a perception of power derived from my position. To minimise the impact of this, the workshops were arranged outside normal teaching timetabled activities in specially arranged two hour workshops. The relevance and interest of the outputs from the workshop were emphasised to the students, and they were informed that the concept maps would not be evaluated but analysed to determine how they understood entrepreneurship. I designed the workshops to ensure that they would be of value to those who participated in order to maximise attendance. The students were informed that their decision to participate or not in the workshops would have no impact on the evaluation of their performance on their

accredited programme. To further ensure anonymity and maximise the chances of unconstrained contribution, I did not record the names of the participants, but only the number and year of study of students in each group. I had no pre-existing direct connection or interaction with the participating students.

I arranged and held two, two-hour workshops on the same day, one in the morning and the other in the afternoon. All students on the targeted entrepreneurship programme were invited to attend the workshops on a voluntary basis. There was a total of one hundred and twenty one students in the target group on the programme at the time of the research.

After introducing myself and setting the scene for the research I showed the students an example of a concept map centred on the question "Why do we have seasons?" taken from Novak and Cañas (2008, p. 10). Novak and Cañas (2008) emphasise the importance of beginning with a domain of knowledge that is very familiar to the participants as concept maps are dependent on their context.

Then I shared the process for constructing maps following the guidelines given by Kinchin (2016) in his book "Visualising Powerful Knowledge to Develop the Expert Student", Chapter 2. I demonstrated the process in the construction of a concept map around the focus question of "What is a concept map?" showing how related concepts are accumulated and then arranged in a hierarchy, before being linked; and finally formulating linking phrases or propositions and adding them to the map. I also shared the features of 'good' concept maps (Cañas, Novak, & Reiska, 2015) and the features of better linking phrases that are more instructional than descriptive (Miller & Cañas, 2008).

I asked participants to form groups of three to five people according to year of study and to develop a concept map around the focus question, "What do you need to understand in order to understand entrepreneurship?" I encouraged them to start by creating a 'parking lot' of concepts at first, writing each concept on a separate sticky note. Then I suggested they started to position the sticky notes on a piece of flipchart paper (A2) putting the ones they thought were most important, broadest or most inclusive near the centre of the paper. I encouraged them to cluster the concepts they felt were related to each other and to draw connecting lines between linked concepts. Using sticky notes allowed the

participants to re-position the concepts until they were satisfied with their position on the map. When this stage had be largely completed, I asked them to formulate linking phrases and to write these on the linking lines they had drawn between the concepts on their maps.

When the maps had largely been constructed, I asked the groups of participants to indicate if each concept on their maps was 'easy' or 'difficult' to 'get their head around' and to mark the 'easy' ones with a small green dot sticker and to mark the 'difficult' ones with a small red dot sticker. Although I had intended the participants to code the concepts as a group, consensus proved too difficult for the groups to achieve so I suggested they coded them individually in the interests of time. Then I asked them individually to indicate if they felt they had understood each one or not by putting a tick or a cross on each of the red and green stickers. I wanted students to mark all the concepts with either a red or a green dot, which in turn would be marked with either a tick or a cross. This was to try and identify where students might have experienced or still were experiencing misleading metacognition (see Chapter 4, section 4.3.9). Concepts would therefore be labelled according to Table 5-6.

Table 5-6 Key to labelling the Concept Maps

	Yes I've understood it	No I've not understood it
RED (Hard to get your head around)		
GREEN (Easy to get your head around)		
Threshold Concept		

Finally, I introduced the threshold concept framework and asked the students to indicate with a gold star sticker if any concepts on their maps were threshold concepts. At this point, many of the students were still trying to complete the tasks they had been already set and were preoccupied with positioning sticky notes, making connections on their concept maps, formulating linking phrases, labelling the concepts with red and green stickers and marking the red and green stickers with ticks and crosses. For this reason I felt that most

students were not able to fully engage with the presentation introducing threshold concepts, and subsequently the task of indicating threshold concepts on their maps was not thoroughly completed or even attempted in some cases.

The maps were labelled to indicate the number of students in the group, their year of study and whether they had attended the morning or the afternoon workshop. I photographed each of the maps and later replicated them digitally using CMap software to facilitate manipulation, legibility and reproduction.

5.4.3. Analysis of concept maps

As the construction of a concept map is better suited to the presentation of the perceptions of the map's author, than to the reproduction of memorized facts (Jonassen, Reeves, Hong, Harvey, & Peters, 1997) concept map analysis is not a straightforward matter. A concept map requires both the representation and the organization of ideas (Halford, 1993) and can be seen as a portrayal of a mental model (Kinchin, Hay, & Adams, 2000). Concept map analysis has historically been undertaken quantitatively, based on derivatives of a scoring protocol devised by Novak and Gowin (1984) which include measures of valid links; the degree of cross-linkage; the amount of branching; and the hierarchical structure, sometimes in comparison with an 'expert map'. Kinchin et al. (2000) advocates a qualitative approach when concept maps are being used for research and developmental purposes arguing that such an approach allows for a more nuanced interpretation. According to Kinchin and Correia (2017) concept maps can be qualitatively analysed in a number of ways including the map structure, degree of conceptual integration, and the nature of the linking statements.

I was interested in the structure, content and degree of integration of the maps. According to Kinchin and Correia (2017), a linear map may be indicative of routine expertise or surface learning; a replication of received information that may not be fully understood. A highly integrated map may indicate a level of adaptive expertise, deep learning and an indication of the ability to contextualise and adapt and reapply understanding. Hatano and Inagaki (1986) first coined the term adaptive expertise and contrasted it with routine expertise. Both types of expertise allow individuals to perform well in familiar situations. However,

individuals with only routine expertise struggle with new demands, whereas individuals with adaptive expertise easily accommodate the new situation and quickly regain a high level of performance. This is explained by their having developed a knowledge representation which allows for flexibility (Carbonell, Stalmeijer, Könings, Segers, & Van Merriënboer, 2014).

Using the likely integrative nature of threshold concepts, I was interested to use the level of integration of concepts the students associated with entrepreneurship as an indication of their understanding. I also wanted to see the students' representations of any candidate entrepreneurship threshold concepts on their concept maps, and the integrative role of such concepts in the overall structure of the maps.

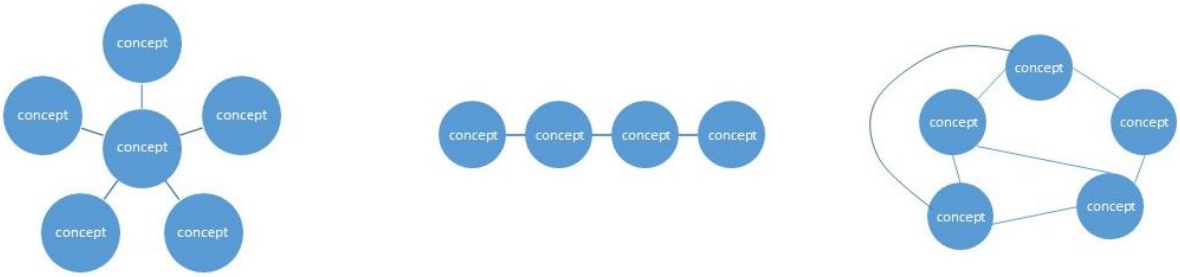
Buhmann and Kingsbury (2015) have identified a number of common concept map types:

- 'Broad' – multiple branches from the key concept with little cross linking
- 'Deep' – multiple chains emanating from the key concept
- 'Imbalanced' – some chains are more developed than others
- 'Disconnected' – segments have no link to the key concept
- 'Interconnected' – forming an often messy network
- 'Normal' – a balanced structure that is well-connected; not dominated by multiple branches or multiple chains and features only significant cross-links that do not obscure the overall structure.

Kinchin (2016) suggests that concept maps with characteristics of 'normal' maps are more likely to exhibit the characteristics of excellence as determined by Cañas et al. (2015). 'Excellent' maps are concise, clear, explanatory, balanced and appropriately pitched for the audience (Cañas et al., 2015).

Kinchin et al. (2000) suggests categorising maps according to the presence of different knowledge structures; chains, spokes and networks (see Figure 5-6).

Figure 5-6 Concept map structure types



Spoke type maps are typical of "learning-ready novices" (Kinchin, 2016, p. 40), individuals who can acquire and integrate new information without needing to radically restructure what they already know. Chain type maps are typical of students with more firmly established chains of understanding that may be incomplete or inappropriate for their new learning context (Hay & Kinchin, 2006) and are more resistant to development, as they may need to be dismantled. Network type maps indicate a level of highly developed and integrated understanding (Bradley, Paul, & Seeman, 2006). The progression of the development of knowledge structures from spoke to chain and then network is supported by the phases of knowledge development described by Pedrosa de Jesus, Albergaria, Teixeira-Dias, and Watts (2006), where students progress from an acquisition phase to an integration phase via a specialisation phase. Kinchin (2010, p. 53) suggests that, "Threshold concepts are seen as points where segmental/ linear knowledge structures and cumulative/hierarchical knowledge structures are integrated, resulting in a transformation in understanding."

I was also keen to analyse the choice of linking words and phrases, as they can also indicate the level of understanding in the group or individual constructing the map (Kinchin, 2016). Kinchin (2016, p. 20) proposes four categories of linking words and phrases (see Table 5-7). These can also be referred to as propositions.

Table 5-7 Concept Map Linking Statements (or propositions)

Type of proposition	**Description and Examples**
1. Static propositions	The relationship between the connected concepts is passive. *For example:* The sky IS Blue Animal cells CONTAIN cytoplasm
2. Non-causative dynamic propositions	There is some kind of implication, functional interdependence and covariation between the connected concepts. They imply movement, action or change. *For example:* Cars COST money Dentists FILL rotten teeth
3. Causative dynamic propositions	As above but a relationship of cause and effect is evident. *For example:* Heat MELTS ice Effective education BUILDS knowledge
4. Quantified and qualified causative dynamic propositions	As above but with implicit means of measurement and limitation. *For example:* Aerated soil HAS A MORE diverse flora Highly integrated concept maps SUGGEST better understanding

These categories also indicate a progression. This is relevant in the research as evidence of progression in the maps from first to second to third year students would indicate a developing understanding of the candidate threshold concepts. Maps with more explanatory power have more propositions of type 4 in this hierarchy. Maps with greater explanatory power indicate deeper levels of student understanding.

I was also interested in taking a quantitative approach to the analysis of the concept maps. Jacobs-Lawson and Hershey (2002) used a count of the number of concepts included on concept maps to assess change in students' understanding.

They also counted the number of hierarchical levels in each map, the number of concepts contained in each of hierarchical levels and the number of cross links.

Drawing all these ideas together, I decided to analyse the concept maps resulting from the workshops both qualitatively and quantitatively. I proposed to use the quantitative measures as an indication of level and nature of content knowledge, and the qualitative measures as an indication of the degree of knowledge integration and adaptive expertise.

I counted the total number of concepts included on each map and categorised these concepts according to each of the CTCs in entrepreneurship I had identified in stages 1 and 2 of this research. Those that could not be categorised in this way, I grouped separately for further consideration. I then counted the number of concepts that could be related to each CTC in entrepreneurship. This revealed how the students understood thinking like an entrepreneur, and enabled me to compare their understanding to the findings from previous research stages. I counted the number of concepts coded 'hard' or 'easy' by year of student, and the number of these the students had indicated that they themselves had understood or not. This enabled me to consider the troublesomeness of the concepts to the students, and their likely threshold nature. I categorised the maps according to type (Buhmann & Kingsbury, 2015) and I counted the number of linking statements on each map. This enabled me to highlight any pattern of progression in student understanding from year to year of the programme. I also categorised the linking statements and the map topography. I highlighted clusters of concepts which appeared to be related to each other and related to a CTC in entrepreneurship on the digital versions of the concept maps, to offer a visual representation of the level and development of the students' knowledge.

5.5. Conclusion

In this chapter I have set out the research method used for each of the three stages of the staged stakeholder curriculum inquiry in detail, describing, justifying and discussing the method of data collection for each stage (Table 5-1) and how each stage of the study builds on the one before. Data was gathered to answer the following research questions:

- What is distinctive about thinking like an entrepreneur?
- How can students be educated to think like entrepreneurs?
- How do students understand thinking like entrepreneurs?

Data was generated in the form of the response to a Delphi survey, transcriptions of interviews with entrepreneurs and entrepreneurship educators and student concept maps. This enabled CTCs in entrepreneurship to be suggested along with effective approaches to entrepreneurship education informed by these CTCs, and an indication of student understanding of entrepreneurship. In the next chapter I will present and discuss my research findings.

Chapter 6. Findings and Discussion Part 1 - Entrepreneurs

6.1. Introduction

This chapter sets out the findings from the first stage of the research study (see Figure 4.1), the Delphi survey conducted with entrepreneurs. In the following chapter these findings are developed in light of the findings from the structured interviews with entrepreneurship educators. The findings from the concept mapping workshops conducted with entrepreneurship students are presented in the context of the findings from the preceding two stages in Chapter 8.

CTCs (Candidate Threshold Concepts) in entrepreneurship have been derived from data generated by entrepreneurs and have been identified in the research process as distinctively entrepreneurial ways of thinking and practising. Rather than attempting to hold up these concepts against the 'defining' or likely criteria of threshold concepts to determine the level of their "threshold-ness", the perspective of the research participants has been privileged. Instead of trying to prove or disprove each CTC as such, the opinion of the research participants regarding the "threshold-ness" of a concept was relied on. Findings support the proposition of P. Davies and Mangan (2007) that threshold concepts "might best be seen as a web of concepts which link thinking and practice in a discipline" (p. 711). Where a participant comment clearly highlights a feature of a concept that is characteristic of threshold concepts, this has been highlighted.

The first stage of the study was designed to explore the following research question;

- What is distinctive about thinking like an entrepreneur?

By suggesting CTCs in entrepreneurship, the likely bounded nature of threshold concepts may be used to define the distinctiveness of entrepreneurship and what is distinctive about thinking like an entrepreneur.

6.2. Entrepreneurs

6.2.1. Introduction

A set of nine concepts and their associated descriptors regarded by participants as fundamental to thinking as an entrepreneur were developed from the initial seventeen interviews with entrepreneurs conducted at the start of a Delphi Survey process (Table 6-1). Interview transcripts were coded in NVIVO10 using a social constructivist perspective to analyse the data thematically. Please see Chapter 5, section 5.2 for a detailed description and analysis of the research method. Concepts fundamental to thinking as an entrepreneur were developed which highlighted patterns in the data and these are set out in Table 6-1.

Table 6-1 Nine concepts fundamental to thinking as an entrepreneur drawn from interviews with entrepreneurs.

Self-Efficacy	Self-efficacy is about thinking "I can do this" whilst being highly self-aware, self-controlled and conscious of one's own strengths and weaknesses. It is about accepting mistakes as part of learning, and always being interested in knowing more.
Opportunity	Opportunity is about seeing commercial potential where others do not. It is associated with intuition, making patterns and connections. It implies future orientation and a focus on possibilities for improvement.
Risk	Risk is regarded as a sign of a potential opportunity, something to be understood - even sought out - rather than necessarily avoided. It implies quick wits, requires discernment and is not reckless.
Focus	Focus is about making choices, having a clear vision and passionately driving towards it. It implies effective prioritisation, appropriate delegation and never switching off. Focus means intense, single-minded determination.
Impact	Impact is about making things happen and taking action on a grand scale combined with a sense of urgency and a desire to make a difference. It requires courage and implies a degree of compulsion.
Deviance	Deviance is about being unconsciously unconventional, able to resist the pressure to conform or do what family and society expect. It implies a degree of strong mindedness and can sometimes be perceived as being difficult or arrogant.

Work	Work is not a distinct bounded set of activities, but integral to and indistinguishable from living and playing. It implies incredible effort invested by choice which is intrinsically motivated.
Team	An effective team is prerequisite to success. Team is about knowing that the team can do more than the collection of individuals combined, not feeling threatened by the capabilities of others, but seeking out others more able than you.
Business Fundamentals	Having fundamental knowledge in sales and marketing, finance and human resources.

Participants were asked to rate the nine concepts in terms of importance to thinking as an entrepreneur, rank them in terms of importance, and also rank them in terms of how well they differentiated thinking as an entrepreneur from not thinking as an entrepreneur. See Appendix 19 for the tables showing outcomes of these rating and ranking exercises.

All nine concepts were rated as at least 'important' to thinking as an entrepreneur by at least half of the participants, but it was difficult to judge whether or not any consensus had been achieved. Agreement was even less apparent in the ranked responses. Consensus could be claimed for Focus being more important to thinking as an entrepreneur (ranked in the top four by ten of the twelve respondents) and Business Fundamentals being less important to thinking as an entrepreneur (ranked in the bottom four by eleven of the twelve respondents.)

Little consensus was apparent when entrepreneurs were asked to rank the concepts to distinguish between thinking as an entrepreneur from not thinking as an entrepreneur, with the exception of eleven of the twelve respondents ranking Business Fundamentals in the bottom four.

Following the interviews and the rating/ranking round, in the final Delphi round, the panel was asked to indicate (to vote on) which of the nine concepts were critical to thinking as an entrepreneur. Ten participants responded (from twelve) (see Appendix 19 for detailed responses)

It was judged that consensus had been reached for five of the nine concepts, with at least nine of the ten respondents indicating these were critical to thinking as an entrepreneur. These were Self-Efficacy, Opportunity, Risk, Focus and Impact. It is important to emphasise this finding is a consensus of the entrepreneur participants who think 'as' entrepreneurs and do not know what it might be like to think 'like' them.

6.2.2. CTCs in entrepreneurship (entrepreneur perspective)

Self-Efficacy, Opportunity, Risk, Focus and Impact were the concepts identified as critical to thinking as an entrepreneur by the panel in the Delphi survey process, and were consequently termed CTCs in entrepreneurship at this stage of the research. For each CTC, a descriptive paragraph was also developed from coding the interview transcripts, and was used to explain the CTC in the actual survey and the final voting round. Representative excerpts from the interviews which informed the development of the explanations are presented with each one. These CTCs are each discussed more fully below and illustrated with verbatim entrepreneur interview quotes.

6.2.2.1. Self-Efficacy

Self-efficacy is about thinking "I can do this" whilst being self-aware, self-controlled and conscious of one's own strengths and weaknesses. It is about accepting mistakes as part of learning, and always being interested in knowing more.

Many of the participants had long harboured the ambition to be their own boss, and had had a clear vision of the future they aspired to. Becoming an entrepreneur was intentional and not accidental. This implied that they believed they could create a successful new venture and had the self-control to make the necessary sacrifices to achieve their goal. This belief was transformative and irreversible, governing their way of seeing themselves, and so was included as a CTC in entrepreneurship.

"I always wanted to run my own business"

Sayer

"I think the only thing that I would mention is that, you know, you get to having a business since [date] and people think that you're alright and you've made it, but actually, you know, things can get harder in different ways and, you know, things can be tough and getting the balance of life right is tough, it's tough, it's really tough, so I might sit here and say, "Oh, you know, it's fine. I did this and I did that," but actually, you know, I had sleepless nights, you know, my hair went grey at certain points and it's, you know, family suffered and ***all*** *of those things, but I wouldn't have changed it for the world."*

Emeline

There was a firm conviction among the entrepreneurs interviewed that they could make their entrepreneurial ventures work. They seemed always to look on the bright side and had confidence in themselves and their ability to achieve what they had set their mind on. They believed they could succeed where others might have failed, or could succeed to an even greater extent than others. In this way, their self-efficacy was bounded in that they used it to distinguish themselves from other people, highlighting another likely characteristic of a threshold concept.

"When I look at myself…you tend to think you can do anything, you can do things better than other people…we [entrepreneurs] tend to look at everything and go "we could do that better!" There's a hell of an arrogance in there but I tend to look at things all the time that I think I could do better."

Douglas

"I think that's what you have to have, you've got to have that sort of steel, to say 'we believe in what we're doing and we're going to do it.'"

Darius

When the participants came up against barriers, they did not let them get in their way. They described themselves as persistent and determined. Their belief in their ability to do what they had set out to do was unshakable.

"Because they have a can-do attitude and don't take no for an answer."

Sayer

"...and so I think there's always a way. So an entrepreneur is someone who will always find a way."

Emeline

"I think they, I think entrepreneurs are typically, quite single minded, quite stubborn...you know but is stubborn a form of thinking? – I don't know, but I think, but I think they are people who, you know they, they are people who will make things happen in spite of whatever obstacles are put in their way."

Menard

There was a sense that the participants were looking for challenging, inherently interesting activities that would hold their attention. This implied a certain level of confidence; participants clearly thought they were able to handle a challenge. They were more motivated by activities that they found to meaningful than any external reward such as personal wealth.

"You don't want an easy ride because that would be boring."

Emeline

"I don't think those guys were at all interested in money...I think they were just interesting in those early days in, you know, doing something that they thought was fascinating."

Darius

The thirst for challenge in entrepreneurs was accompanied by little evidence of a fear of failure. They accepted failure as part and parcel of the process of what they did. Failure was regarded as less than ideal, but was not given much

significance. Failure and making mistakes did not affect their strong sense of personal capability and self-confidence but the need for resilience was acknowledged.

"So I think everybody makes mistakes and as long as I do the best that I can and be objective within that, then I can sleep at night and I make peace with that, it's fine."

Emeline

"But you also learn that making mistakes isn't such a problem"

Douglas

"...you have to be quite thick skinned, you have to be prepared to take the knocks. Because you're going to get a lot."

Denis

Their self-efficacy came with a highly developed sense of self-awareness. The participants believed they could do whatever they set their mind to, but not necessarily single-handed. They did not give the impression of believing that they were brilliant at everything. They were not conceited or narcissistic. They were enthusiastic about their own learning and development. They were very keen to point out the importance of knowing their own strengths and weaknesses, engaging other people when complementary skills and expertise were required.

"You also realise that, cos detail isn't my strong point, I'm not a detail person, but I had to take control of certain things when you're small, and I realised very quickly that paying somebody else to do things that you're not good at is much smarter than you trying to do them yourself. I mean I used to manage our cash flow which is hilarious, you know I'd spend days, literally days, looking at spread sheets trying to work out the cash flow - so it would take up a massive amount of my time, and I would ultimately get it wrong anyway, so the information that was being provided was useless, so we couldn't make proper decisions, and then we hired a financial controller one day a week and he did all of that. He did it in probably an hour and provided accurate information that we could then make decisions on."

Douglas

"if you think you never know it all, and you do think you've got lots more to learn you tend to be quite good at developing a business and really reaching out to get it to the next stage because you don't have this over confident view that you know everything. And I think a lot of entrepreneurs do actually, are always listening and thinking about ideas and and are always sort of thinking about what more do I need to do to make this successful?"

Darius

The participants often described their experiences as if they were on a journey and always learning. Often they were learning from experience and mistakes they had made, but sometimes they were actively seeking out new opportunities for the chance to learn from them. In this way, the concept of self-efficacy also displayed the likely threshold concept characteristic of integrativeness as it allowed them to assimilate new knowledge and adapt to new contexts.

"Yeah, you realise that actually you, you never stop learning."

Sayer

"But unless, I mean for me, I had to I pushed myself into [...] cos my core business is [...] but I wanted to go into [...] so I could learn more about another area of being an entrepreneur, that was something I wanted to push

myself into. I learnt masses and I actually applied a lot of that back into my core business, and it's that sort of experience that you've got to go through"

Robin

Ultimately many were clear that although they made good use of all the resources that were available to them, the responsibility for the success or failure of their venture was theirs and theirs alone.

"Nobody gets the job done except you. So you have all this support, all this team, all the rest of it, but you've got to get it over the line come hell or high water and the rest of it's something else."

Sayer

"If you're an entrepreneur in business, if you don't sort the problem out, you go bust."

Eric

Although the term 'Self-Efficacy' was later replaced with 'Entrepreneurial Agency' (Section 7.1.2.1), this CTC was clearly very significant in defining what made the perspective of entrepreneurs' distinctive. It was perceived to be transformative in that it enabled the entrepreneurs to see themselves in a new way, irreversible in that they never saw themselves in any other way, integrative in that it allowed them to continuously learn and bounded in that they felt it made the way they saw the world distinctive.

6.2.2.2. Opportunity

Opportunity is about seeing commercial potential where others do not. It is associated with intuition, making patterns and connections. It implies future orientation and a focus on possibilities for improvement.

This CTC was about seeing the operating environment differently, and identifying commercial potential where others could not. In this way it was both transformational and irreversible, which are likely characteristics of threshold concepts.

"But in recognising, yeah, it's the energy, it's the get-up-and-go, it's the foresight., it's the ability to see the issue before the issue arises. It's also being ahead of the market…Real entrepreneurs, they're kind of even ahead of the customer."

Clarence

"So, and I haven't realised this in work, but if we come up against a problem, which we do come up against a problem, you know, a lot of people are, like, "Oh my god, you know, that's terrible! What are you doing to do about that?" There's always an option. There's always an option. You can just choose to pull back. You can go over here. You can do this, you can do that. There are so many options and it's really nice when you get someone who's younger who says, "This is terrible," and you go, "Well, we can do these four things." And they go, "Can we?""

Emeline

"I think that's what, I see that all the time now, seeing opportunity and seeing a kind of strategic route to get there. I wouldn't say this to the rest of the company, but every year we have, at least twice a year, an off-site, where we all get together and we talk about strategy and it always amazes me that nobody else can kind of see the world that way. And then getting really frustrated with those sessions where I think, "Why is nobody seeing this?" But I think people, people just don't necessarily think that way. The majority of people."

Inez

This way of seeing involved a strong desire to change the status quo. There was a general sense of dissatisfaction with the way things were, and a feeling that they could always make things better. In this way, this concept had an integrative quality, typical of threshold concepts, allowing the entrepreneurs to see patterns and make connections. The irreversible nature of this concept is also evident in that it cannot be switched off, and enabled the entrepreneurship to be future orientated.

"There's definitely that desire to change, to want to do things differently and to be the person that thinks they're the ones that can do it. I think you also have to have a certain level of dissatisfaction about just the general status quo all the time, I guess it ties in to wanting to change things but I get irritated when…I think I mean I look for solutions to things all the time."

Douglas

"I think it's kind of that desire to do…to create, that desire to do interesting things and not be happy with just doing the same thing over and over again."

Robin

The entrepreneurs interviewed often expressed a future orientation.

"I do think you've got to a be an ideas [person]…., you've got to be able to, you know, constantly be looking for the next idea sort of thing."

Bart

"I think you always have to be planning, you know, so you've just raised your first 100K, you know you're going to need the next 250 in 12 months' time, you know, what do you need to look like to raise that 250? To think ahead and add sort of, you know, and sort of plan your, your business growth to the extent you can to make sure that by the time you get there you look the way you need to look to be able to raise that next tranche of money really."

Bart

Entrepreneurs also associated the identification of opportunities with instinct, gut feel and intuition, built from years of experience. This also implied an integrative quality as their expertise in this way of thinking and practising is developed over time with experience.

"So you can see some people just naturally are happy to just make decisions with their gut feel or their instinct and they want to do it tomorrow or the day afterwards"

Darius

"I think we've learnt over the years that it's rarely the detail that gives you the answer. Usually your judgement, your instinct's usually pretty close."

Douglas

It became clear however (see Section 6.2.2.3), that although on face value this appeared to describe risk orientated behaviour, it was more relevant to the action orientation of the entrepreneurs. Action that was subconsciously informed by a wealth of experience to the extent that it felt intuitive, rather than a manifestation of a tendency towards recklessness.

Opportunities often presented themselves in the form of patterns seen by entrepreneurs making connections where others did not, and quickly taking in the big picture, again emphasising the integrative quality of this CTC.

"You're a – and I'm not sure if I've already said this – you join dots. You know, you see connections. You see, you see your own pathways that other people just don't see. You see colours, you see shapes that other people just don't see."

Clarence

"You know, you create the space and then people move into it."

Ariella

"One of the things a lot of entrepreneurs are very quick, they're not as some people think, they're not kind of salesmen or somebody trying to do a quick turn or a quick deal or do something very, very quick, you just do it. Most entrepreneurs that I know that are really successful are able to take in the whole world view whether that's the environment that's round and about you, the people that are working for you, the customers, quite a lot of different things, but just to be able to take that whole view into account very, very quickly, and they can see themselves and their business decisions in the context of the local economy, the place in which they work, the market place in which they work, the wider economy, other things going on around about in a different that may influence the consumer. They can see all those different

things going on but they get that big world picture very, very quickly. I, I find that that's something that I've got a, a knack of doing and not everybody else can because they're in a silo or they're in a little box and, that ability to be able to see so much in one go is pretty fundamental to being an entrepreneur to me."

Denis

Entrepreneurs were able to take in and make sense of a great quantity of information very quickly, becoming aware of opportunities without any apparent effort. They appeared to do this automatically and constantly. This way of seeing the world was closely connected to the next CTC of 'Risk' as opportunities were quickly weighed up and action taken where appropriate. The CTC of 'Opportunity' appeared to have transformative qualities as it meant the entrepreneurs were seeing the world in a new way, again in a way that was different from others, reflecting the bounded nature of this CTC. This way of seeing the world was irreversible and habitual, the integrative nature of this CTC permitting its development over time with experience, and seeing patterns and making connections invisible to others. The fact that is appeared to develop of time with experience also accentuated the bounded nature of this CTC.

6.2.2.3. Risk

Risk is regarded as a sign of a potential opportunity, something to be understood - even sought out - rather than necessarily avoided. It implies quick wits, requires discernment and is not reckless.

Entrepreneurs understood risk as an inherent part of pursuing any potential opportunity, and something not to be avoided but perhaps even sought out. Their way of understanding 'Risk' was fundamentally different from a normally accepted use of the word and in this way, this CTC was transformative and irreversible. Risk is not associated with one particular decision making style in this instance and participants described taking both calculated risks and acting on gut instinct and intuition. Decisions could be made by the entrepreneurs quickly or relatively deliberately, unconsciously or consciously assimilating the available information, and always mindful of the temporal nature of any available

opportunity. The distinctive aspect of entrepreneurial thinking and practising therefore appeared to lie in their preference for action despite the acknowledged associated risks. Rather than seeing risk purely as an opportunity for potential loss, they took account of a situation's potential for gain and gave this aspect more weight than others would.

> *"So every spare penny we ever had, and in fact quite a lot of money we didn't have, we used to put into growing and scaling up as quickly as possible."*
>
> Douglas

> *"But it did cost a few hundred thousand to do that first year, so it wasn't, you know, when you're a small business, it wasn't a small risk for us. But I think sometimes, even though the market might tell you, yeah, they don't always know they need it but if you can really see that gap, you can see how useful it would be, it's worth then taking a punt and just going for it. So thankfully it did work."*
>
> Inez

> *"I think, I think one of the key ingredients is the, is that unnatural, and I think it is unnatural - but it is natural in businesses that survive and grow, is around risk. And sort of sometimes even 'betting the farm', so we were spending for example in the very early days 40% of our revenues on creating and marketing a brand because we thought that was important in establishing ourselves in the [...] market so it's that ability to think that you are right and that success will come."*
>
> Darius

Entrepreneurship, for the interviewees, involved understanding risk and seeing it as an indicator of potential opportunity. In this way, it was integrative, in that there was a connection between 'Opportunity' and 'Risk' and these two CTCs formed a web or tangle of concepts together with 'Self-Efficacy'. Too much analysis unnecessarily delayed things, interfering with instinct, intuition and gut feel that in any case was likely to have been informed by experience.

"A natural instinct to think – "I've got to go and do that. I'm not going to have 14 committee meetings and 15 white papers and make sure I've put in a process to think about this and…" by which time the opportunity's gone."

Darius

"But then again I think you can spot the ones who aren't entrepreneurial because you can't mess about…you can't take time as an entrepreneur, you can't. You have to be able to move and you know, to move on and get on with the next challenge that's in front of you because there will be many. So people who tend to delay those decisions or stress about them, or worry about them, pontificate on them for ages they're the people who aren't entrepreneurs"

Douglas

This last quote emphasised the potentially troublesome characteristic of the CTC of 'Risk' and it represented a clear way in which entrepreneurs differentiated themselves from others, demonstrating its bounded characteristic too. Some entrepreneurs clearly enjoyed operating in uncertain environments.

"I have a high propensity for risk, even to the point where, I'm uncomfortable when I'm comfortable."

Clarence

"So, you know, that's the other thing about entrepreneurs, they create choice. They create choice because they're constantly moving the status quo."

Ariella

"But it's something about a spark, something's going to happen that hasn't already happened, but something's going to."

Barry

However, the idea of the entrepreneur as a risk seeker was rejected. Risk was part of the business landscape that needed managing dispassionately, whilst being mindful of the potential opportunities the situation could also offer.

"And so I think when an experienced entrepreneur sees an opportunity, they generally go through quite a rigorous check-list of erm, you know, what's the market size? what's the technical feasibility? what's the likelihood of success? All those sort of things."

Lennie

"So I think sometimes you just, when you get a bit gung-ho and try and grab every opportunity, so that's one of the things that I've learnt over the last 14 years is that you've got to be a little bit more selective……and do your homework on opportunities more."

Inez

"So just sort of convincing people they need to kind of look at this dispassionately, rationally and objectively."

Bart

'Risk' involved being discerning regarding potential opportunities, and having faith in your own decisions, trusting gut instinct and not needing to have all the detail. Entrepreneurs were comfortable acting on incomplete information.

"But I do think that a very sort of rigid approach and very analytical approach to, to things probably isn't the obvious characteristic of an entrepreneur because they will do, you know, those kind of people will do things logically, they'll do lots of analysis and, again, to use those dreadful phrases, you get paralysis by analysis. You need someone who says, "Yeah, yeah, I know all of that, but…""

Bruce

"So it was that, it was that inquisitive mind of we can actually do something here that's really different and really better and let's give it a go, let's get some money and try and do it. The last thing on their minds was "are we going to build a big business?" – they wouldn't have thought like that."

Darius

Entrepreneurs appeared to be very analytical and mindful of the implications of the decisions they took, and where the associated risks lay.

However, their approach to risky situations was characterised by a greater emphasis on the more positive potential outcomes of their actions than might be expected in others. This CTC 'Risk' therefore manifested the transformative, troublesome and integrative characteristics typical of threshold concepts. In distinguishing this particular way of thinking and practising for entrepreneurs, entrepreneurs also emphasised its bounded nature.

6.2.2.4. Focus

Focus is about making choices, having a clear vision and passionately driving towards it. It implies effective prioritisation, appropriate delegation and never switching off. Focus means intense, single-minded determination.

Entrepreneurs are very good at focusing on what was most important. Once a decision had been made, they were not easily distracted, and pursued their objective with single-minded determination. The CTC of 'Focus' was about making choices and perhaps turning away from other attractive opportunities. This CTC appeared to have come less "naturally" than some of the others, entrepreneurs implying that they had had to learn it the hard way. This is an indication that it has a troublesome nature.

> *"I learned how to, you know, cut through the crap basically and sort of... you know... just sort of spend time on what was important."*
>
> Menard

> *"...you realise you know years on, that actually being very focussed and not straying is a key asset...there's always that desire to break out and try and do more, go off and do other things at the same time as running your business, your core business...And whilst you might think it's entrepreneurial to go and sort of try to do other things or, or tangential things along the way, actually - don't."*
>
> Darius

"And what you've also got to learn is that if it ain't working, stop. And that's the hardest thing. Because not all business ideas can be commercialised."

Sayer

In the context of 'Focus', entrepreneurs felt it was important to have a clear vision and passionately and perhaps stubbornly, drive towards it. Entrepreneurs were clear that this way of thinking and practising distinguished them from other people, emphasising its bounded nature, often characteristic of threshold concepts.

"I think an entrepreneur is somebody who, as I said before, has a vision for something that can be, that they can do... and perhaps something that you see a real opportunity and you think, "I can do that better than somebody else. I can make a real success of that. I can gather a team of people around me to deliver that" and they've got the drive and determination to make it work because failure is not an option. You know, you have to succeed or, you know, the business will, will fold."

Eric

"And you are focussed in that aim and that vision that you've got as well – to the detriment of other things sometimes as well, absolutely..."

Emeline

The entrepreneurs were very aware of the need for good priority setting, and the importance of managing their time well and using it as effectively as possible.

"I think, I think, the, the ability to not get sucked into the day-to-day business, to be the seagull rather than the octopus, especially which is one of [...]'s favourites that he spouts every now and again. And, but yes, especially when things are busy, it's very easy to just get involved in fire-fighting and you can end up spending an awful lot of time solving small problems, that aren't business critical."

Lennie

"You need to know kind of which boxes to tick and which not."

Bart

'Focus' also involved a recognition of the importance of delegation, and making the best use of the resources around you in pursuit of the goal. In this way it manifested its integrative nature, also often characteristic of threshold concepts.

"You know, you can make that right call and also I used to, erm, micro-manage and I had to get away from that. I've got amazing people here. I've got people who are better than me and it's recognising that and going, "Do you know what, Emeline? It's not all about you, it's about other people." So I think that's my best lesson I've learnt and I try to make sure I do that."

Emeline

"I think it's also important to be a jack of all trades and a master of none. And, so that you can do a little bit of everything, but then when you need expertise you can bring in the expertise to get it done, as best as possible. But I think it's important to have done it a little bit yourself so that you know what you're asking your people to do."

Lennie

Another aspect of 'Focus' was its all-absorbing nature suggesting it was both transformative and irreversible.

"Just that incredible sort of consistency of dedication to the whole thing. You know, you just never let it drop, you never relax, you never, you know, you don't ever stop doing what you're trying to do really. It's, it's kind of, it's what drives you, sort of thing."

Bart

"They're not just doing it for the money, they're doing it for other reasons you know, they're interested in it, it gets them out of bed, energy. I think there's real energy there. Someone who enjoys business, genuinely enjoys business I think. Someone who doesn't really care, someone who just wants to talk about football or whatever, you know cos it's so easy you know, I think relatively good entrepreneurs want to talk business, and they're happy

talking business and they don't like switching off talking about the business. I certainly could talk about business for as long as anyone could keep talking to me about it! Fall asleep or start to gently walk away from me…"

Robin

The CTC of 'Focus' also appeared to be connected to and enabled integration with self-control and self-discipline. The entrepreneurs had a distinctive way of "zoning in" on their particular project to the exclusion of all else during the critical phases of start-up, and an excellent ability to prioritise, knowing what actions taken when would have the biggest impact on the success of their venture.

The CTC of 'Focus' manifested transformative, troublesome, integrative bounded and irreversible characteristics according to the perceptions of the entrepreneurs.

6.2.2.5. Impact

Impact is about making things happen and taking action combined with a sense of urgency and a desire to make a difference. It requires courage and implies a degree of compulsion.

The CTC of 'Impact' was about making things happen and taking action with a sense of urgency, almost compulsion.

"And I think an entrepreneur is someone who – really important – doesn't think about the consequences because if you start to think about it too much, you don't do it, and that is the most, for me, defining thing about an entrepreneur. And the second thing – it's strange to say it's second, but I think it's really important – is that you then do it. You don't delay by a day. You don't delay by a week. You just absolutely do it."

Emeline

"Well, that sounds a bit sort of obvious, but, you know, they actually do it rather than think about it. There are lots of people that are working in jobs will be thinking, you know, "I'd love to do this, I'd love to do that," and I

think a lot of, you know, entrepreneurs will actually just take that, take that risk and, and, and do it."

Alastair

The entrepreneurs were motivated by a variety of things, but the desire to make a difference was apparent for most. In this way this CTC manifested its transformative qualities.

"some entrepreneurs are driven by money…some entrepreneurs are driven by just wanting to do something the best it can be. So with entrepreneurs it's not always about the money…It's being, it's making something or being the very best that you can be."

Emeline

"Whereas for me, [money] isn't at the top of the list. It's the absolute buzz of being able to achieve what you can in terms of quality of life, healthcare, that kind of thing."

Barry

"I think, I think, like, I mean I don't think there is one thing for an entrepreneur, to be honest with you. When I look at entrepreneurs, you know, for many of them they do want to make some money, many want to make, have a social impact, many of them want to kind of leave a mark, build a business, change the way something works and I think those are all important things. My personal drive is definitely commercial. Well, it's not, it's all those things, to be honest with you, it's all those things."

Bart

The panel of entrepreneurs also acknowledged the need for courage and bravery. The fact that this CTC appeared most evident in challenging situations implied that it had troublesome characteristics.

"You know, when I, when I first went to the bank for an overdraft, when I had a, because it was a […] business, and I had to hand the keys of the house across, that was my mortgage on the line, you know? It took me four years to get them back, but it was a hell of an incentive. You know?"

Ariella

"You can make a lot of money but it will be by taking risk in the early days…which is an interesting way of doing it and it take a lot of balls to do that."

Darius

The CTC of 'Impact' was associated with a need to take action. Entrepreneurs were almost unable to resist taking action when they saw something that they thought needed to be done, to a level that was not far from being obsessive. In this way the CTC of 'Impact' manifested integrative qualities in that it led directly to other connected ways of thinking and practising entrepreneurship. It was also used by entrepreneurs to distinguish what made their ways of thinking and practicing in the world distinctive, showing its bounded and irreversible nature.

6.3. Conclusion

The first stage of the research, a Delphi survey with entrepreneurs, was designed to explore the answer to the following research question;

- What is distinctive about thinking like an entrepreneur?

Five CTCs in entrepreneurship were suggested here enabling the distinctive nature of entrepreneurship to be described and claimed in terms of these ways of thinking and practising (Table 6-2).

Table 6-2 CTCs in entrepreneurship mapped against characteristics regarded as typical of threshold concepts

	Self-Efficacy	Opportunity	Risk	Focus	Impact
Transformative	✓	✓	✓	✓	✓
Troublesome			✓	✓	✓
Integrative	✓	✓	✓	✓	✓
Bounded	✓	✓	✓	✓	✓
Irreversible	✓	✓	✓	✓	✓

All the CTCs in entrepreneurship suggested here were perceived to be transformative by the entrepreneurs in that they differentiated the way that they saw the world from the way that others did. In this respect, their irreversible nature was also implied as this new way of seeing was not something that they had to remember to do, it was habitual and could not be turned off. The CTCs of 'Risk', 'Focus' and 'Impact' appeared to be more troublesome than 'Self-efficacy' and 'Opportunity' which appeared to come more naturally and had less obvious potential downsides.

All the CTCs were perceived to have integrative qualities in that they connected to and enabled a deeper understanding of other concepts and other ways of thinking and practising. As mentioned in the introduction to this section the findings support the proposition of P. Davies and Mangan (2007, p. 711) that threshold concepts "might best be seen as a web of concepts which link thinking and practice in a discipline". Indeed it would be hard to conceive of an individual practicing entrepreneurship in which any one of the CTCs in entrepreneurship were not evident. The CTCs were also integrative in that they could be developed over time with experience, allowing a distinctive approach to become clearer and clearer.

Entrepreneurs often used these ways of thinking and practising to distinguish themselves from other people and in this way all the CTCs were bounded in that they were particular to entrepreneurs. Table 6.2 summarises how all the CTCs in entrepreneurship developed from the Delphi survey conducted as Stage 1 of this research with entrepreneurs map against the likely characteristics of threshold concepts.

Entrepreneurship therefore may be described in terms of the candidate threshold concepts described in Table 6-3 which suggest distinctively entrepreneurial ways of thinking and practising.

Table 6-3 Candidate threshold concepts in entrepreneurship generated from entrepreneur data

Self-Efficacy	Self-efficacy is about thinking "I can do this" whilst being self-aware, self-controlled and conscious of one's own strengths and weaknesses. It is about accepting mistakes as part of learning, and always being interested in knowing more.
Opportunity	Opportunity is about seeing commercial potential where others do not. It is associated with intuition, making patterns and connections. It implies future orientation and a focus on possibilities for improvement.
Risk	Risk is regarded as a sign of a potential opportunity, something to be understood - even sought out - rather than necessarily avoided. It implies quick wits, requires discernment and is not reckless.
Focus	Focus is about making choices, having a clear vision and passionately driving towards it. It implies effective prioritisation, appropriate delegation and never switching off. Focus means intense, single-minded determination.
Impact	Impact is about making things happen and taking action combined with a sense of urgency and a desire to make a difference. It requires courage and implies a degree of compulsion.

The bounded and integrative nature of these CTCs can be used to define entrepreneurship in terms of these distinctive ways of thinking and practising. These CTCs in entrepreneurship can also be used to demonstrate how entrepreneurship can be regarded as a distinct subject area in an educational context. They enable what is distinctive about thinking like an entrepreneur to be described and explained, paving the way for others to be educated in these ways of thinking and practising. In the second stage of the research, these CTCs in

entrepreneurship were developed with entrepreneurship educator perspectives, and ways to educate students in thinking like entrepreneurs were developed. The next chapter presents the findings from the second stage of the research involving semi-structured interviews with entrepreneurship educators.

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Chapter 7. Findings and Discussion Part 2 – Entrepreneurship Educators

7.1. Introduction

This chapter sets out the findings from the second stage of the research study (Figure 5-4). Findings from the Delphi survey conducted with entrepreneurs are developed here using the findings from the structured interviews with entrepreneurship educators. The findings from the concept mapping workshops conducted with entrepreneurship students are presented in the context of the findings from the preceding two stages in Chapter 8.

Following the collection and analysis of the entrepreneur data as shared in Chapter 6, the interview questions for the entrepreneurship educators were developed (see Appendix 17), and the educator interviews conducted, transcribed and analysed. See Chapter 5 for the full details of the research method and analysis. Eleven semi-structured interviews were conducted across ten higher education institutions in the United Kingdom from June to November 2017. Eighteen educators with between two and twenty nine years' experience, took part in three group face-to-face interviews, three individual face-to-face interviews and five individual telephone interviews lasting between 60 and 90 minutes (see Chapter 5, Table 5-4).

The research data generated here together with the data generated from the previous stage of the study involving entrepreneurs enabled me to further develop my response to the first research question:

- What is distinctive about thinking like an entrepreneur?

The research data generated during this second stage of the research also enabled me to address the second research question:

- How can we educate students to think like entrepreneurs?

The analysis of the educator data with respect to CTCs in entrepreneurship was significantly informed by findings from the entrepreneur data set as described

in Chapter 6. The initial set of five CTCs in entrepreneurship found in stage 1 (Self-efficacy, Opportunity, Risk, Focus and Impact) were expanded to six and further developed in light of the educator data in stage 2. The resultant set of six CTCs in entrepreneurship (Entrepreneurial Agency, Context is Opportunity, Context is Resource, Risk is missed Opportunity, Value is determined by the Customer and Entrepreneurship is a Practice) together with analysis are presented in section 7.1.2. The educator interviews were also used to explore how students can be educated to think like entrepreneurs and these findings are presented in section 7.1.3.

7.1.1. Evolution of CTCs in Entrepreneurship

I have treated entrepreneurs as subject specialists in *entrepreneurship*. As discussed in section 6.2.2, the CTCs in Stage 1 were drawn from the external practitioner perspective. Entrepreneurs have first-hand experience of entrepreneurship, and think and practise as entrepreneurs. However, they are not subject specialists in teaching entrepreneurship, and so the CTCs were developed further by drawing on the entrepreneurship educator data, recognising that the threshold concept framework was developed to enhance learning.

Many entrepreneurship educators have no direct personal experience of being an entrepreneur. I have treated entrepreneurship educators in my research as subject specialists in *entrepreneurship education*. Entrepreneurship educators were regarded as the best source of data concerning how best to teach entrepreneurship, and the degree of troublesomeness of CTCs and so their perspectives were essential in the further development of the entrepreneurship CTCs. Educators were expected to be able to translate entrepreneurship threshold concepts into learning thresholds in an educational context and to have informed perspectives on effective approaches to entrepreneurship education. Integrated findings from the first two stages of the research will be used to analyse the data generated from the student stakeholder group in the third stage of the study.

The development of CTCs in entrepreneurship drawing on data from educator interviews and CTCs developed from the Delphi survey with entrepreneurs is shown in Figure 7-1 and presented in detail in Section 7.1.2.

The new CTC of 'Entrepreneurial Agency' was developed from the old CTCs of 'Self-Efficacy' and 'Impact'.

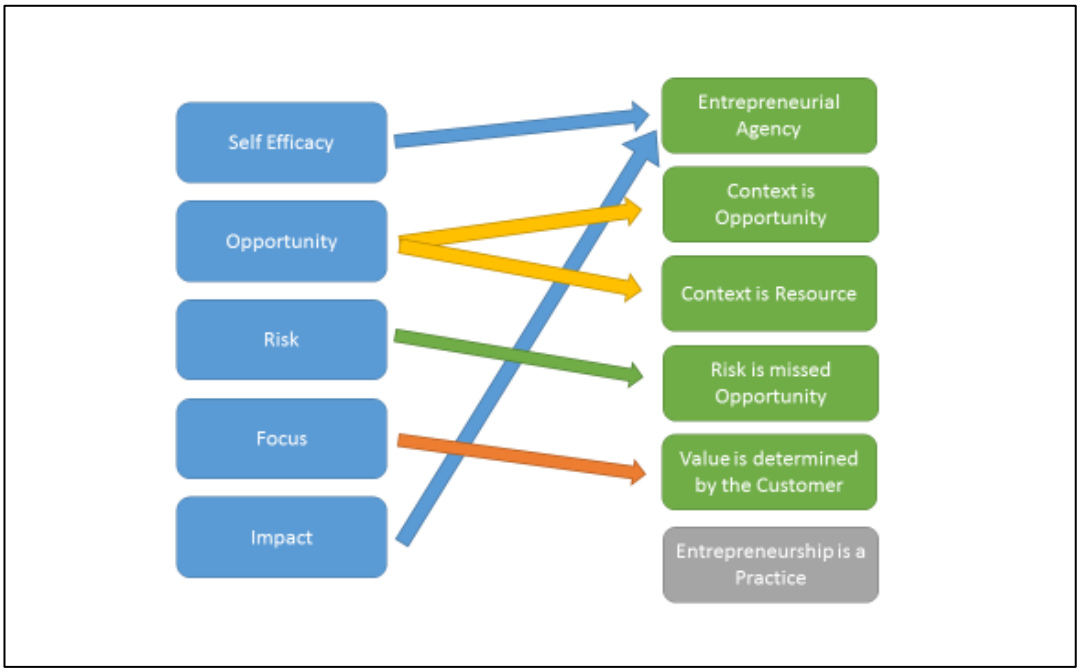
New CTCs of 'Context is Opportunity' and 'Context is Resource' were derived from the old CTC of 'Opportunity'.

The label of the old CTC of 'Risk' was expanded a little to become 'Risk is Missed Opportunity'.

The old CTC of 'Focus' evolved into the new CTC of 'Value is Determined by the Customer'.

Finally the new CTC of 'Entrepreneurship is a Practice' was derived from the educator data, and supported by entrepreneur data on subsequent re-analysis.

Figure 7-1 Evolution of CTCs in entrepreneurship from Stage 1 to Stage 2 of the study



7.1.2. CTCs in entrepreneurship (combined entrepreneur and educator perspective)

The concepts identified by entrepreneurship educators as critical for students to understand, in order to understand thinking like an entrepreneur are presented here, building on the CTCs in entrepreneurship identified in the first stage of this research with entrepreneurs. For each CTC, representative excerpts

from the interviews which informed the development of the definitions are presented, alongside discussion of places where findings from the respective data sets are relevant to each other. Where the educators have highlighted concepts with likely characteristics of threshold concepts, these have been highlighted.

The five CTCs developed from the entrepreneur data were shared by email with the educators in advance of the interviews, but their attention was not drawn to this information explicitly during the interviews, largely due to time constraints. The decision to share the CTCs with the educators in advance of the interviews is discussed in 5.3.3. It was clear that many educators had not had time to read any of the information sent to them in advance of the interviews, including the descriptions of the CTCs in entrepreneurship so the extent to which their answers were influenced by this information is not known. It was assumed that educators would identify CTCs within their subject based on their knowledge of their students' interaction with the content (Land, Meyer, & Flanagan, 2016a) and not on the basis of their own expertise in the subject.

7.1.2.1. Entrepreneurial Agency

This concept was developed from the CTCs of 'Self-efficacy' and 'Impact' generated from the entrepreneur data. Perceived self-efficacy is the belief that one can successfully execute a behaviour required to produce a specified outcome (Bandura, 1977a). The precise meaning of the term "Self-efficacy" was felt to be too narrow in this context, so it was changed to the broader term of Entrepreneurial Agency, and expanded to cover the CTC of 'Impact'. The self-reactiveness property of agency (see below) appears to encapsulate the concept of 'Impact' adequately negating the need for a separate CTC.

The perennial structure-agency debate in social theory is relevant here and is reviewed more fully in 3.2.3. Privileging structure (the entrepreneurial context or eco-system) over agency (the individual entrepreneur) can effectively deny the existence of agency and creativity in humans (Garud et al., 2007). Clearly, the entrepreneurial context is important, but it is unlikely to be the primary concern in an educational context when looking to educate students to think like entrepreneurs. Privileging agency (the individual entrepreneur) promotes heroic

models of actors and can be criticized for being historically inaccurate, decontextualized, and so broad as to be meaningless. However, the individual is most relevant in an educational context. This study is not concerned with the structure or context in which entrepreneurship, or the particular set of behaviours constituting entrepreneurship take place. This study is concerned with a focus on practice rather than the structure-agency debate. Structure can be treated as both the medium and outcome of social practices: instead of being in opposition, structure and agency are treated as presupposing each other and as being mutually constitutive (Sewell Jr, 1992).

According to Bandura (2006), 'human agency' is about intentionally influencing one's functioning and life circumstances. His perspective appears particularly salient in this context. When an individual sees the world through the lens of the CTC of Entrepreneurial Agency, they see value creation as a self-organizing, proactive and self-regulating individual. They see the world as a person who reflects on their behaviour and learns from it, in order to contribute to their life circumstances. Personal efficacy is described by Bandura (2006) as a foundation of human agency, "Unless people believe they can produce desired effects by their actions, they have little incentive to act, or to persevere in the face of difficulties" (Bandura, 2006, p. 170).

According to Bandura (2006), there are four core properties of human agency;

Intentionality.

"People form intentions that include action plans and strategies for realizing them." (Bandura, 2006, p. 164)

Forethought.

"People set themselves goals and anticipate likely outcomes of prospective actions to guide and motivate their efforts." (Bandura, 2006, p. 164)

Self-reactiveness.

> "Agency thus involves not only the deliberative ability to make choices and action plans, but also the ability to construct appropriate courses of action and to motivate and regulate their execution." (Bandura, 2006, p. 165)

Self-reflectiveness.

> "Through functional self-awareness, [people] reflect on their personal efficacy, the soundness of their thoughts and actions, and the meaning of their pursuits, and they make corrective adjustments if necessary." (Bandura, 2006, p. 165)

Entrepreneurial Agency can be explained as a combination of entrepreneurial intentionality, entrepreneurial forethought, entrepreneurial self-reactiveness, and entrepreneurial self-reflectiveness. Entrepreneurial intentionality can be described as the intention to create value, including action plans and strategies for realising action plans. Entrepreneurial forethought can be described as the setting of value creation goals and anticipating likely outcomes of prospective actions to guide and motivate efforts to these ends. Entrepreneurial self-reactiveness can be described as not only the deliberative ability to make choices and action plans with the aim of creating value, but also the ability to construct appropriate courses of action and to motivate and regulate their execution. Entrepreneurial self-reflectiveness can be described as the act of reflection on personal entrepreneurial efficacy, the soundness of associated thought and action, and the meaning of entrepreneurial pursuits, making corrective adjustments as necessary.

The CTC of Entrepreneurial Agency is illustrated here using verbatim quotes from interviews with educators. According to educators, a fundamental aspect of understanding entrepreneurship for students is understanding their own individual role in realising the potential of any opportunity in order to create value, a form of entrepreneurial self-reactiveness.

> *"...learning theories? It's brilliant. It's not going to make it happen. Having a good idea? Not going to make it happen. If you want to, if you want to be an entrepreneur, if you want to be entrepreneurial, if you want to start*

up your own business, however you wish to do that, if you want to be in entrepreneurial employment, you have got to take control and you have to make it happen."

Kelsey, Jocelyn, Percy and Shirley

"the entrepreneur will say, "There's something I want to change. I'm going to find a way of doing it." And the non-entrepreneur will say, "There's something that needs to be changed. Somebody needs to do something about that."

Aubrey

The CTC of Entrepreneurial Agency is manifested as a new way of seeing the world and as such, has a transformative characteristic. The transformative characteristic of this CTC was seen as fundamental to understanding entrepreneurship by the educators. Educators also felt it was troublesome for many students whilst also being integrative and irreversible.

The CTC of Entrepreneurial Agency was also characterised by a need for the resilience to persevere in the face of difficulties or when things do not go to plan. The following quote illustrates the often troublesome nature of this CTC and variation in the students' understanding of it. Some educators referred to their students as 'team entrepreneurs' as in this case.

"Resilience probably. We have seen, I have seen some really good examples of resilience in some of our team entrepreneurs and some really, like, examples of no resilience whatsoever. So they come across that one problem with an idea and that's it, the idea is rubbish and they've binned it. That's something that's, again, quite difficult especially, especially in a situation where perhaps their experience of trying things has been that they don't really need to do that, and that someone else will save them from it if it doesn't go very well, I don't know."

Ella

In order to understand the CTC of Entrepreneurial Agency, educators regarded it as important that students took responsibility for their own learning. The following quote describes the transformative effect of this CTC.

"And we've seen the change. So one of them, the lad I was telling you about that's very quick to say, "I'm not supported," he is much better now at the end of the year at recognising his own place in the problem than he was at the beginning of the year. So at the beginning of the year if, you know, he was rocking on his chair, for example, and fell over, you would say, "Well, you shouldn't have done that, should you?" And he would say, "Well, you shouldn't have chairs like that in here." You know what I mean?

Yes. Yes.

Now he won't do that. Now he's able to go, "Yeah, you're right. I shouldn't have." And I think that's a huge shift in maturity."

Ella

Educators felt that students must be motivated to achieve something, and believe that they themselves could and should be the one who makes it happen.

"And, and maybe push themselves out of their comfort zone a little bit more, and be able to see the learning that they get from pushing themselves out of their comfort zones."

Kendall, Naomi, Andrew and Perry

"I think they need, what's fundamental is that they need to be active in terms of finding things out and trying things out themselves."

Sophia

The importance of collective endeavour, intentionality and mutual accountability was also emphasised by the educators.

"I think that's why there's a hundred percent [attendance], they got to know each other really well and it's that team bonding. That team bonding, they know that, they feel a bit guilty if they're not. And also they set up their own rules. If there is, if someone cannot make it, what are they going to do? It's not just e-mail the coach…it's essentially taking responsibility, be

accountable that you are part of the team. In real business, you don't just not turn up if you're not well, you actually inform someone. So that's what the rules, they've set up their own rules because I think that was annoying themselves as well…that's what's going on here, when they set that up, and attendance is pretty much, almost a hundred percent."

Sophia

"…you know, so we expect them to take responsibility for themselves, we expect them to take responsibility in terms of their relationships with each other. We expect them within their teams to set norms and rules and to manage, you know, manage what happens when people don't comply with those expectations."

Aubrey

Educators mentioned the significance of self-reflection in this context too, linking directly to entrepreneurial self-reflectiveness.

"It's about being able to be personally reflective and, because no one else is going to tell you what, if you're going to be an entrepreneur here you are, by definition you've not got bosses giving you that kind of top down feedback."

Aubrey

Students often arrived with a need to get external validation for their proposed actions and educators saw one of their key responsibilities as the development in the students of confidence in their own opinions.

"So the students will ask me what they need to do. "What's a good idea? How do I know what's a good idea?" What's my opinion? They're looking for me to validate a lot of what they're doing. And I refuse to do it. And they get annoyed. And I'm saying, "It's what ***you*** *think is a good idea," you know, "what* ***you*** *want to do with it." "But is it any good?" And so trying to get them to understand that I don't, well, I do care, I do care about what they're trying to do, but what I care about is that they go through the process more than what they're actually doing. And they struggle to get their heads around that.*

And also get confidence in their own opinion.

Exactly. Yeah. They're used to being told what to think almost."

Sacha

The importance of proactivity on the part of the student was repeatedly emphasised.

> *"So it's, I guess, there's a, that, that then perhaps goes beyond confidence because you need to, you need to not just think, "It would be great if this thing existed," or if there was a particular product or service available…but they actually have to recognise that that will only happen if somebody takes the initiative to make it happen and to realise that you, you are the person who can do that."*

Gavin

The importance of understanding the CTC of Entrepreneurial Agency in students is highlighted by C. Jones (2019) as the aim of all entrepreneurship education globally. He described Entrepreneurial Agency as the "essential capability argued to be the minimal outcome for entrepreneurship education" (C. Jones, 2019, p. 244). C. Jones (2019) defines being entrepreneurial as being capable of self-negotiated action. He argues that self-negotiated action is prerequisite for and precedes value creation. The meaning of the CTC of Entrepreneurial Agency here is taken to incorporate self-reactiveness, in particular both the making of and the execution of plans to create value.

Self-efficacy is one of entrepreneurship's "Big Five" (Vecchio, 2003). Entrepreneurial self-efficacy is defined as "the strength of a person's belief that he or she is capable of successfully performing the various roles and tasks of entrepreneurship" (Chen, Greene, & Crick, 1998, p. 295). The CTC of Entrepreneurial Agency builds on the concept of entrepreneurial self-efficacy and extends it with entrepreneurial intent, entrepreneurial forethought, entrepreneurial self-reactiveness and entrepreneurial self-reflectiveness. The educators clearly regarded this CTC as transformative (and therefore likely to be irreversible), troublesome and integrative. When used in the context of value creation, it becomes bounded and distinctive of entrepreneurship as well.

7.1.2.2. Context is Opportunity

The CTC of 'Context is Opportunity' was developed from the CTC of 'Opportunity' generated from the entrepreneur data set. The new label of the CTC expresses more clearly the new way of seeing that an understanding of this CTC opens up. Educators were clear that being able to spot or create an opportunity was one of the most important things that a student of entrepreneurship needed to be able to do. Students needed to be able to see all contexts as opportunity-rich, even in circumstances where others might see none. The educators were aligned with the entrepreneurs in regarding this as a way of differentiating thinking like an entrepreneur from not thinking like an entrepreneur, making this CTC bounded in entrepreneurship. Opportunities might be discovered in the form of fixes to problems, or created as a new ways of doing things.

> *"one of the things I think I feel quite strongly about is around the idea of opportunity identification and seeking and an openness to, an openness to ideas. So I think those two things, I think, are really quite important because one of the things about the people who are entrepreneurs that I've met or people who are sort of talking and thinking about entrepreneurship seems to be the ability to notice things that require fixing or, you know, that there's a gap somewhere, there's a hole."*
>
> Ella

> *"as an entrepreneur, I think it's all about opportunity recognition."*
>
> Anthony

The CTC of 'Context is Opportunity' was closely related to the CTC of 'Value', as value was a way of defining the presence of an opportunity. In this way this CTC was integrative.

> *"if you're thinking as an entrepreneur, you're going to be seeing the opportunities around you, and then not just seeing those opportunities and maybe thinking that there's a possibility there, but actually seizing that opportunity, that possibility, and thinking, you know, asking questions, taking it forward, and, and trying to see ways that you can use that opportunity to create value"*

Gavin

Educators were clear that sometimes context could present both the opportunity and the resource to realise the opportunity to create value. Sometimes resource was identified before an opportunity to make use of it was clear. Both the idea or opportunity and the resources to make it happen were available in whatever context that the students found themselves in. This CTC often proved troublesome as students could be reluctant to make use of all the resources available to them, or lacked an understanding of the CTC of Entrepreneurial Agency to do so.

> *"One of the things that I find frustrating is that they struggle to link to other, other faculties and other mind-sets and other skill-sets which I have tried to do, connected with Geography students, for example, but I think it's important that they're not all just entrepreneurs together with the same mind-sets, that they are connecting with people who've got complementary skills and to exploit that and see the value in that. So, yeah, I'd like to have more interdisciplinary, yeah."*
>
> Kelsey, Jocelyn, Percy and Shirley

Opportunity recognition is a well-researched area in entrepreneurship literature (Baron, 2006) and can be described as consisting of three aspects of recognition; actively or passively searching for opportunities, alertness to opportunities and prior knowledge enabling opportunity recognition. The basic cognitive process of pattern recognition have also been highlighted by Baron (2006) as a possible explanation of entrepreneurs' abilities to recognise opportunities. Shane (2000) presents a theory of entrepreneurship at the nexus of enterprising individuals and valuable opportunities.

From the educator's perspective, 'Context is Opportunity' was a transformative, irreversible, bounded and troublesome CTC which was also integrative, enabling other entrepreneurship concepts to come into view.

7.1.2.3. Context is Resource

'Context is Resource' was a CTC emerging from the educator data analysis, and is related to the concept of 'Context is Opportunity' emerging from the entrepreneur data and described in Section 6.2.2.2. The idea that an entrepreneur

sees opportunities all around them was reinforced in the educator data set. It became clear from the educator data set that opportunities could come both in the form of ideas for new ventures or other forms of value creation, and resources with which to make these ideas happen. It was evident in the entrepreneur data, partly in the CTC of 'Opportunity' and partly in the concept of 'Team'. The word 'team' and the associated explanation of this concept did not adequately express the idea behind it to the entrepreneurs participating in the Delphi study, and consensus was not achieved on the criticality of this concept to entrepreneurship. However, the ability of entrepreneurs to see their context as resource was evident in the entrepreneur data.

Educators were clear that ideas for new ventures are created and discovered in the context of the individual, and the means or resources to bring the ideas to fruition are also realised in that same context. The CTC of 'Opportunity' resulting from the entrepreneur data was therefore split into two CTCs and developed to emphasise these two distinct ways of seeing context; 'Context as Opportunity' and 'Context as Resource'.

According to the educators, the students needed to understand at all times that they were surrounded by potential resources. It was important that students developed the skills they needed to be able to realise the potential of their environment (including human resources) in making their ideas happen. When this understanding was achieved, it was transformational, irreversible and, integrative.

Often students needed a great deal of encouragement to approach people they did not know in order to pursue an opportunity they had identified. This CTC appeared to be closely linked to the CTC of 'Entrepreneurial Agency', as often it was a lack of courage or self-belief that prevented the students from extending their networks and seeking help from other people to overcome obstacles and secure the necessary resources to execute their value creation plans. In this way the educators felt that understanding this CTC was troublesome for the students.

"the other one is using what's around you. That's the big one we have, so same with why I'm getting them to work in teams is you can't do everything yourself. Other people have skills and the great thing about being in this place is you've got a whole area, a whole building full of experts in areas and you'll still have them that try and run away and say "I know everything about this" and you say "just talk to someone"."

Nicholas and Tim

"And team, again, I'm not sure. I think, I think, the guys that I know who are individual entrepreneurs would say they definitely don't need a team. But what they do is they pick people to work around them and with them that can help them do things. But they don't associate themselves as being part of the team. They are resources."

Ella

"I do, I think there's something very much, not the same, someone just being able to connect a lot of things, whether it's people, whether it's ideas, whether it's opportunities, that, I suppose on my side it's seeing the bigger picture and putting things together. "

Kendall, Naomi, Andrew and Perry

"But you always think "I'll need to do this, I'll need to design this product, I'll need to sell it to the customer," and all this. And I think that's one of the things they, they need to grasp that, you're, you're the, I don't know, you're the facilitator, you're the oil, the machine's there, you just need to, you're bringing together the bits of the jigsaw, for want of a better metaphor. I think that's the thing, they naturally think "How am I going to make this? How am I going to sell this? How am I going to find the customers?" as opposed to "Who already is talking in those terms?""

Jeff

"I think, the biggest sort of change is that, you know, if something comes along in here, while this is going to, it's going to cost us, even, even for the students, "Yeah, oh, it's going to cost us" – I don't know – "£5,000 to do this" and it's that change from like, "Right. It's going to cost us £5,000. Where can we get that from? Who can we get on board to actually help us to achieve that?" as opposed to "Wow, gosh, that's such a big hurdle. There's no way we can raise that sort of money.""

Sacha

The CTC of 'Context is Resource' draws on the theory of effectuation (Sarasvathy, 2008), and the ways in which thinking and practising like an entrepreneur means assuming all contexts not only are the source of opportunity for the creation of value but also present the means with which to bring it to fruition. Educators felt that this CTC was transformative, troublesome, integrative and irreversible. In distinguishing how entrepreneurs thought, it was also bounded.

7.1.2.4. Risk is missed Opportunity

The CTC of 'Risk is missed Opportunity' was developed from the CTC of 'Risk' identified in the entrepreneur data. The new wording expresses more clearly the transformative new way of seeing that an understanding of this concept enables. Rather than seeing risk in terms of what might go wrong if a particular course of action were followed, educators strove to develop in their students an ability to see risk in more positive terms of missed opportunity if a particular course of action were not taken, similar to the idea of opportunity cost. This perspective of risk required students to take the counter-intuitive step of ignoring "sunk-costs" and to take a more future orientated perspective in decision making (P. Davies & Mangan, 2007). That was not to say that all opportunities are necessarily going to create value, but the up side of any particular course of action must be adequately considered, as well as the opportunity cost. Risk is inherent in all opportunity, and educators sought to engender a balanced perspective in their students of the benefits as well as the disadvantages of a potential course of action. This was a troublesome concept primarily because it was counter intuitive. The CTC is phrased to encourage an optimistic perspective, and disrupt habitual and perhaps

normative ways of viewing risk. Educators noted that students were often inclined to be risk averse, especially in an educational setting.

> *The rest is, you know, I mean, I'm not suggesting any of it is easy particularly, but risk is very tricky. I mean, even financial risk, they're usually, they don't have a lot of money, a lot of students, so, you know, even risking a little bit of money can be quite tricky for them to understand."*
>
> Sacha

Educators noted a great deal of misunderstanding surrounding risk and entrepreneurship. Students appeared to veer between being reckless and overly cautious. Whereas the entrepreneurs had clearly learnt from their experience, the educators felt the students still had many misunderstandings concerning the relationship between entrepreneurship and risk.

> *"A lot of them think it's about risk, and the more risky you are the better, so having to try and unpick that and demystify that as well. I think there's an awful lot of just trying to, certainly the first years, to establish what it is and what it might not be."*
>
> Kelsey, Jocelyn, Percy and Shirley

> *"everyone always says entrepreneurs take risks and that makes it sound like they leap off buildings without parachutes. Actually, what, what I've found from the guys who have been incredibly successful is, yes, they do take risks but they take calculated risks. So they learn each time they do something when it works, when it doesn't work and then they use that knowledge, which then means that they can make a decision about something much faster because they've already had an experience that's like that. And it doesn't mean they always get it right but…whereas when you've never done it before and you're kind of wandering around in the dark, you, you're kind of trying things out to see what might work and what might not."*
>
> Ella

> *"you have to have the right kind of mental approach to engaging with stuff. So that includes being able to deal with the uncertainty and taking risks,*

but also seeing the really positive sides of what entrepreneurial activity can produce."

Sacha

The CTC of 'Risk is missed Opportunity' also links to effectuation theory together with the CTC of 'Context is Resource' (Sarasvathy, 2001). She proposes that entrepreneurs are experts at exploiting contingencies that cannot be easily analysed or predicted. This concept is bounded in the way it distinguishes this uniquely entrepreneurial way of thinking and practising. She builds her theory on four principles; affordable loss (contrasted with expected returns), strategic alliances (contrasted with competitive analysis), exploitation of contingencies (rather than exploitation of pre-existing knowledge) and controlling an unpredictable future (contrasted with predicting an uncertain future).

> Effectuation begins with a given set of causes, consisting of (mostly) unalterable characteristics and circumstances of the decision maker, and the focus is on choosing among alternative (desirable) effects that can be produced with the given set of means, thereby eliminating the assumption of pre-existent goals
>
> (Sarasvathy, 2001, p. 259)

Busenitz and Barney (1997) suggest that entrepreneurs may be different in the way they perceive and think about risk but explain this in terms of use of heuristics and bias, implying that this CTC has transformative characteristics. Optimism bias also appears to be relevant here and is the tendency to believe things will turn out well. It is frequently associated with entrepreneurial cognition (Wadeson, N. in Casson et al., 2006, p. 97) and has three main forms; over-positive self-evaluation, over-optimism about future plans and events, and over-optimism arising from an illusion of control (S. E. Taylor & Brown, 1988). The illusion of control is a tendency for people to believe they can control or have an influence over outcomes over which they actually have no control, or to over estimating the control they have. It can result in a reduced perception of risk (Wadeson, N. in Casson et al., 2006, p. 98). The CTC of 'Risk is Missed Opportunity' is biased toward action and away from caution and inaction, as negative consequences are

perceived to be more likely associated with actions not taken, rather than with actions taken.

The CTC of 'Risk is missed Opportunity' then is perceived by the educators to have transformative, troublesome, integrative, irreversible and bounded characteristics and is closely related to the theory of effectuation (Sarasvathy, 2008) as is the CTC of 'Context is Resource' .

7.1.2.5. Value is determined by the Customer

The CTC of 'Value is determined by the Customer' originated from the CTC of 'Focus' developed from the entrepreneur data. The importance of the customer was a strong theme in the entrepreneur data but was integrated into the concept of 'Opportunity' in the research findings. Entrepreneurs were clearly having to make some hard choices but the idea that it was the customer that was often the determinant of the best opportunities was only apparent in the educator data. Educators were keen to emphasise with their students the importance of understanding the role of the customer in determining value. Students often were reluctant to share their ideas with each other or with prospective customers, for fear of being copied (having their idea stolen) or for fear of their idea being revealed as flawed, and of little value to prospective customers. Consequently, it was not unusual for students to struggle to grasp the CTC of 'Value is determined by the Customer' as it required sharing their ideas on a broad scale, and perhaps having to change their own individual perception of the value of their idea. What they perceived to be of value was sometimes not the same as what their customers perceived to be of value. The CTC of 'Value is determined by the Customer' was often troublesome to the students.

In order to evaluate the viability of an opportunity, students must understand the supreme role of the customer and the market in valuing the offer, and consequently work closely with both. Only a perception of value by the potential recipient or customer (and not the student) will allow the student to make a good decision regarding the viability of any specific opportunity.

"I guess what I'm saying to people what an entrepreneur is, you know, it's a funnel. You want to be able to see and create lots of opportunities one

way or another. When we work with the students about how we assess somebody who's a good entrepreneur in terms of opportunity it is the ability to cull opportunities early, when we go, "Actually, this isn't going to work." Because some of them will cling on to something in desperation because they don't have anything else to do. So I think it's about their ability to spot, you know, probably lots of opportunities, cull them quickly if needed, and to create value from them."

Jeff

"It's this whole thing of, it isn't what you think though, it's what's your customer perceives. And that perception is so vital. And they go –"yeah but they might be wrong!" "Yeah but they've got the money" "They're going to buy it, and if they buy it for the reasons they want to that you don't understand, you've got to start understanding your customer."

Nicholas and Tim

Entrepreneurs understand the superordinate role of the customer in valuing the offer, and subordinate their own perception of value. This represents a transformed way of thinking. Only a perception of value by the potential customers will allow the entrepreneur to make a good decision regarding the viability (or non-viability) of an opportunity for the creation of value. This CTC is associated with design thinking (Brown, 2008) where innovation is derived from a thorough understanding of what people want and need in their lives and what they like or dislike about what they currently have access to. Brown (2008) associated design thinking with empathy and a 'people first' approach. The CTC of 'Value is determined by the Customer' also relates to the marketing theories of market research, customer value (Slater, 1997) market orientation (Jaworski & Kohli, 1993), customer development (Blank, 2013) and customer engagement (Harmeling, Moffett, Arnold, & Carlson, 2017). Entrepreneurial methodologies such as lean start-up (Ries, 2011) advocate business model validation based on rapid iterations, integrating prospective customer opinion in the validation process (Paternoster, Giardino, Unterkalmsteiner, Gorschek, & Abrahamsson, 2014). Arguably the greatest risk in any start up is to offer the market a product that no one wants or needs (Eisenmann, Ries, & Dillard, 2012).

Educators saw this CTC as transformative, irreversible and troublesome, as well as integrative in that it allowed other entrepreneurship concepts to come into view. It was bounded in that it distinguished what it meant to think like an entrepreneur.

7.1.2.6. Entrepreneurship is a Practice

From the perspective of educators, when people have a true grasp of entrepreneurship, they demonstrate that it is iterative and never 'finished'. Sometimes students did not come to understand that the act of creating value was not a one off during their time in education, but only after a number of years of experience after graduating. They needed to understand that in this transformed way of seeing the world, the individual is always thinking of the next thing, perhaps similar to an artist who is driven to produce works of art, or an author; to write the next book. One picture or one book does not necessarily make an artist or an author.

When the CTC of 'Entrepreneurship is a Practice' is grasped, students understand that entrepreneurship can be described as ways of thinking and practising and therefore cannot be defined by one single act of value creation. Individuals who see the world in this way are often primarily interested in the creative act and move on to their next project once the current project starts to take on the characteristics of a more established organisation and their role become less creative. Educators were clear that students rarely attained a good understanding of this concept whilst in education, as it often came from many years of experience.

"I think really what makes an entrepreneur is when they've been through the cycle. So we've got a few people who've started some businesses, done that and then passed it on or sold it or stopped. And so to me, that's now an entrepreneur. You've done it and you've realised, it's potentially a repeatable thing. And it's served its purpose so, you know, I think if you said to me, "How would you define someone who's an entrepreneur?" I would say someone who's, who's kind of creative and done it and probably exited and is doing it again."

Jeff

"For example, they did have the idea to set up a carwash and I thought, "Wow, what a great idea." Because we constantly have people in and out of here, they negotiated it all, blablablabla, and I thought, "Fabulous! This is going to be an on-running, you know, every couple of weeks they're going to do a carwash." The first time they did it, they made 250 quid in a day, I mean it was great. That was it. They didn't run it again. And I said, "But I thought you were doing this as a business?" "Oh no, it was a cash challenge, make money." "And what else are you going to do?" "Oh, I don't know." And I was like, "How do you not understand that that's actually quite an amazing thing?""

Ella

"but sometimes you'll get people who, yeah, are taking the calculated risk, extremely focused, probably more interested in the idea than they are in the, in the actual running and kind of so serial entrepreneur, I've come across several of those who will come up with an idea, form the processes and then back away as soon as they can or sell it on because that's not the bit that excites them. To me that feels like an entrepreneur."

Kelsey, Jocelyn, Percy and Shirley

In this way, entrepreneurship is regarded as more similar to a creative practice or an art than to business or management.

"So I think it's both to give them the tools and allow them to practise. So it's not that different in my mind to, you know, becoming a good ceramicist

or a, you know, a lot of the other creative arts where you need some input, but a lot of it is experimenting, failing, having a go and producing stuff."

Jeff

"How can you tell if someone is an entrepreneur? So I would talk to them, to be honest, talking to someone I knew was a business owner, I think I would ask them what their, if you really wanted to find out you'd ask them what their plans are for the next year and the year after and almost just listen to what they've got to say because you can, you can get a sense for people who will always grow a business or look for the next opportunity for their business even if their business is wildly successful, you know, in a really good state, they almost can't help themselves, in terms of that, you know, that sense of change."

Sacha

This CTC was not drawn out originally from the entrepreneur interviews, but when the entrepreneur data was revisited in light of the educator interview data, it was clearly critical to thinking as an entrepreneur. One entrepreneur interviewed compared it to breathing, in terms of how natural it was. Entrepreneurship was not a choice, entrepreneurship is a practice, it is not something that can be sometimes regarded as a practice and at other times not.

"I think, I, I wouldn't call it an expert entrepreneur, I think, I would use the term 'serial' as opposed to an expert, I think it's a better term. Because what an entrepreneur does, he or she does it again and again and it's like breathing."

Bruce

"So I have a very simple view of business [...]: it's get an 'in' team, 'make it happen' team, 'get it out' team."

Clarence

"but he also has a very logical way of thinking about his businesses, for instance – so he has a core business which is a consultancy [...], and he also has this vision of his spin out businesses and he has a very much sort of

a template and like he always sells them within five years, and I just thought that was quite a refreshing clear way of thinking."

Robin

"So you look at exit, it seems strange, because when you're building a business the last thing on your mind is exit, but really it ought to be along there because everybody exits."

Sayer

Drawing on a practice perspective from social science (De Clercq & Voronov, 2009), enables broader societal structures and the shared understandings that guide human behaviour to be linked with a focus on the granular detail of everyday life. This construes people as improvisers whose identity and external environment get jointly and simultaneously co-created. Drucker and Noel (1986) state that entrepreneurship is practice. Johannisson (2011, p. 136) signals a need for a framework that acknowledges entrepreneurship as "an (everyday) hands-on practice, including routines as well as improvisation in order to cope with coincidence". There is growing recognition that entrepreneurship is unlikely to be fully explained in the creation of a single venture (Wright, Robbie, & Ennew, 1997) and some research has been done into the phenomenon of the 'serial' or 'habitual' entrepreneur, implying that value creation can be a habit. Others have emphasised the importance of habitual entrepreneurship, contrasting it with 'one-shot' entrepreneurship in scholarly efforts to build a comprehensive theory of entrepreneuring (Thorgren & Wincent, 2015).

This CTC certainly appeared to be transformative when understood, but it is difficult to find evidence of the other possible attributes of a threshold concept. The educators were clear that it was unlikely to come into view for students during their time in education but was more likely to be understood later.

7.1.2.7. Summary

In summary then, taking the entrepreneur and educator data sets together, six CTCs in entrepreneurship can be proposed as shown in Table 7-1 which also indicates how they each map against the likely characteristics of threshold concepts. It is interesting to note the entrepreneurs did not seem to find the CTCs

of 'Self-Efficacy' or "Entrepreneurial Agency' and 'Opportunity' or 'Context is Opportunity' troublesome. This might have been either because they had forgotten what it was like not to think or practise in this way and their appreciation of these CTCs was so deep that their initially troublesome characteristics were no longer apparent. This difference provides further support for the inclusion of both the entrepreneur, and the entrepreneurship educator perspectives. This was in contrast to the educators' experience of the students who perceived all the CTCs as troublesome, with the exception of 'Entrepreneurship is a Practice'. 'Entrepreneurship is a Practice' had not yet come into view for many students, so its troublesome nature was not yet apparent, neither were its integrative, bounded or irreversible characteristics.

Table 7-1 Candidate Threshold Concepts in Entrepreneurship combining entrepreneur and educator data

	Transformative	Troublesome	Integrative	Bounded	Irreversible
Entrepreneurial Agency	✓	✓	✓	✓	✓
Context is Opportunity	✓	✓	✓	✓	✓
Context is Resource	✓	✓	✓	✓	✓
Risk is missed Opportunity	✓	✓	✓	✓	✓
Value is determined by the Customer	✓	✓	✓	✓	✓
Entrepreneurship is a Practice	✓				

7.1.3. How to educate students in CTCs in entrepreneurship

In 7.1.2, six CTCs in entrepreneurship were proposed. These CTCs describe what it means to think and practise entrepreneurship and what is distinctive about thinking like an entrepreneur. Using these CTCs in entrepreneurship to define what it means to think like an entrepreneur; the second research question can now be considered:

How can students be educated to think like entrepreneurs?

Pedagogical approaches which educators found helpful in educating students to think like entrepreneurs have been drawn from the educator interview data, and are considered in light of the issues raised for pedagogy in the threshold concept literature (Section 4.3). They are set out here.

During the interviews, educators described many areas that the students struggled with that did not appear to be unique to students in entrepreneurship education, but were shared by all students entering higher education. For example, several educators mentioned the difficulty they had in getting their students to read independently. There were a number of important realisations, new ways of thinking and being, that the students needed to understand in order to flourish in a higher education environment. However, in order to retain an appropriate focus on the research question, only themes that appeared to be distinctly relevant to students of entrepreneurship education are presented here.

From the analysis of the entrepreneurship educator comments, a framework for engagement was created, combining elements they felt were prerequisite for any entrepreneurship learning. This consisted of a willingness in students to engage in value creation activities, and a learning context conducive to the development of CTCs in entrepreneurship. Opportunities for experiential learning in real-world situations were valuable especially when combined with adequate space and support to reflect on their learning from these experiences. The importance of the acceptance of failure as a natural part of learning was emphasised as was the critical part that group or team-work played in learning and engagement. Whilst experiential learning or learning by doing was vital, educators were also clear this needed to be balanced with the teaching and learning of relevant theory and knowledge content, in order that students could connect theory and practice, whilst also implicitly communicating a distinctive subject legitimacy. Educators were mindful that some didactic teaching of theory laden content was required in order that the students' expectations and self-perceived need for educational experiences of this kind were satisfied.

7.1.3.1. A framework for engagement

The educators were mindful that the attitude of the students had a very significant effect on their ability to understand the CTCs in entrepreneurship. They were constantly looking for ways to facilitate the development of the appropriate enabling attitudes and were mindful of the impact of their pedagogical choices to this end.

Educators were trying to develop in their students a willingness to 'have a go', to engage and actively participate in practical activities both in the classroom and outside the classroom. The students needed to want to practise entrepreneurship.

"Willingness to have a go. God knows how you put that."

Nicholas and Tim

"It's that mix of, kind of those eyes lighting up, that kind of ability to have ideas and make them happen and to want to have ideas and make them happen."

Kelsey, Jocelyn, Percy and Shirley

"I looked for this sort of adaptive, willing to learn, willing to change their mind, willing to see other people's point of view, those sorts of attitudes. Someone who's like that will be willing to learn anything they need to learn."

Anthony

"I always tell them all they'll be different people by the end of the two years, completely different people and I asked him after a year I said "What's different?" and he said "Yes [Nicholas], I'm a completely different person" he said. I said, "Why?" He said "I don't have a comfort zone anymore." Which epitomises it in one sentence."

Nicholas and Tim

"They're, they're kind of, coming along saying, "Isn't it interesting that I don't know about this?" or "Isn't it interesting that we've got this

problem?" Rather than saying, you know, "It's not fair I've got this problem." You know, they're trying out new things."

Aubrey

Many educators felt that their role involved the creation of an optimal learning environment as facilitators of learning, as well as actively teaching the students. Linking to the idea that some things can be only be learnt and not taught, one educator compared his role to that of a gardener, creating the optimal conditions for personal growth in the students. In this role, they also protected the students from some of the harsher realities of the world (as if protecting seedlings from harsh weather conditions) and removed potential barriers to their progress (as if weeding).

"Some of it, particularly at university, I hate – and I did a lot of work on this early on – is kind of helping to create the environment for them to behave entrepreneurially in the, almost a kind of nursery if you like. If you're going to grow some plants, the first thing you need to do is to get rid of the weeds and kind of make a greenhouse…"

Jeff

Igniting an interest in and developing an understanding of entrepreneurship in students was often achieved through the use of practical examples and well-chosen guest speakers that the students could easily relate to as role-models. Presenting only successful entrepreneurs as role models risked having detrimental, unintended consequences.

"And, so I make a conscious decision to bring in as many real cases and also to bring in role models that are close to them in terms of their own development, so in my experience there is no point bringing in, you know, grey-haired, 50-year-old guys in suits if you're trying to persuade them that they can, they can do this too, and, you know, because that's just too far away for them. You know, that, 30, 40 years in the future, if you talk to them about earning millions, they get very kind of, you know, they just turn off to it, whereas if you can bring back role models that are two, three years ahead of them or maybe even ten, but can sit there and say, you know, "I was sat where

you were now. I remember what it was like. These are the things I did," they suddenly start to see that actually, you know, it's possible for them too.

My favourite thing to do is actually to bring in student businesses that are in fact the same age as them and just say, "Well look, these guys can do it – why can't you do it?""

Sacha

"I totally believe in that as being a threshold concept because once the student understands this is something that they can, they can do and they can, you know, a club they can join, their, their attitude towards engaging with the activity, you know, massively changes."

Sacha

The importance of developing confidence and resilience came up repeatedly. Confidence was seen as a pre-requisite to initiative and action. It was used by many educators as an indicator of success. A very important part of the educators' role was developing self-belief in the students.

"There will be people who will say, "You know, I can do this. I've had this inkling that I might want to and I've spent quite a lot of time thinking, 'Ooh, I don't think I can!' but actually, you know what, I can!" so it's around, it's around that sort of confidence and, and eliminating the fear."

Kendall, Naomi, Andrew and Perry

"I think that's a big one for me – that it's not always going to go right, it's just not always going to go the way that you think it's going to be, so how, it's not just being adaptable but how quickly can you adapt to something, assimilate the knowledge, change direction, and, and do it in a way that's positive as opposed to feeling negative about it as well. Those are probably the sort of things that I would say are at the top. I think they see problems as opportunities rather than hurdles."

Sacha

As highlighted by Land et al. (2016a); students do not come to university expecting, looking for or valuing the cognitive and affective challenges associated

with liminality and transformational learning. In order to cross a threshold, students need to believe that they belong "on the other side" and educators acknowledge that threshold concepts are about confidence as well as knowledge (Felten, 2016). The establishment of a framework for engagement is vital for instilling confidence in the students and enables the educator to notice affective experiences of learning and respond to pre-liminal variation (section 4.3.6).

Several educators referred to the importance of the language they used with their students in order to develop this self-belief. By making it clear to the students that they believed in them, they were trying to develop self-belief in the students. This sometimes included not referring to them as "students" but as "nascent entrepreneurs", "teampreneurs" or "team entrepreneurs". By talking to the students as if they were already confident and successful, educators felt they were playing an important role in making it real.

> *"I will always talk to them as if they are nascent entrepreneurs. They don't all get there and some of them don't like that, but I will always talk to them in that way because I want to, them to, going back to the confidence point, I want them to think that I believe in them, but right from the start, and so if the base line of the assumption is they could do it, then they believe in it themselves."*
>
> Sacha

By gradually increasing the level of challenge the students were exposed to, and enabling them to achieve small wins, the educators sought to inculcate a "can-do" attitude in their students.

> *"Well for us it is actually trying to help, to build their confidence and support them in a way that they do achieve something quite early on in terms of creating some kind of win because I think once they've done it, they realise they can, they can do it."*
>
> Jeff

Educators acknowledged the need to build up the challenge presented to their students gradually over the course of their university experience. The nature

of what was expected of the students evolved as they moved through their time at university.

"So that ultimately it moves, you know, this discussion we had from pedagogy to andragogy to heutagogy. It moves from developing skills where they learn by the way the educator manages it to them taking ownership, and then ultimately them leading the process."

Anthony

"and making a clearer progression from Level 1 to Level 2 to Level 3. So Level 1 is about getting the right habits, Level 2 is about really pushing yourself, Level 3 is about preparing your exit strategy"

Aubrey

Some also felt it was important to habituate their students to uncertainty and emphasised the power of asking students to make regular and perhaps impromptu presentations. This relates to the liminal state associated with understanding a threshold concept and the need for students to adopt an epistemological view that accepts uncertainty (4.3.6).

"Absolutely. Regular presentations are vital. I'm not sort of talking about "what's a presentation" we're talking about the ability to just stand up and say – when somebody says, 'So what do you do ?'

We've had kids who've gone from, 'I refuse to present in front of other people,' to at the start of the course, and at the end of it they just go…and they will happily walk in and do a full thing about your business for 20 minutes and you're like OK so that's…something has happened there.

And that's because you've put them in that situation repeatedly?

Repetition. And they're not, they're not ever, I don't want to say they're not ever comfortable, but we're constantly trying to add things and make it as – stretch them if we can.

So you're exposing them to uncertainty all the time."

Nicholas and Tim

Educators were clear that their role was necessarily very varied, and both proactive, reactive and responsive according to the educators' perception of the students' immediate needs. The students' immediate needs were in turn affected by the particular developmental stage or specific requirements of any new venture they were creating. The nature of the role adopted by the educator was also dependent on their view of the overall purpose of education in the first place. Many educators described their role as evolving with the students, moving from teaching to coaching and facilitating as the students developed independence. Some explained the variation in their role in terms of the need to develop knowledge, skills and attitudes in their students, respectively requiring them to adopt the roles of teacher, facilitator and co-creator/coach.

> *"Once you've got that foundational set of skills, you need to have your, you know, to have and develop your idea for what it is that you think you want to do to create value, but because those ideas will be different and different people will be doing different things in different contexts and for different, stakeholder groups, then it's more difficult to have a one size fits all approach and you need that more, I mean, obviously for basic things like, you know, often the questions that we initially get asked are very simple things like what are the legal requirements, how do I register, what do I need to do in terms of tax and those sorts of things. You can have, you can have those in a more prescribed way and deliver them as workshop sessions, but otherwise, I think, to really support and develop and nurture that entrepreneurial potential you need to move towards more coaching and mentoring and working on a more one-to-one basis with individuals."*
>
> Gavin

There were many references in the educator interviews to the expressed desire of some students to be 'spoon fed' and the difficulties that some students had in moving from a pedagogical educational approach which puts an emphasis on teaching, to a heutagogical educational approach which puts an emphasis on self-determined learning, especially on venture creation programmes. Many educators experienced internal conflict where they felt a strong urge to just "give students the answers" rather than to watch them struggle to find out the answers

for themselves, even when they knew a more facilitative approach would be more effective in the longer term.

> *"I think the things that help them, probably, is the model that we use, the fact that we operate this kind of team coaching approach where we challenge them to think for themselves, but we do, we do offer not direction, but we offer thoughts and sort of, questioning and some element of guidance without it being advice on direction, it's more "That's an interesting question, where might that take you?" or "Have you thought about…?""*
>
> Ella

> *"And I had some feedback from my [students] and they adopted this sort of feedback thing where they would, every week somebody would be the sort of, say "I would like feedback" and I was kind of the last one on the list to do it. And so I went out the room and then I came back in and, you know, they did, "What we'd have liked you to do more of is give us more information, give us more of your knowledge, blablablabla" and the other question I asked is, you know, "What shall I think about if I work with another team?" and they said, "Remember not to give them too much knowledge."*
>
> Aubrey

Clearly, the need to develop self-reliance varied widely across the student population and was dependent on many factors including the home situations that they had left. However, for the most part, as students moved away from home, they realised that they had to look to themselves if they wanted things to happen and there was a need to take a more proactive approach. They needed to understand that there was no one coming along behind them, looking out for them, acting as a safety net, in the same way that their parents or teachers might have done when they were living at home. The need to develop this understanding however, appeared to be particularly relevant to entrepreneurship education where the onus was on the individual to create value.

The pressure to achieve high levels of student satisfaction ratings in course evaluations magnified the temptation educators felt to feed students information. Educators referred to the difficulty in striking the right balance between

challenging the students more (working in their longer-term interest) and risking lower satisfaction scores, or regressing to a more teacher-led approach that appeared to be what some students thought they wanted, but in fact often proved not to be what they needed in the longer term. As has been noted by Land (2016), the discourse of the 'student experience' can set students and teaching staff in opposition to one another. For the educators, judging what students wanted and what educators felt they needed was like walking an ever-present tightrope.

The educators highlighted what some might call an under-recognised aspect to education as proposed by Barradell and Kennedy-Jones (2015, p. 542), "as part of helping students discover who they are, we perhaps need to know our students better."

7.1.3.2. Opportunities for real life learning

There was a strong theme of the necessity of practical experience in learning entrepreneurship apparent in the educator interviews. The value of experimentation, the associated failures, and repeated practise was emphasised as being vital for learning entrepreneurship.

> *"There's some good examples of teaching methods, cos, so our kids we accept are probably not the most, are the least likely to sit down with a text book for a weekend. And the good lecturers realise that quite quickly so things like selling yourself is all activities, it's much more like a workshop. The law, which you think would be quite a dry subject, he gets them to do a moot so they actually are having to go prepare a case and come and argue with each other cos he found that they're far more argumentative than any other students. So they're gonna learn much more"*
>
> Nicholas and Tim

> *"And with that module, they also have to plan an event. So I get them to think about what entrepreneurial, how can they be entrepreneurial and plan an event for the whole university, you know, that students can attend? But they can do anything, they can plan anything they want, they must…it has to be the whole cohort. They must plan it as a class, which they get really irritated about because planning as a class is quite tough apparently, there's*

little cliques, yeah, but they have to do it as class and then reflect on it, in the portfolio, what it was like to plan this event"

Chelsea

In this respect, entrepreneurship was presented more like an art than a body of disciplinary knowledge or a set of skills. Educators differentiated between what could be learnt and what could be taught, implying that elements of entrepreneurship could only be learnt though practise, by experience and active experimentation. This practice would be ideally initiated largely by the students themselves.

"Because it's practice based, as with any practice base, they have to have a very active role in their development because we can't do the practice for them, and a great deal of their learning is outside their sessions when they put stuff into practice."

Jeff

It was also significant that much of this practice, in order to be meaningful, needed to be conducted outside of the limits of the educational context, with external contacts, customers and suppliers. The importance of real-life learning is relevant in the mitigation of the risk of mimicry in response to uncertainty in the liminal space (4.3.8). Real-life learning reduces the risk of both compensatory mimicry and self-deceit, and learning only how to play the game (but not playing the game knowingly).

"I think they need to be open-minded and I think they need to be out there doing stuff."

Chelsea

"I think there is a difference because if you're teaching any, if you're learning any other discipline, you're learning a whole series of pockets of knowledge that you know you're going to be needing to apply at some future juncture. With entrepreneurship, we are doing a real here-and-now activity so we're not saying "Store this away for a cumulative benefit at some point down the line." We're saying, "Go and do it. Now. At this moment.""

Kelsey, Jocelyn, Percy and Shirley

"literally, you can't be a passive entrepreneur, it's not, you know, I've got somebody who came from a university elsewhere, he already has done a year on an entrepreneurship course sitting in a lecture and he went, "It's not entrepreneurship. It's like having a lecture on photography but you're not allowed to take your camera out.""

Jeff

One of the important realisations that students derived from active experimentation was that there was no one right answer. Coming to terms with ambiguity and uncertainty was a transition that many students struggled to make, moving from an educational environment where there appeared to be one right way of doing things, to one where there was not.

Opportunities for real-life learning may also correct misleading cognitive experiences associated with the relatively low cognitive load and high affective demand of entrepreneurship CTCs (Section 4.3.9), ensuring a more fertile ground for learning.

7.1.3.3. Opportunities for reflection

For the students to obtain the maximum benefit from extensive practical experience, the educational experience needed to incorporate substantial opportunities for reflection, in order that the learning could be made concrete and explicit.

"The second one is reflection. This isn't just here but, for me, in this kind of course, reflection is so important and I can kind of cite evidence left, right and centre that the kind of entrepreneurs who reflect are likely to be more successful. Students actually engaging in reflection is a battle. When they do get it, then suddenly this lightbulb goes off and they realise that, yeah, usually Year 3, that's when they kind of realise that actually that was very worthwhile and they know they can genuinely be proud of what they've achieved, even if it doesn't feel much but kind of they can see how they've developed and they also know they can develop further through those processes."

Kelsey, Jocelyn, Percy and Shirley

Opportunities for reflection might also serve to move students from unhelpful affective learner positions such as a tendency to avoid introspection, resistance to learning or identifying as a victim (Section 4.3.7). Facilitated opportunities for reflection might offer learning environments where students can safely experience the discomfort caused by learning and the troublesome and transformative characteristics of threshold concepts. Dialogue has been highlighted as an important pathway through barriers presented by learning thresholds (Baillie & Johnson, 2008) (Section 4.3.12).

It was felt that reflection was of particular significance in learning entrepreneurship as educators were aware that entrepreneurs were frequently operating in circumstances that were not necessarily conducive to reflection, and individuals drawn to entrepreneurship were often not naturally inclined to reflect.

> *"but then I think there is also something about the self-awareness bit, and I think particularly, and where entrepreneurship education is maybe different to, to, to more mainstream business education is actually around the issue of cognitive biases because there's quite good evidence that entrepreneurs, whatever they are, have, you know, are prone to cognitive biases more, so getting, you know, getting people who are entrepreneurs to sit back and reflect is something that is sort of often, that's something that they struggle with. It goes back to someone who is doing, what we were talking about earlier, you know, that you've got people who are very action orientated and you've got to get them to reflect and plan a bit more."*

Kendall, Naomi, Andrew and Perry

7.1.3.4. Failure as a valuable learning experience

Allowing the students to fail safely was important to their learning, and many educators reflected on striking the optimal balance between their duty of care to the students and the need to maintain the freedom to experiment (even if the consequences might be relatively serious).

> *"There used to be a case, a few that would just go out and say, "We're just going to go out and spend £1000," and buy something, someone went out*

and bought a van once, that took a lot of arguing apparently they went out and bought a van and they needed it for a thing and it was an old van and they forgot how much insurance cost and all that sort of stuff. OK sometimes it's quite nice to let them spend a bit of money to realise the mistake because they're never going to learn"

Nicholas and Tim

Failure as a way of learning in an academic context was also a difficult concept to accept and get used to for the students. The ability to accommodate uncertainty and failure is important particularly for students of entrepreneurship, but it also important for students in general. The opportunity to fail safely may also reduce the likelihood of conscious mimicry, and increase the likelihood of threshold concept understanding. Schooling traditionally trains students to look for answers and rewards them for being right (Felten, 2016), so it is natural that the prospect of failure and uncertainty will feel less safe both personally and academically in this context. Educators emphasised the importance of exposing students to situations in which they were not guaranteed success in order for them to learn from their failures and develop resilience. Students need to learn to value both being correct and being incorrect, to value uncertainty as well as certainty. However, the extent of the risk educators might allow the students to expose themselves (and potentially the educational institution) to, were fuzzy and open to constant reconsideration and renegotiation. Students were also reluctant to take risks when they perceived a potential threat to their academic success in the form of assessment outcomes. Educators were striving to enable students to see failure as an opportunity for successful learning in the context of entrepreneurship education

"Risk, I think, is probably the one that's, it's okay to fail, I think is one of the hardest things to try to get them to appreciate because they are, I mean, you know, [Mallowcoast] is a great university, it recruits students who are usually, although it's not sort of triple A, they're certainly up there in terms of academic ability, they've come to a great university to study and to get a good degree. And that means that over the course of the time that they've been at school, they have been conditioned into thinking this is how you get a

good grade: you follow the rules that the teacher has put down in front of you, you do everything on that tick list and you will get a good mark. And they're clearly good at doing that because they've been doing it for years. So to try to get them to experiment with something that will affect their final grades, or affect the grade for the module, is really tricky. So, so the only way in which we do it, or can do it, is to try and build in the notion of failure as a learning point, not an assessment point. But it's not, it's, it's, for me, it's not a, it's not a perfect situation. So it, but it is by far and away the hardest thing to try to get across."

Sacha

"because I think that there's a reluctance on the part of students to take risks often because they feel that the stakes are high as this is part of their degree programme. And so we have to take great care in the way that we set up those opportunities for students to take risks so that failure can be success in the context of learning."

Gavin

This was less of a problem where students were learning entrepreneurship in a non-accredited course.

The importance of challenge and learning through failure also created complex dilemma for the educators who felt pressure to maintain high levels of student satisfaction.

"And I think that's, you know, I'm not totally against it [the National Student Satisfaction survey], I just think it needs to be, you need, there are other, and I think the danger, and particularly in entrepreneurship education is what will happen is, at that critical time academics across the UK will be kind of thinking, "I'd better not over-challenge them," or, you know, whatever. It's just at the time they need to be and it comes just at the time when they're doing their final project…"

Jeff

7.1.3.5. Closing the 'theory-practice gap'

Many educators noted students struggled to link theory to practice. Students were inclined to separate their practical experiences from what they were taught and asked to read, and found difficulty integrating and making connections between the two.

> *"When they go out into what we might sometimes call in inverted commas 'the real world', then, then you need to start helping them to connect that learning to that real world before they even leave the University or else you get that gap that sometimes is reported by industry partners and employers that students have great technical knowledge but they don't know how to apply it in that kind of context."*
>
> Gavin

> *"…yeah, just so that there's that connect. Because at the minute I think we, we teach them the theory and then they get, so it's maybe it's, like, 60 percent theory, 40 percent doing something, but then in the doing, we don't actually, I don't know if we always go back and say, you know, "Did you see how this was linked?"*
>
> Chelsea

> *"So, okay, they may not know, you know, you may say to them "What are Porter's five forces?" and they may say, "I don't know," and yet, what they've actually done is demonstrate that. So then our job is to go, "Okay, look at… Isn't that an interesting link?" and then it can make a lot more sense."*
>
> Ella

> *"they're now starting to trust the theory a little bit more because if they actually go out and do the business and do it the way they had said, like, without talking to customers and then they see themselves failing, and then they read the theory saying, "Yeah, you've done it all wrong." They're going, "Oh right.""*
>
> Kendall, Naomi, Andrew and Perry

The educators wanted students to use their reading and the content of lectures to inform their practice, and to use practice to make sense of what they were reading and being taught.

> *"And so basically the, that what I've been trying to do is, you know, what they kept on, used to be saying, "Well, do I do my academic work or do I do my practice?" And, you know, seeing it as a choice and nobody said that to me in the last year. You know, that, that constant dialogue about academic or practice, now they see them as being integrated."*
>
> Aubrey

It was important to educators that these links were made constantly. Most felt that it was easier for students to make sense of theory if they were introduced to it retrospectively as a way of explaining what had happened in practice. Understanding the need to reference multiple sources of literature and then to draw their own informed opinion from them was a struggle for many, further exacerbated by historically low levels of reading experience in many students.

> *"But if you simulate something, and a learner gets to use it, he gets to develop it and then you do the theory afterwards, all of that teaching per se follows the experience, so it's experience first, teaching second."*
>
> Anthony

> *"So what I say to them is "The models and the input you get and what's written is mainly codified best practice which helps you, you know, so you don't have to start from a blank sheet of paper."*
>
> Jeff

It has been recognised by others that there are significant benefits in taking time to integrate prior understanding with students, as opposed to introducing new knowledge that may remain un-integrated and consequently rendered unusable (Kinchin et al., 2011). It also underlines the proposal by P. Davies and Mangan (2007) that threshold concepts work as a web which can link thinking and practice in a discipline, and the importance of knowledge building blocks for grasping a threshold concept, mitigating the risk of misconceptions. The

close-coupling of theory and practice allows students to appreciate that each stage in their learning is provisional, habituating them to uncertainty; since the acquisition of threshold concepts transforms their understanding of subject knowledge previously acquired (P Davies & Mangan, 2008). By concentrating on CTCs educators have a defence against the temptation to overload the curriculum.

7.1.3.6. Teamwork

It was apparent that team working played a key part in the effectiveness of the educators' pedagogy. As well as enabling students to have an experience of working in a team which would likely be relevant to their future working lives, it also developed their interpersonal skills, communication skills, emotional intelligence and self-awareness. Team working allowed students in entrepreneurship to reflect through dialogue and to learn from each other's experiences. It underpins the 'knowledge as participation' perspective (Table 4.2) where educators and students are active agents in co-creating threshold concepts through local pedagogic practice. Team working also appeared to play a very important role in increasing levels of student engagement in their educational experience. Students in teams were able to hold each other to account.

> *"But much more of that is reviewed within the team company training sessions, so they can't say, "Oh, I did this project and this happened," because their peers have got to sign off on that, this report of what they've done. Yeah. And they've got to sign off that actually they have been coming back to the team company and telling us what they're doing and they did, we did agree this but they should be doing this as part of their goals at the beginning. So forcing them to, you know, as part of the process, to be engaging with their team company. We've upped the role of the learning contract, so the learning contract is, is formally reviewed twice a year…"*
>
> Aubrey

> *"And I think the journey they've come so far at the end of Year 2 has been phenomenal because they were essentially completely dysfunctional by the end of Year 1. They struggled through Semester 1 of Year 2 but now they are incredibly functional as a team. You know, they've gone through some*

very difficult situations actually. So the learning they have got from that is quite monumental. You know, you've seen huge shifts in behaviour, attitudes, practice, which I think is great, but you can't measure that because there's no, you know, yes, they've achieved their assessments but actually it's in their character now"

Ella

Team working had a magnifying and catalysing effect on the amount of learning achieved by the individual members of the team. Learning from each other's mistakes meant individuals did not have to make all the mistakes themselves in order to learn from them. Being able to reflect through dialogue enabled individuals to realise what they had learned through their own experiences outside the team as well as those experienced in the team context. Opportunities to share learning with the team reinforced knowledge and clarified the individual's own understanding.

"So they don't get any of that if it doesn't come back into the team. It has to be a shared experience. It's a catalyst for learning. And also other development opportunities and jobs, but it's a catalyst for learning and I think that's the really crucial thing."

Ella

"And they're experimenting not just with business ideas but socially, so, I think the kind of big learning that they do is essentially the social learning, so they, they learn, you know, how to work in teams and they learn how to work with other people so that hopefully by the time that they leave, they have a rather different understanding from perhaps some of the main business systems stuff that we teach, which is that they'll understand processes as a subset of the social skills and social understandings. That's perhaps a key difference. They'll experiment with each other as they go along."

Kendall, Naomi, Andrew and Perry

Teamwork had an important role to play in developing self-reliance and agency. The team allowed the educator to wean the students off dependence on them, offering the alternative focus of the team. The students moved from being

dependent on the educator, to being dependent on the team and themselves, to becoming self-reliant, and interdependent on their fellow team members.

> *"But the structure of the thing, as yeah, as self-directed learning teams, comes back to sort of [Perry's] basic thing about self-reliance, you know, the kind of not being beholden to the machine in terms of, like, the university machine, you know, or a particular teacher or a particular curriculum, to be, to be obliged to be self-reliant about your own learning as a team I think is really powerful.*
>
> Kendall, Naomi, Andrew and Perry

This appeared connected to their developing sense of identity as well. Felten (2016) has commented on the importance of confidence developing from a sense of belonging in threshold crossing. The team acts as a 'home' in this respect for the developing identity of the student.

7.1.3.7. Teaching knowledge content

Knowledge content of the programmes was important in communicating the credibility of the educational experience to the students. If a course included teaching that they would expect to find on an entrepreneurship programme, such as intellectual property and understanding financial statements for example, then students were more likely to engage in it fully. Educators recognised that the wide availability of information and its temporal nature meant knowledge transfer was not their priority and were more likely to be inclined to focus on the development of skills and attitudes in their students. However, they recognised that students valued knowledge content as a signifier of quality, and enabled the development of an academic subject identity in the students, and this justified a central role for it. Knowledge content served educators as a vehicle for the development of skills and attitudes but was not regarded as a priority for classroom time or as a focus for assessment.

> *"And when I kind of got them to articulate what their dissatisfaction was, a lot of it was about being mis-sold that, you know, "When I came on this programme, I was told I'd be able to set up a business and be an entrepreneur."*

Aubrey

"They all came to me and said, "This is," you know this conversation we had where, "This isn't what we expected from this course." "What did you expect?" "Well, I expected I would be taught how to do business and nobody's teaching me anything." So there's certainly a lot of expectation of content in the first year as well, because that's traditionally what they, what they have from school."

Kendall, Naomi, Andrew and Perry

"because they have been used to being fed stuff and - we haven't had this yet - but I have no doubt that this will happen at some point. We haven't had the "I'm paying you nine grand a year" thing yet, but I have a feeling it will happen, because that drag from pedagogy to heutagogy is very, very, very difficult because they don't like not knowing and they expect you to tell them."

Ella

It was important that the educators themselves were credible too, and usually direct personal experience of venture creation was the best source of credibility.

"Yeah, absolutely. Yeah, credibility with the students is really, really important. I will happily tell them all about my, my business experience – good and bad –because it helps for me to be the credible person in the classroom."

Sacha

It has also been highlighted by Kinchin et al. (2011) that for students to understand a threshold concept, and in particular to access its integrative qualities, they must have had sufficient exposure to content knowledge and experiential learning opportunities. P. Davies and Mangan (2007) suggest that introducing threshold concepts to students before they are in a position to use them to integrate knowledge is problematic as they are likely to develop inadequate and superficial knowledge, which may eventually inhibit the transformations necessary for a complete understanding of the concepts. P Davies and Mangan (2008) also

highlight the importance of ensuring a sufficient foundation of basic concepts to enable students to work towards the acquisition of threshold concepts.

7.1.3.8. Summary

In summary then, six important pedagogical approaches enabled students to be educated to think like entrepreneurs. These approaches worked best when adopted in the context of a framework for engagement which created a desire and provided an enabling context for students to understand what it means to think like an entrepreneur.

- Opportunities for real life learning - moving out of the educational context, exposing students to higher levels of risk and uncertainty.
- Opportunities for reflection - providing time and space to allow students to make sense of their real life learning experiences.
- Failure as a valuable learning experience - enabling students to see failure as an important part of learning and understanding entrepreneurship.
- Closing the 'theory-practice' gap - making the connections between theory and practice explicit and encouraging students to make these connections independently.
- Teamwork - developing a significant number of high-stakes team based experiences to enable the students to develop self-awareness, interpersonal skills, learn from each other, reflect through dialogue and develop student engagement.
- Teaching knowledge content - retain a clear and explicit theoretical knowledge content to ensure credibility and act as a vehicle to permit the development of relevant skills.

7.2. Conclusion

This chapter set out the findings from the second stage of the research study (see Figure 5-4) drawing on semi-structured interviews with educators, and building on findings from stage 1 with entrepreneurs. Six CTCs in entrepreneurship have been presented (see 7.1.2) along with ways in which

students might be educated in them (see 7.1.3).

These findings suggest a response to the following research questions;

- What is distinctive about thinking like an entrepreneur?
- How can students be educated to think like entrepreneurs?

By suggesting CTCs in entrepreneurship, the likely bounded nature of threshold concepts can be used to define the distinctiveness of entrepreneurship and what is distinctive about thinking like an entrepreneur. This definition of entrepreneurship in terms of CTCs in entrepreneurship can enable an entrepreneurship curriculum to be developed that will effectively educate students to think like an entrepreneur. The findings from the concept mapping workshops conducted with entrepreneurship students are presented in the context these findings in Chapter 8 in order to explore how students understand thinking like entrepreneurs. Having explored the practitioner perspective for direct experience of entrepreneurship, and the educator perspective for how best to teach entrepreneurship together with a perspective of CTC troublesomeness; the student voice is important to develop an understanding of experiences of learning entrepreneurship and first-hand experiences of troublesomeness. The findings from the final stage of the study build on the first two stages, and enable the richness of the data gathered at each stage to be fully realised.

Chapter 8. Findings and Discussion Part 3 - Students

8.1. Introduction

This chapter sets out the findings from the third stage of the research study (see Table 4.1). The findings from the semi-structured interviews and Delphi survey conducted with entrepreneurs in Stage 1 and the findings from semi-structured interviews with entrepreneurship educators in Stage 2 are presented in preceding chapters. In this chapter, the findings from Stage 3 of the research; the concept mapping workshops conducted with entrepreneurship students, are presented in the context of the findings from the preceding two stages.

The first two stages of the research were designed to explore what is distinctive about thinking like an entrepreneur and how students might be educated to think like entrepreneurs. Having defined what entrepreneurship is, in the form of entrepreneurship CTCs, and how students might be educated in entrepreneurship, this stage of the research considers how students understand entrepreneurship and reveals their experience of learning it. As previously stated, the student voice is important to develop an understanding of experiences of learning and experiences of troublesomeness.

This third and final stage of the research was designed to explore the following research question:

How do students understand thinking like entrepreneurs?

Entrepreneurship CTCs have been identified in the research process, and form a way of explaining what entrepreneurship is. Students' understanding of entrepreneurship may be assessed using the bounded, integrative and troublesome nature of CTCs, enabling curriculum development. They are a way of expressing what students need to understand, in order to understand entrepreneurship. A comparison of students' perceptions of concepts required in order to understand entrepreneurship with the entrepreneurship CTCs previously identified in this research, will reveal how well the students understand entrepreneurship. Entrepreneurship CTCs not evident or well understood by the students in their

concept maps will indicate priority areas of focus for future entrepreneurship curriculum development.

Two concept-mapping workshops were conducted with forty-eight volunteer business school students from a population of one hundred and twenty-one across three years of an undergraduate entrepreneurship programme. In the workshops, small groups were asked to develop concept maps around the focus question, "What do you need to understand in order to understand entrepreneurship?" Participants came up with concepts that expressed what they thought needed to be understood in order to understand entrepreneurship and wrote these on sticky notes, they then positioned the sticky notes relative to each other on flip charts, and added connecting lines and linking statements to construct concept maps. They indicated if each concept on their map was 'easy' or 'difficult' to 'get their head around', and if they felt they had understood each one or not, as indicators of troublesomeness. They were also asked to indicate if any concepts on their maps were threshold concepts, after having been introduced to the threshold concept framework.

The analysis of and findings from the concept maps created by the students groups is presented in this chapter. Photographs were taken of each map, and each map was recreated in a digital form using Cmap software, (Florida Institute for Human and Machine Cognition, IHMC) to facilitate legibility and analysis. Areas of the digital versions of the maps which included concepts that related to the entrepreneurship CTCs developed in the two preceding stages of the research were shaded, again to facilitate analysis. The concept maps were given labels coded according to Table 8-1.

Table 8-1 Legend explaining coded digital concept map labels

AM or PM	Morning or Afternoon session
YR1, YR2 or Yr3	1st, 2nd or 3rd year group
N (number)	Number of students in the group creating the map
A or B	To distinguish between groups in the same year in the same session

For example, a group labelled AMYR1X3A would indicate a map produced by Group A consisting of three students from year 1 in the morning session.

Attendance of the workshops is shown in Table 8-2

Table 8-2 Record of participation in concept mapping workshops

	Total	Male	Female	1st year	2nd year	3rd year
Morning	22	19	3	1 x 2	1 x 5 1 x 4	1 x 6 1 x 5
Afternoon	26	20	6	2 x 3	2 x 5	2 x 5

Photographs and digital representations of the concept maps are found in Appendix 20.

8.2. Student response to workshops

The students found the tasks they were set in the workshop challenging and demanding. Their initial enthusiasm when presented with flipcharts, sticky-notes, felt-tip pens and stickers waned as the complexity and extent of the task became clear. Most students visibly chose to engage with the task and found it interesting, but others disengaged finding intrinsic motivation a struggle.

The amount of work the students were required to do during the workshops was ambitious and most groups found it difficult to complete the tasks set in the time allowed. There was a high level of group discussion throughout but the workshops finished with many concepts on sticky notes not incorporated into

the maps, and many concepts not coded 'hard/easy' or 'understood/not understood'.

Some students approached the task as if it were a question with a correct answer and were keen to secure the approval of the facilitator or other faculty members present. Significant effort was made to assure them that there was no 'right' answer.

Most student groups immediately started considering 'an entrepreneur', rather than the phenomenon of entrepreneurship, finding it easier to describe the characteristics of an individual. They also identified themselves as entrepreneurs in this context and tested their ideas for their concept maps against what they themselves would do, and how they personally would behave.

8.3. Analysis of concept maps

The concept maps were analysed qualitatively and quantitatively in order that richness of what they represented might be explored as fully as possible. The structure, content and degree of integration shown in the maps were analysed as they were all potentially useful indicators of the students' understanding of entrepreneurship and how it changed over the degree course. Map structure and integration were used to indicate level of understanding (Kinchin & Correia, 2017). Map content was used to correlate the extent of the students' perceptions of entrepreneurship with those of the entrepreneurship CTCs. The nature of the linking words and phrases was also used to explore the students' level of understanding. Data was analysed qualitatively to explore the degree of knowledge integration and adaptive expertise.

Data was analysed quantitatively to indicate the level and nature of the students' content knowledge. The number of concepts included in the maps overall, and the number of concepts that could be respectively associated with entrepreneurship CTCs were counted. Differences in the correlation of the students' perception of entrepreneurship relative to the entrepreneurship CTCs by year of study became apparent. Data on troublesomeness was collected by counting the number of concepts coded "easy" or "hard" and the number of concepts that the students felt they had understood or not.

8.3.1. Number and coding of concepts

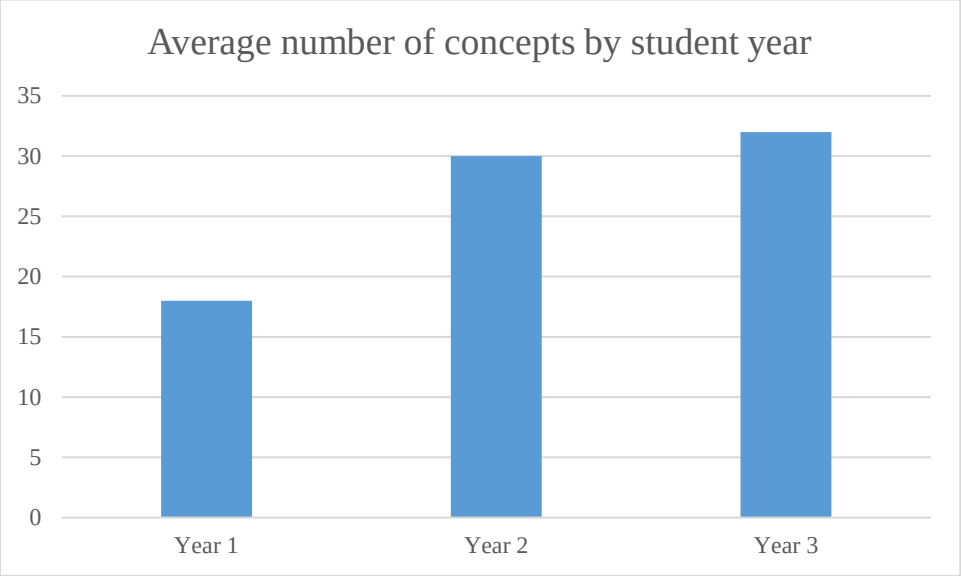
Concept map data relating to the total number of concepts on each map, and the number of concepts labelled "hard", "easy", "understood" and "not understood" is presented in Table 8-3.

Table 8-3 Number of "easy", "hard", understood" and "not understood" concepts on each map

Group	Number of concepts	Average number of concepts / year	Concepts coded Hard + Understood	Average / year	Concepts coded Hard + Not understood	Average / year	Concepts coded Hard (no other coding)	Total concepts coded Hard	Average Hard concepts / year	Concepts coded Easy + Understood	Average / year	Concepts coded Easy + Not understood	Average / year	Concepts coded Easy (no other coding)	Total concepts coded Easy	Average Easy concepts / year
AMYR1X2A	19	**18**	8	**3**	7	**4**	0	15	**7**	10	**13**	0	**1**	2	12	**15**
PMYR1X3B	16		0		1		0	1		11		1		1	13	
PMYR1X3A	20		0		5			5		17		2		0	19	
AMYR2X5A	43	**30**	11	**8**	0	**2**	1	12	**11**	13	**14**	0	**4**	1	14	**18**
AMYR2X4B	28		17		3		0	20		17		3		0	20	
PMYR2X5A	35		2		5		0	7		19		9		1	29	
PMYR2X5B	13		3		1		1	5		7		3		0	10	
AMYR3X6B	52	**32**	4	**5**	5	**3**	0	9	**10**	9	**12**	5	**5**	0	14	**17**
AMYR3X5A	31		2		0		5	7		11		5		2	18	
PMYR3X5A	22		6		2		0	8		11		7		0	18	
PMYR3X5B	24		8		6		0	14		15		3		0	18	

It is interesting to note that there is a jump in the number of concepts constituting the maps created by students in year 1 (averaging of 18 concepts) and students in year 2 (averaging 30 concepts) and year 3 (averaging 32 concepts) (Figure 8-1).

Figure 8-1 Average number of concepts by student year

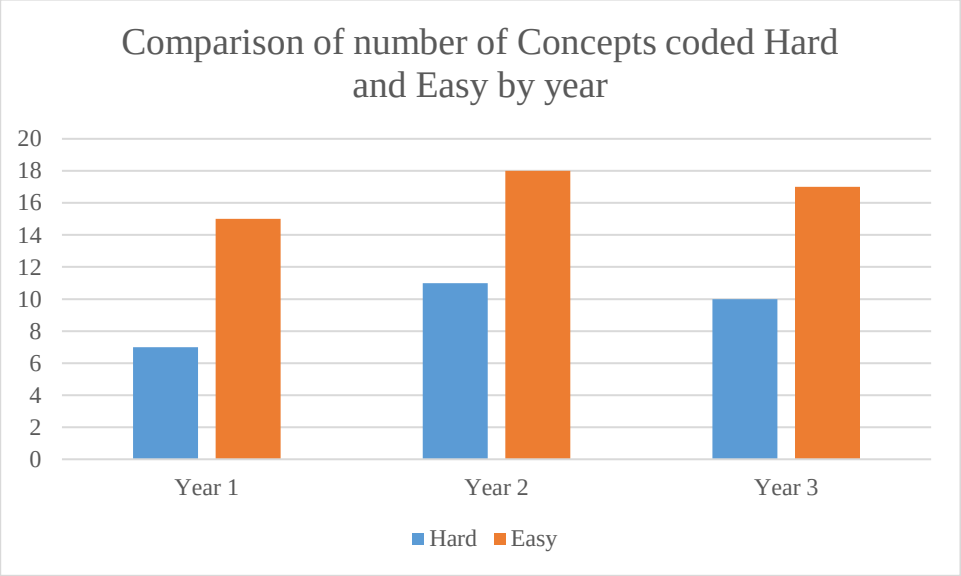


This may indicate a growing understanding of the breadth of entrepreneurship, and its complex nature, with a bigger leap between years 1 and 2, than between years 2 and 3 of the programme.

8.3.2. Concept coding

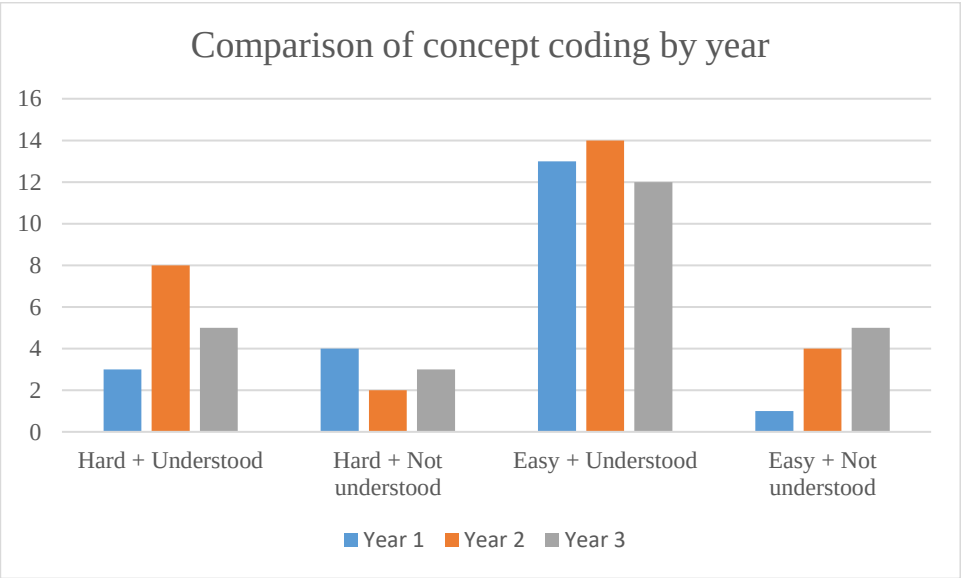
Across all years, students were more inclined to code concepts Easy than Hard, at about the same ratio (Figure 8-2). Confidence was regarded as an essential attribute for students of entrepreneurship according to the educator data, so this could be an indicator of an existing strong base of confidence in the students, or evidence that the educators at this particular institution were positively impacting on the confidence of their students. It may be because the students could not identify concepts that they found hard or did not understand because of these very same attributes.

Figure 8-2 Coding of concepts as Easy or Hard by year



The 1st year student groups were more likely to indicate that concepts coded Hard were Not understood, than those coded Easy, as might be expected. However the 2nd and 3rd year students groups were more likely to indicate that concepts coded Easy were Not Understood, than those coded Hard (Figure 8-3).

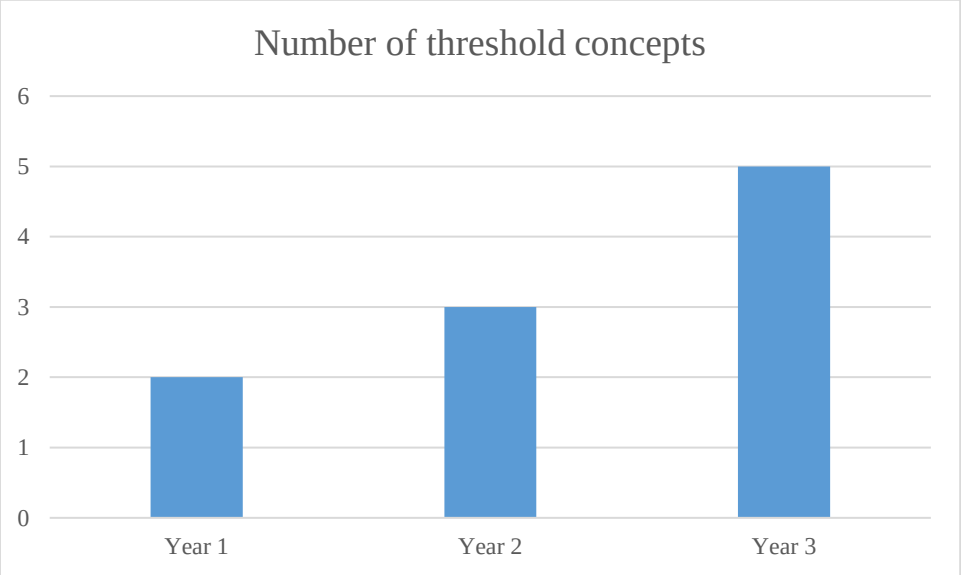
Figure 8-3 Comparison of concept coding by year



This may be an indication that the students were starting to appreciate the threshold nature of some of the concepts, despite apparently being easy to "get your head around" they were in fact more challenging to understand and to put into practice than had first been assumed.

The number of concepts marked as threshold concept increased from year to year (Figure 8-4).

Figure 8-4 Threshold concepts by year



This may indicate that students were becoming more confident in their ability to be able to distinguish the concepts that make a significant difference to their understanding of entrepreneurship as a whole, from those that were less significant.

8.3.3. Concept map quality of structure

The quality of the structure of the concept maps was drawn from the number of causative dynamic propositions (CDPs) they contained (which was taken as an indication of their explanatory power) and a rating of their topography (Buhmann & Kingsbury, 2015). This will be explained in more detail below.

8.3.3.1. Explanatory power

The words or phrases linking concepts on a concept map can be termed "propositions" and categorised according to the nature of the relationship they describe between the concepts they link. Static propositions indicate a passive relationship between the concepts (for example, "is"), non-causative dynamic propositions indicate some kind of implication, functional interdependence and covariation between the concepts (for example, "contributes to"), as do causative dynamic propositions (CDPs), but these also show evidence of a relationship of cause and effect (for example, "that requires"). The number of causative dynamic

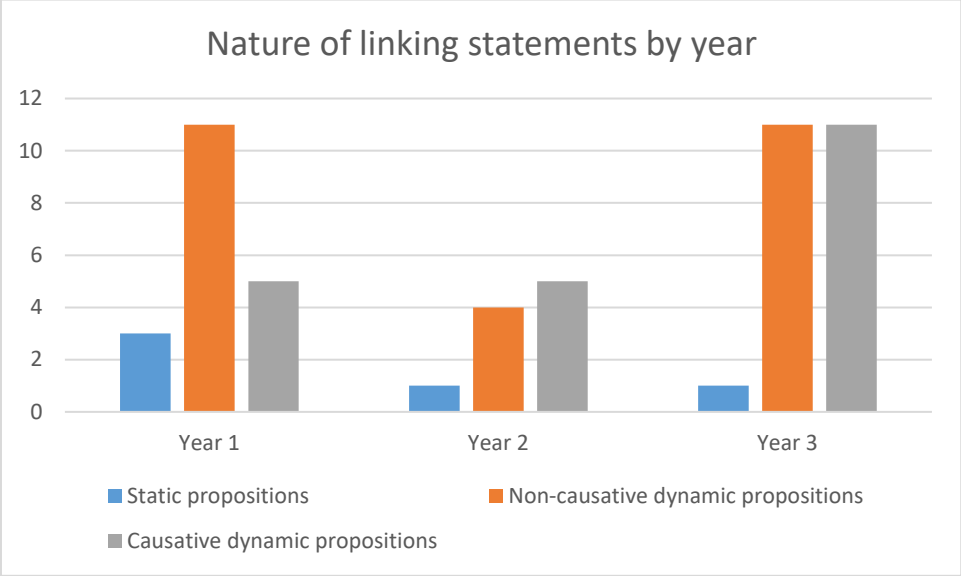
propositions used by students in their maps was linked here to the explanatory power of the maps, with a greater use of CDPs associated with greater levels of explanatory power.

The propositions on the concept maps were analysed. There was an increase in the use of causative dynamic propositions between 3rd year students, and 1st and 2nd year students, perhaps indicating a more sophisticated understanding of the relationships between the concepts on their maps and an appreciation of their integrative nature (Table 8-4) (Figure 8-5).

Table 8-4 Concept map summary data - linking propositions

Group	Static Propositions*	Average / year	Non-causative dynamic propositions*	Average / year	Causative Dynamic Propositions*	Average / year
AMYR1X2A	3	**3**	17	**11**	4	**5**
PMYR1X3B	4		7		3	
PMYR1X3A	1		8		8	
AMYR2X5A	0	**1**	2	**4**	5	**5**
AMYR2X4B	1		6		9	
PMYR2X5A	1		3		2	
PMYR2X5B	1		4		5	
AMYR3X6B	0	**1**	13	**11**	8	**11**
AMYR3X5A	0		8		25	
PMYR3X5A	1		5		2	
PMYR3X5B	4		16		10	

Figure 8-5 Nature of linking statements by year



8.3.3.2. Topography

The topography of the maps was rated according to the approach set out by Buhmann & Kingsbury (2015). Maps that displayed multiple branches from the key concept with little cross linking or multiple chains emanating from the key concept were rated as having a 'poor' structure. Maps where some chains were more developed than others or maps that displayed segments that had no link to the key concept were also rated as having a 'poor' structure. 'Normal' maps that displayed a balanced structure that was well-connected; not dominated by multiple branches or multiple chains and featured only significant cross-links that did not obscure the overall structure were rated 'good' or 'excellent'.

By combining the number of CDPs and the rating of the map topography, an evaluation of the overall quality of the map structure was drawn. See Table 8-5. The three year 1 groups produced two maps with a poor structure and one with a good structure. The four year 2 groups produced two maps with a good structure and two maps with a poor structure. The four year 3 groups produced two maps with an excellent structure, one map with a good structure and one map with a poor structure.

Table 8-5 Concept map quality of structure (explanatory power and topography)

Group	Number of CDP's (explanatory power)	Topography	Structure quality
AMYR1X2A	4	Normal	Poor
PMYR1X3A	8	Normal	Good
PMYR1X3B	3	Normal	Poor
AMYR2X5A	5	Broad	Poor
AMYR2X4B	9	Broad	Poor
PMYR2X5A	2	Broad	Poor
PMYR2X5B	5	Normal	Good
AMYR3X6B	8	Normal	Good
AMYR3X5A	25	Normal	Excellent
PMYR3X5A	2	Broad	Poor
PMYR3X5B	10	Normal	Excellent

8.3.4. Concept map quality of content

The individual concepts identified by the students on their concept maps were also analysed. Each concept was reviewed and, where possible; associated with a CTC in entrepreneurship developed from the entrepreneur and educator data.

The process of associating the concepts from the students' maps with the CTCs in entrepreneurship involved interpretation. I took a broad, inclusive perspective. When considering concepts that might be associated with the CTC of 'Entrepreneurial Agency', I included any concepts that related to an individual such as characteristics, attitudes or traits or what the individual was doing, had created or was delivering. For example the concepts 'Resilience' and 'Ambition' appeared to be clearly related to the CTC of 'Entrepreneurial Agency'. The association of other concepts such as 'Product or service' were more tenuous, but in such cases I also considered the context of the concept on the concept map. For

lists of the concepts on the maps associated with each entrepreneurship CTC, please see Appendix 21.

Map content was evaluated by the number of CTCs in entrepreneurship the concepts on the maps could be related to (the more the better). See Table 8-6. Maps with concepts linking to three or more CTCs in entrepreneurship were rated 'good', otherwise they were rated 'poor'.

Table 8-6 Concept map quality of content

Group	Number of entrepreneurship CTCs related to	Content quality
AMYR1X2A	2	Poor
PMYR1X3A	4	Good
PMYR1X3B	3	Good
AMYR2X5A	4	Good
AMYR2X4B	4	Good
PMYR2X5A	4	Good
PMYR2X5B	2	Poor
AMYR3X6B	4	Good
AMYR3X5A	3	Good
PMYR3X5A	4	Good
PMYR3X5B	3	Good

8.3.5. Concept Map Quality

The overall quality of each concept map was drawn from the quality of its structure and the quality of its content (see Figure 8-6). The quality of structure of each map was evaluated based on the topography of the map (normal, broad etc.) and its explanatory power (number of CDP's) as discussed. The quality of content of each map was evaluated based on the number of entrepreneurship threshold concepts the concepts on the map could be linked to (Table 8-7).

Figure 8-6 Quality of Concept Maps

Table 8-7 Concept map topography, quality of structure and content

Group	Number of CDP's	Topography	Structure quality	Number of Entrepreneurship threshold concepts related to	Content quality
AMYR1X2A	4	Normal	Poor	2	Poor
PMYR1X3A	8	Normal	Good	4	Good
PMYR1X3B	3	Normal	Poor	3	Good
AMYR2X5A	5	Broad	Poor	4	Good
AMYR2X4B	9	Broad	Poor	4	Good
PMYR2X5A	2	Broad	Poor	4	Good
PMYR2X5B	5	Normal	Good	2	Poor
AMYR3X6B	8	Normal	Good	4	Good
AMYR3X5A	25	Normal	Excellent	3	Good
PMYR3X5A	2	Broad	Poor	4	Good
PMYR3X5B	10	Normal	Excellent	3	Good

The method of relating numbers of CDPs and map topography to structure classification is shown in Table 8-8.

Table 8-8 Relationship of CDP, map type and structure classification

Number of CDP's	Map topography	Structure classification
4 or less	+ Normal	= Poor
5 to 9	+ Normal	= Good
10 or more	+ Normal	= Excellent
9 or less	+ Broad	= Poor
10 or more	+ Broad	= Good

It is worthy of note that the two 'best' maps were produced by groups of third year students, and the 'worst' by a group of 1st year students, indicating perhaps a development in understanding over the course of the programme of study (see Figure 8-7).

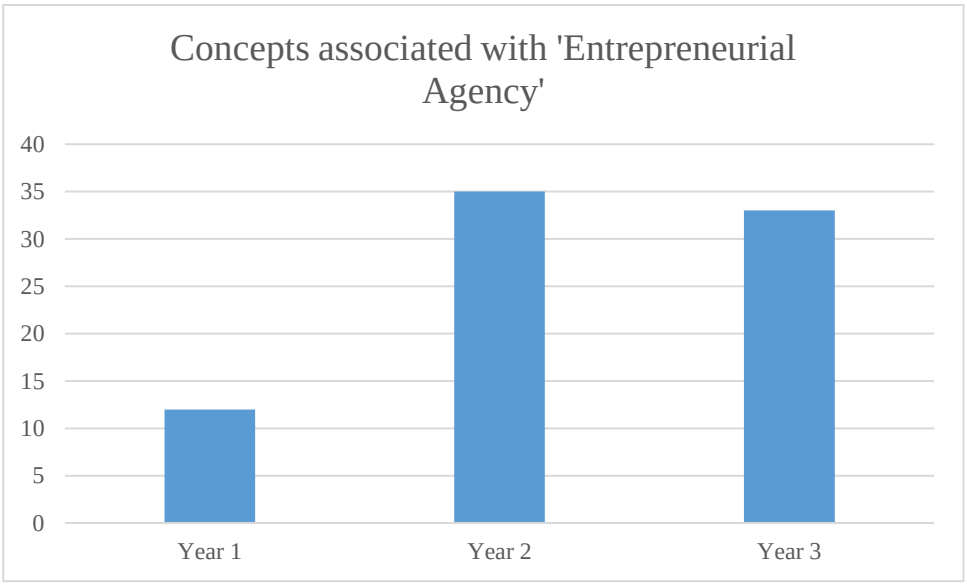
Figure 8-7 Quality of concept map structure and content by student year

In the first year groups, two maps have a poor quality of structure and one a good quality of map structure. In the second year groups, three maps have a poor quality of map structure and one a good quality of map structure. In the third year, one group has a poor map structure, one a good map structure and two an excellent map structure. In the first year, one map has a poor quality of content and two a good quality of content. In the second year groups, one map has a poor quality of content and three a good quality of content. In the third year, all groups have a good quality of content.

It may therefore be said that the students' development of an understanding of the knowledge content develops more rapidly but plateaus, in comparison to their development of an understanding of the knowledge structure. The students' maps indicate greater development of knowledge structure, in comparison to the development of knowledge content over the three year degree programme. It may be said then that the students are deepening their understanding of the limited range of entrepreneurship CTCs that have come into view over the course, but they not developing awareness or understanding of the comprehensive set of entrepreneurship CTCs as identified in the previous two stages of this research.

Concepts associated with 'Entrepreneurial Agency' increased markedly between years 1 and years 2 and 3 (Figure 8-8).

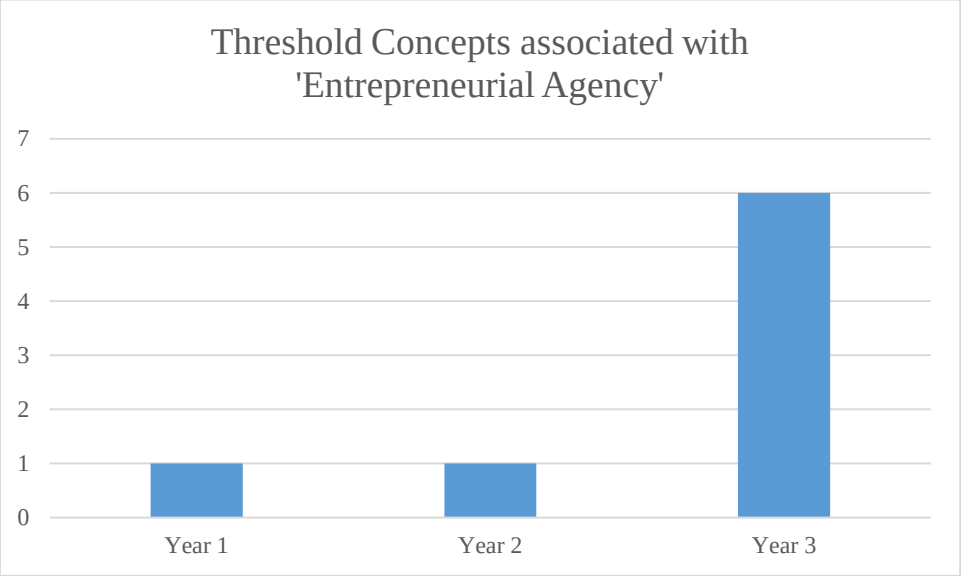
Figure 8-8 Concepts associated with 'Entrepreneurial Agency' by year



This could be interpreted as the CTC in entrepreneurship of 'Entrepreneurial Agency' coming into view between the first and second years of the programme.

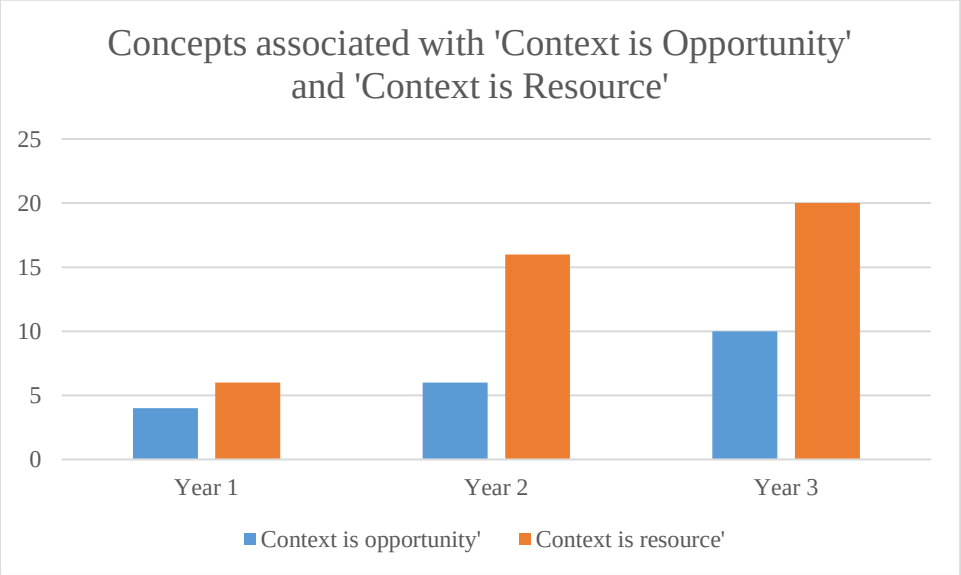
Year 3 students coded more concepts associated with 'Entrepreneurial Agency' as threshold concepts (Figure 8-9). This indicates a developing appreciation of the threshold nature of this concept with regards to understanding entrepreneurship.

Figure 8-9 Threshold concepts associated with 'Agency' by year



Concepts associated with 'Context is Opportunity' and 'Context is Resource' steadily increased between years 1, 2 and 3 (Figure 8-10). It is interesting that students readily identified more concepts associated with 'Context is Resource' as opposed to 'Context is Opportunity' with the difference becoming more pronounced as they progressed in the course.

Figure 8-10 Concepts associated with 'Context is Opportunity' and ' Context is Resource' by year

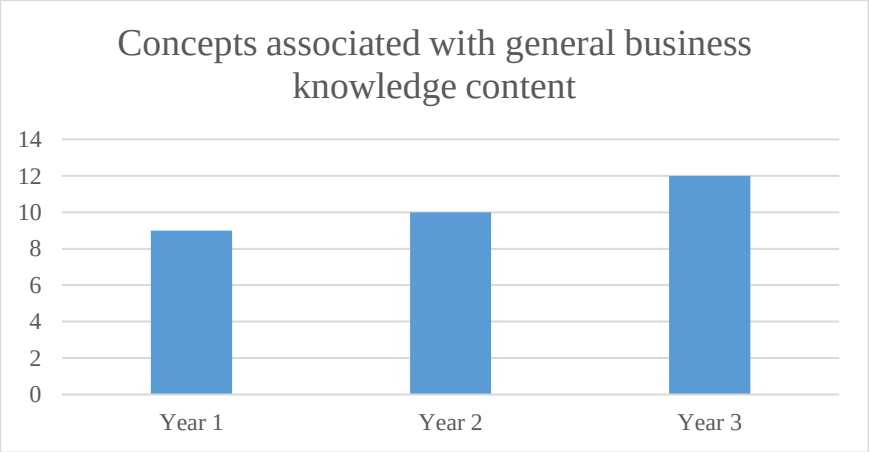


There were very few concepts associated with 'Risk is missed Opportunity' and 'Value is determined by the Customer'. This suggests that these CTCs in entrepreneurship have not yet come into view for the students. The concept of 'Entrepreneurship is a Practice' was not evident at all. This suggests that it might only become apparent to those with more experience in entrepreneurship, either

from the perspective of a practising entrepreneur, or an entrepreneurship educator, at any rate only beyond the scope of an educational context. Perhaps it is not a threshold concept for students at all.

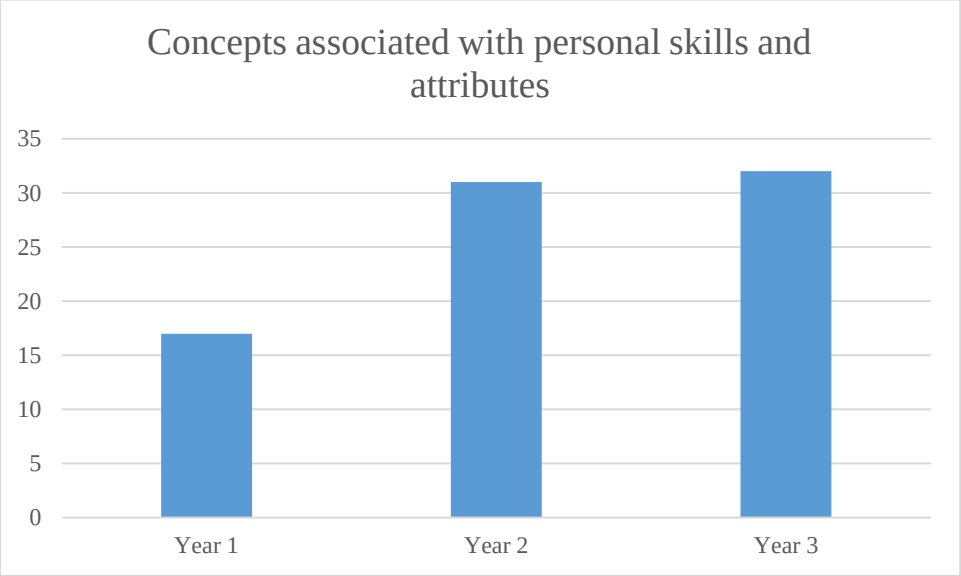
There is only a very slight increase in the frequency of concepts associated with general business content knowledge over the three years of the programme (Figure 8-11). This would indicate that the programme was not having a noticeable impact on the students' knowledge of business content associated with entrepreneurship, and that knowledge of business content was not a distinctive feature of entrepreneurship.

Figure 8-11 Concepts associated with general business knowledge content by year



There is however a marked increase in the number of concepts associated with personal skills and attributes between year 1 and years 2 and 3 (Figure 8-12). This would indicate a developing appreciation in the students of the value of "soft skills" in entrepreneurship.

Figure 8-12 Concepts associated with personal skills and attributes by year



8.4. Conclusion

In summary, over the course of the programme of study they were enrolled on, students' understanding of entrepreneurship and what it means to think like an entrepreneur is developed, as indicated by the improvements in the quality of content and structure of the concept maps they produced.

Concept maps were used in this research as artefacts to reveal students' understanding of entrepreneurship. There were some interesting differences between students from different years of study regarding the number of concepts associated with the CTCs in entrepreneurship identified from the entrepreneur and educator data.

Students appear to have become most aware of the CTCs of 'Entrepreneurial Agency' and 'Context as Resource'. There is some evidence of a growing awareness of 'Context as Opportunity', but little evidence of 'Risk is missed Opportunity', 'Value is determined by the Customer' and no evidence of 'Entrepreneurship is a Practice'. Increased focus on the development of an awareness of these missing CTCs in entrepreneurship are likely to improve the effectiveness of entrepreneurship curricula.

It is important to note that the maps the students created here will have been influenced by their particular context and the curriculum of the programme they were studying. It would be reasonable to suggest that a similar concept

mapping exercise with students should be undertaken in any institution looking to develop entrepreneurship curriculum before work is done to develop it.

The presence of multiple CTCs in entrepreneurship in each year of the programme indicates perhaps that a broad but partial transformation is achieved in this context which signifies something irreversible but incomplete, a form of hybrid transformation. Rather than understanding the CTCs individually and sequentially, it appeared that students were achieving a partial understanding of several at the same time as a web or network of concepts. This would support the propositions of P. Davies and Mangan (2007) that threshold concepts "might best be seen as a web of concepts which link thinking and practice in a discipline" (p. 711) and that conceptual change may operate at a deeper level through the acquisition of "organising schemas that can be associated with the development of disciplinary thought" (p. 714).

Von Graevenitz et al. (2010) suggest that entrepreneurship education may be best regarded as a decision making tool which enables students to decide whether or not to start a business based on a perception of their aptitude and desire to pursue such a path. This implies that students are maintaining a state of undecidedness during their higher education. As suggested by Mohamed, Land, and Rattray (2016) it may be that students on entrepreneurship education programmes are able to maintain a state of ontological ambivalence in which they are learning how to start a business but are not sure they want to become an entrepreneur, leading to the formation of hybrid identities.

The systematic approach to the analysis of the concept maps in this research produced some interesting findings. The use of both qualitative and quantitative approaches meant that the quality of the structure and the content of the maps could be examined and the development of map quality over the programme, highlighted. Where maps were categorised or rated, the categories or ratings were kept as broad as possible, recognising the possibly wide margins of error, and only broad trends were noted. My own perspective as an entrepreneurship educator was useful in relating the students' concepts on their maps to entrepreneurship CTCs.

As has been previously discussed in Chapter 4, the challenges associated with involving students in threshold concept research are well documented and to date the student voice has been largely absent from threshold concept research (Felten, 2016) despite the fact that student voices are recognised as useful in informing curriculum development (Scott, 2017). This approach permits the inclusion of the student voice in threshold concept research by using concept mapping with students to validate and verify threshold concepts, noting that interactions of this nature with students have more support (Barradell, 2013).

This chapter has set out the findings from the third stage of the research study. In this chapter, the findings from Stage 3 of the research; the concept mapping workshops conducted with entrepreneurship students, have been presented in the context of the findings from the preceding two stages. Findings from this stage of the research enable answers to be suggested in response to the following research question:

How do students understand thinking like entrepreneurs?

By exploring the integrative, bounded and troublesome nature of entrepreneurship candidate threshold concepts as evidenced in student concept maps, gaps may be identified and entrepreneurship curriculum developed.

Chapter 9. Discussion, Recommendations and Conclusion

9.1. Introduction

This thesis presents a conceptual framework to inform entrepreneurship education. A staged stakeholder curriculum inquiry has been undertaken involving entrepreneurs, entrepreneurship educators and students of an entrepreneurship programme. It offers an innovative approach to entrepreneurship in education, contributing to knowledge in the areas of entrepreneurship theory, education practice and research methods. In this final chapter, the research findings are summarised, recommendations are made for applications of the findings, suggestions for future research are made and conclusions are drawn.

9.2. Research context

As set out in Chapter 2, UK higher education institutions are experiencing increasing pressure to generate more of their own income, and to demonstrate and quantify evidence of their measurable contributions to the economy. This pressure has been combined with an explosion in student numbers and increasing demands from employers for more employable graduates. The commodification and marketization of education has focused universities' efforts on the student experience, levels of student satisfaction, and ranking in league tables. Regarding higher education as a primarily economic transaction, and the learner as a consumer, learning can be misleadingly depicted as something that "does not entail deep personal change or transformation, troublesome challenge or even, at times, engagement." (Land, 2016, p. 12). Entrepreneurship education has appeared to be a panacea in this operating environment, with the added bonus of the promise of producing student and graduate spin-out new ventures, and the creation of jobs. As such, it has been more vulnerable than most to market pressures and the need to meet the demands of multiple stakeholder groups. Governments seeking economic growth have long believed in the central role of enterprise and entrepreneurship, and the role of education programmes in

encouraging it. The potential importance and benefits of enterprise and entrepreneurship education have been endorsed by the policies of governments and lobby groups around the world despite the extensive efforts to measure success of the associated initiatives proving largely inconclusive.

This research aims to shift the focus away from using the by-products of effective entrepreneurship education as direct indicators of success; such as the number and size of new ventures created. Instead, a conceptual approach permits the distinctiveness of entrepreneurship to be explained. Rather than assessing indirect outcomes, assessment can be of the education itself; the conceptual knowledge and understanding of entrepreneurship. Addressing the challenge of assessment when adopting constructivist pedagogical approaches has been highlighted as important for the advancement of entrepreneurship and enterprise education (Liguori et al., 2019). The threshold concept framework allows for the restoration of difficulty to learning (Cousin, 2016) and its application in this context enables entrepreneurship education to be transformative; integrating the cognitive and the affective, and encouraging a more dialogic relationship between educators and students. As (Meyer & Land, 2006) assert; knowledge should be troubling in order for it to be transformational.

When regarded as an instrumental good, valuable only because of what it enables people to do, entrepreneurship education comes to mean different things according to the particular application and use, whether that is new venture creation, employability or the preparation of graduates for an uncertain future. When regarded as an intrinsic good, worthwhile for its own sake, its meaning can be consistent, clear and something to be relied upon.

When entrepreneurship is defined in terms of understanding what it means to think like an entrepreneur, entrepreneurship education is more likely to deliver on all the current promises of entrepreneurship education more reliably; enhancing employability skills, galvanising intent to create new ventures, and preparing students for an uncertain future. Students can attain a clearer sense of their own academic identity through greater disciplinary legitimacy, and a more conceptual approach allows for the greater enhancement of their critical thinking

abilities. Their education is more like to be one that "involves extending human understanding through open ended enquiry" (Collini, 2012, p. 91).

Theory is an essential part of education, as it is the only way that educators can help students anticipate the future (Fiet, 2001). The threshold concept framework demarcates the subject of entrepreneurship and distils the essence of cognitive and socially constructed entrepreneurship knowledge in a way that can be usefully applied both in an educational context and in practice. When the threshold concept framework is used a lens through which to look at entrepreneurship, "it can also serve as a counter-discourse to the commodification of learning" (Land, 2016, p. 12).

9.3. Research Questions and Research Objectives

As set out in the introductory chapter (Chapter 1, Section 1.3), this research was developed around two propositions:

- *Entrepreneurs think and practise differently from non-entrepreneurs*
- *Students of higher education can be educated to think and practise like entrepreneurs. This is entrepreneurship education.*

Underpinned by these two propositions, the research questions were set out;

- *What is distinctive about thinking like an entrepreneur?*
- *How can students be educated to think like entrepreneurs?*
- *How do students understand thinking like entrepreneurs?*

By conducting a staged stakeholder curriculum inquiry, interrogating the perspective of entrepreneurs, entrepreneurship educators and students of entrepreneurship education, the aim of this research was to use the threshold concept framework to define entrepreneurship as an academic subject and suggest approaches to entrepreneurship education in higher education informed by how students understand it.

The research objectives were:

- to conduct a staged stakeholder curriculum inquiry involving entrepreneurs, entrepreneurship educators and students of entrepreneurship
- to identify candidate threshold concepts in entrepreneurship
- to explore educators' views on the effectiveness of approaches to entrepreneurship education
- to explore how students understand entrepreneurship

I have sought to identify *candidate* threshold concepts in entrepreneurship rather than definitive threshold concepts in entrepreneurship. As mentioned in Chapter 4 (Section 4.3.3), the use of the term "candidate threshold concept" started to appear in the literature from 2008 (Osmond et al., 2008; Shanahan et al., 2008; Zander et al., 2008) and has been chosen here to communicate a sense of fluidity and openness to the potential evolution and social construction of these concepts in entrepreneurship; they are being offered as starting points for discussion, selection and further consideration, not as absolute fixed definitions. Moreover, the qualitative nature of the research approach which includes very small sample sizes indicates the non-generalisability and the non-representative nature of the findings, rendering any attempt to define "universals" inappropriate here.

9.4. Research Design and Methodology

This research used the threshold concept framework as a lens to examine entrepreneurship education from a multi-stakeholder perspective. Building on elements of transactional curriculum inquiry (Cousin, 2009a) in the identification of entrepreneurship threshold concepts, a 'staged stakeholder curriculum inquiry' was developed (see Section 4.4). Taking an interpretivist and social constructivist approach, entrepreneurship has been treated as a socially constructed phenomena and a qualitative research approach has been adopted. Data was generated from three different stakeholder groups to make the findings as robust and reliable as possible. The respective stakeholder groups did not interact with each other in order that the distinctive aspects of their perspective could be maintained, whilst also allowing the respective perspectives to be considered together. This was

achieved at the expense of achieving consensus between the stakeholder groups. Data regarding entrepreneurship was gathered from entrepreneurs using a Delphi survey, data regarding teaching entrepreneurship and the troublesomeness of entrepreneurship threshold concepts in an educational context was gathered from entrepreneurship educators using semi-structured interviews. Data on experiences of learning was gathered from students using concept maps.

All the relevant ethical approvals were given and consents granted for this research (see Section 4.5). Accessibility of the participants was an important consideration in the sampling strategy and non-probability sampling was used to secure expert participants (see Section 4.6).

9.5. Findings

Ten entrepreneurs participated in three rounds of a Delphi survey. Eleven individual and group semi-structured interviews were conducted with eighteen entrepreneurship educators in ten higher education institutions. Two concept-mapping workshops were conducted with forty-eight students across three years of one undergraduate entrepreneurship programme. The main findings from this research are now set out.

9.5.1. The distinctiveness of entrepreneurship

The first two stages of the research study were designed to answer the first research question, "What is distinctive about thinking like an entrepreneur?" Consensus for the Delphi survey (Stage 1) was set at least 80% agreement. This was achieved with a panel of ten expert entrepreneurs on five CTCs in entrepreneurship. Consensus amongst the entrepreneur stakeholder group on these five CTCs describing what is distinctive about thinking like an entrepreneur can be taken as an indication that entrepreneurs think and practise differently from non-entrepreneurs, the first research proposition.

These five CTCs were modified and further developed by integrating data from semi-structured interviews with educators in Stage 2. Six CTCs in entrepreneurship emerged when the data sets from Stage 1 and Stage 2 were combined. These CTCs can be used to explain what is distinctive about thinking

like an entrepreneur, in response to the first research question. They have no hierarchy and there is no implication that understanding of them is likely to be developed in any defined sequence. Findings here support the proposal that threshold concepts function together as a web or network to link thinking and practising in a discipline (P. Davies & Mangan, 2007) and ways of thinking and practising are intrinsically bound up with each other. They more likely form a web of concepts (P. Davies & Mangan, 2007) and are summarised here.

Entrepreneurial Agency

When an individual understands 'Entrepreneurial Agency', they think and practise value creation as a self-organizing, proactive and self-regulating individual who reflects on and learns from their behaviour in order to contribute to their life circumstances.

Context is Opportunity

When an individual understands 'Context is Opportunity', all contexts become contexts for value creation, and as such are rich in opportunity, even those that others might not regard as such.

Context is Resource

When an individual understands 'Context is Resource', all contexts present the means to enable value creation through the exploitation of the opportunities that have been, or are yet to be recognised. All contexts not only are the source of opportunity for the creation of value but also present the means with which to bring it to fruition.

Risk is Missed Opportunity

When an individual understands 'Risk is Missed Opportunity', risk is associated with opportunities for value creation that are not pursued as well as those that are, in terms of opportunity cost. Risk is more likely to be associated with actions not taken, rather than actions taken. There is a bias toward action and away from caution and inaction. Negative consequences are perceived to be more likely associated with actions not taken, rather than with actions taken.

Value is determined by the Customer

When an individual understands 'Value is Determined by the Customer', they understand the subjective nature of value creation and recognise that only the prospective customer may perceive value. They understand the superordinate role of the customer in valuing the offer, and relegate their own perceptions of value.

Entrepreneurship is a Practice

When an individual understands 'Entrepreneurship is a Practice', they understand that the process of value creation is iterative and not a singular event. Value creation is not a ''one off' and they are always thinking of the next value creation opportunity.

9.5.2. Effective ways to educate students in entrepreneurship

The second stage of the research study was also designed to answer the question, "How can students be educated to think like entrepreneurs?" The data from semi-structured group and individual interviews was interrogated to suggest answers to this question.

Having identified CTCs in entrepreneurship, it was clear from the educator interviews that they thought pedagogical design made a significant contribution to the ease with which students are able to grasp these concepts. This can be taken as support for the second research proposition: students of higher education can be educated to think and practise like entrepreneurs. This is entrepreneurship education.

Educators proposed six pedagogical approaches to develop an understanding of entrepreneurship in students, which worked best within a framework for engagement, which created both a desire and an enabling context.

A framework for engagement

Educators emphasised the importance of paying attention to the attitude of the students and taking time to lay the foundations of effective entrepreneurship education. Students needed to understand the relevance of the knowledge to them and why it could prove useful. They needed to know what they needed to know

and how to understand it, and they needed to be able to identify occasions where it would be appropriate to apply their knowledge.

Opportunities for real-life learning

The importance of integrated experiential learning opportunities was emphasised where practical, real-life activities formed significant parts of the curriculum.

Opportunities for reflection

Integrating a reflective approach and designing in adequate time for this was also key to enabling students to understand CTCs in entrepreneurship, to negotiate liminal spaces and to learn from practical real-life experiences.

Failure as a valuable learning experience

Enabling students to understand failure as a valuable learning experience was highlighted as crucial but also particularly challenging in an educational context, and in the context of the prevailing neo-liberal ideology.

Closing the theory-practice gap

The importance of integrating theoretical knowledge content with practical experiences was emphasised.

Team work

Educators were clear that teamwork was a critical pedagogic strategy, which encouraged students to develop independence, through use of their team as a resource for both knowledge and emotional support. Teams were also pivotal in the development of student engagement, and were connected with improved student outcomes.

Teaching knowledge content

The importance of teaching entrepreneurship knowledge content was emphasised, supporting the argument that theory is the most practical thing that students can be taught (Kuhn, 1962). Use of theory ensured that students were able to act when they encountered new or unfamiliar situations, and avoided discouraging those that did not fit a special profile.

9.5.3. How students understand entrepreneurship

From the analysis of concept maps in Stage 3 insights were gained into the way students understand entrepreneurship in response to the third research question, "How do students understand thinking like entrepreneurs?" Students appear to develop an understanding of the knowledge content of entrepreneurship more rapidly than the knowledge structure, but their content knowledge plateaus. In comparison, their understanding of the structure of entrepreneurship knowledge develops more slowly but ultimately to a greater extent. Students appear to be deepening their understanding of the range of entrepreneurship CTCs that have come into view for them, but they are not developing awareness or understanding of the comprehensive set of entrepreneurship CTCs as identified in the previous two stages of this research.

'Entrepreneurial Agency' was the CTC that appeared to be most apparent to the students and their awareness of this CTC increased markedly between years one and years two and three. Awareness of the 'Context is Opportunity' and 'Context is Resource' CTCs steadily increased between years one, two and three. There appeared to be a low level of awareness of the CTCs 'Risk is missed opportunity' and 'Value is determined by the customer'. This suggests that these CTCs may not yet have come into view fully for the students. Some evidence was found for a developing understanding of all but one of the previously identified CTCs in entrepreneurship; 'Entrepreneurship is a Practice'. This is likely due to the educational context and this concept may only be understandable beyond education, after some further time thinking and practising like an entrepreneur.

9.6. Contributions to knowledge

This research has been motivated by the desire to define entrepreneurship as a valid and legitimate academic subject in its own right, worthy of scholarly attention. The threshold concept framework has been used here to demarcate and bind the subject of entrepreneurship together, clarifying what makes it conceptually distinctive and what gives it intrinsic value.

I was motivated to do this research by the sense of dissatisfaction that I felt when entrepreneurship was associated with generic, transferable and employability skills. I sought to address the sense of emptiness that I felt associated with the ubiquity, and resultant meaninglessness, of entrepreneurship. It appeared to me at first sight nothing more than a collection of generic skills and other business subjects, combined with an unrealistic expectation of new venture creation, measurement of which was used to prove effectiveness. Research into entrepreneurship education highlights an indistinct subject identity which is not yet bound by any clear theoretical inspiration (Landström & Harirchi, 2018). Using the threshold concept framework to identify the conceptual basis of entrepreneurship establishes it as a legitimate and valid academic subject, affording it a stronger identity, and by association, affording a stronger identity to those who research, teach and learn it. Strengthening its identity as an academic subject also strengthens the identities of the academics and students specialising in it. Legitimacy is a meaningful pursuit in the context of the purpose of higher education and is an effective defence against the risks of inauthenticity and superficiality. As an entrepreneurship educator, I acknowledge the central role my values have played in generating the research findings.

Defining entrepreneurship using the threshold concept framework also permits a clearer, more focused approach to learning and teaching entrepreneurship. It moves the debate from teaching 'for', 'about' and 'through' entrepreneurship, or from the "who-is-doing-what-for-whom-and-how" perspective (Hägg & Gabrielsson, 2019) to a simple focus on the teaching and learning of CTCs in entrepreneurship. Thus the debate can be moved to explore how various pedagogies enable an understanding of CTCs in entrepreneurship, rather than the relative merits of the pedagogies themselves.

CTCs in entrepreneurship are not suggested here as a replacement for learning outcomes or competency frameworks, but as a complementary addition to them, allowing them to be used to their best advantage and prioritised more effectively. Knowledge of CTCs in entrepreneurship offers a way to integrate the 'about, through and for' (Hannon, 2005) approaches to entrepreneurship education, reflecting the way experts operate (Kinchin et al., 2011). A strong

pedagogical approach uses all three, but requires a robust conceptual basis, which has hitherto been lacking. The threshold concept framework both highlights and offers a means to address some of the weaknesses of a purely competency based approach (Kinchin et al., 2011). The threshold concept framework offers a way of connecting "experiential chains of practice through which students may demonstrate competence and the underlying networks of understanding" (Kinchin et al., 2011).

CTCs in entrepreneurship enable educators to guard against an "overstuffed" curriculum by allowing them to focus on the areas of understanding that will make the biggest difference to the students, and enable them to understand what it means to think and practise like an entrepreneur.

9.7. Contributions to practice

The method developed in this research of staged stakeholder curriculum inquiry involves external stakeholders and builds expert consensus. It addresses the two main criticisms of transactional curriculum inquiry, namely the lack of involvement of external stakeholders and the challenge of achieving consensus amongst experts (Barradell, 2013). The input of external stakeholders in threshold concept research is critical in connecting the academic world with the 'real' world (Barradell & Kennedy-Jones, 2015). This research builds on the work of (Cousin, 2009a) and the transactional curriculum inquiry as an approach to identify threshold concepts. Each stage of the research builds on the next, as the perspective of experts in entrepreneurship has been integrated with that of experts in entrepreneurship education, and is finally used to assess the level of students' understanding of entrepreneurship. Staged stakeholder curriculum inquiry involves gathering data from three different stakeholder groups using three different appropriate research methods, gradually building a basis which is likely to be fuller, more credible and more reliable from which to derive curricular enhancements.

In transactional curriculum inquiry, the different stakeholder groups interact with each other and this adds value to the process of curriculum development. In staged stakeholder curriculum inquiry, the stakeholder groups

interact with each other only indirectly through the researcher. This clearly places a heavier onus of responsibility for interpretation on the researcher and does not enable consensus or interaction between the stakeholder groups. However, it does have several advantages. The first is convenience, as gathering all the various stakeholder groups together several times for a considerable duration would be difficult if not impossible. The second is that the separate and distinct views of the stakeholder groups are preserved and may be compared and analysed in more detail.

The student voice has been largely absent from threshold concept literature to date as there is an inherent contradiction and methodological challenge regarding their involvement in the gathering of valid and reliable perspectives in curriculum inquiry (Felten, 2016). In this research, concept mapping has been used to explore students' experiences of learning entrepreneurship and troublesomeness. The student voice has made a valuable contribution, but not in relation to the identification of threshold concepts.

The threshold concept framework can facilitate simpler and more effective curricula development with the potential of more constructive alignment with assessment and clearer evaluation of student progress, potentially appealing to Higher Education policy makers interested in moving beyond the competencies and the learning outcome agenda. CTCs in entrepreneurship permit students of any academic discipline to understand what it means to think like an entrepreneur. The threshold concept framework enables the evaluation of entrepreneurship curricula and the assessment of student progress, without resorting to extrinsic measures, for example; the number of new ventures created. It also offers a potential approach for people beyond the educational context to become more entrepreneurial.

9.8. Recommendations for practice and future research

Through this research, six entrepreneurship CTCs have been suggested in response to the question, "What is distinctive about thinking as an entrepreneur?" and six pedagogical approaches in response to the question, "How can students be

educated to think like entrepreneurs?" which worked best within a framework for engagement. It calls for programmes of entrepreneurship education to be developed around the entrepreneurship CTCs using the suggested pedagogical approaches and engagement framework, so that their impact may be evaluated. This will also require the development of assessments to evaluate the extent of CTC understanding in terms of both knowledge content and knowledge structure. Such programmes might also be usefully evaluated for their impact on quantitative indicators such as entrepreneurial intent and number and success of new ventures created.

Although unclear, findings here may indicate that entrepreneurship CTCs have no hierarchy and there is no linear progression of student understanding. It is not clear from this research if the concepts are interrelated, interdependent or if they lead one from another. Research to explore possible relationships and dependencies between CTCs in entrepreneurship would enable the further development of entrepreneurship curricula.

The different perspectives of the various stakeholder groups have revealed several potentially fruitful avenues for further research. The differences between the entrepreneur and educator perspective are important to understand in depth as employers and their representative bodies often claim that universities are 'out of touch' or that they are failing to prepare students adequately for future careers. Understanding the differences between educators and entrepreneurs could perhaps explain the sources of these criticisms and enable them to be addressed.

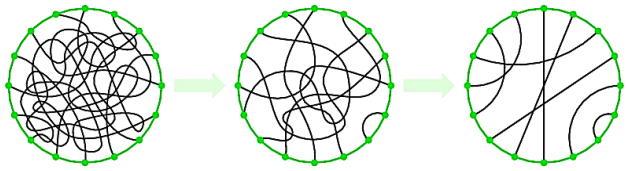
9.9. Conclusion

"A threshold concept necessarily helps to define the boundaries of a subject area because it clarifies the scope of a subject community" (P. Davies, 2006, p. 74). In this research, the identification of candidate threshold concepts has been used to demarcate the academic subject of entrepreneurship. The threshold concept framework promotes the notion of episteme; the system of ideas or ways of understanding that allow knowledge to be established. The CTCs in entrepreneurship identified here are offered as a way to encapsulate the accepted ways of thinking within the subject (Perkins, 2006). Understanding

entrepreneurship means having entrepreneurial agency, seeing opportunities and resources to enable value creation in all contexts, recognising only value perceived by the customer as valid, understanding risk as missed opportunity and regarding value creation as a practice.

The integrative nature of the threshold concepts within a subject enable the boundaries of that subject to be set; the sharper the boundaries, the stronger the integration (P. Davies & Mangan, 2007). Integration can be understood using the metaphor of tangles in knitting wool. The more integration between the concepts in a subject, the tighter the tangle and the sharper its boundaries (Figure 9.1).

Figure 91 Tangles (Chang & Erickson, 2016)



Legitimacy for entrepreneurship has been to date largely anchored in "external stakeholders" (practitioners, policy-makers and politicians) (Landström & Harirchi, 2018) but moves to increase its academic legitimacy have been taken perhaps at the expense of relevance. The threshold concept approach enables both conceptual legitimacy and subject identity, without sacrificing relevance.

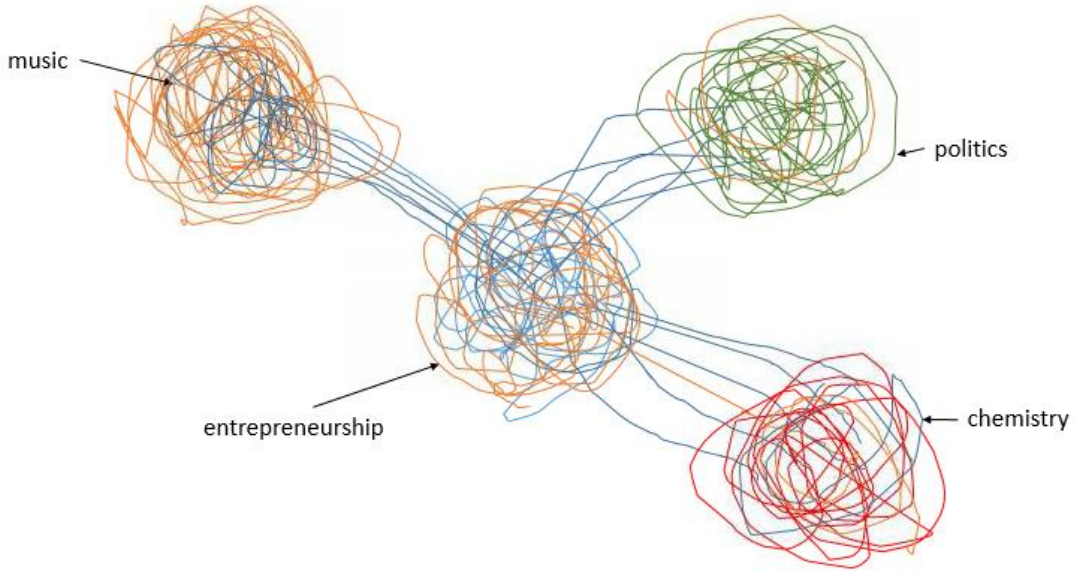
Establishing a clearer subject identity using threshold concepts allows entrepreneurship as a subject to defend itself from the perils of genericism. As it is a product of the market, entrepreneurship shares a kind of emptiness with generic skill sets which can be explained by its previous lack of intrinsic theoretical and conceptual content. (Collini, 2012) argues that generic skills are effectively becoming abstract propositions when incorporated into the curriculum without the requirement of the students to engage in a particular subject matter. The skills agenda is "rather like training people in tricks for improving their memory but without their having any past to recall" (Collini, 2012, p. 145).

Compounding this confusion is the diversity which exists in terms of the implied purposes of entrepreneurship education. The academic identity of entrepreneurship cannot be distinctive nor defined in an educational context when

it has multiple instrumental purposes and is measured solely in terms of "usefulness". Taking a more conceptual approach to entrepreneurship allows its purpose to be unified and realigned to the core purpose of higher education. "Education takes a particular form in universities, where, whatever professional or vocational 'training' is also undertaken, the governing purpose involves extending human understanding through open-ended enquiry" (Collini, 2012, p. 91). "Advanced scholarship and research" may be characterised to include that both with and without immediate practical application.

Entrepreneurship as a subject may be defined as ways of thinking and practising which have validity in other disciplinary and occupational contexts. Using the metaphor of tangled knitting as before (Figure 9.2), candidate threshold concepts can be integrative across academic subjects, enabling an entrepreneurial approach to be distinctive, and also applicable in any context.

Figure 9.2 Integrativeness of CTCs in entrepreneurship across exemplar subject areas



The likely integrative nature of the candidate threshold concepts in entrepreneurship across subjects might enable their application in other subject areas in order to facilitate a more entrepreneurial approach in contexts other than business as desired or appropriate. Identifying CTCs in entrepreneurship enables entrepreneurship to be taught as a distinct subject and as an approach which can be integrated into other academic subjects. Entrepreneurship can be both an

educational philosophy (Lackéus, 2015b), an academic subject and a new perspective of value creation when applied in contexts other than venture creation.

CTCs in entrepreneurship give educators a framework around which to construct and develop existing curricula, and to assess and evaluate student development and the quality of teaching and learning interventions. The threshold concept framework urges a "big rethink" (Cousin, 2006a, p. x) about the structure of the subject of entrepreneurship, the cognitive and affective challenges associated with its mastery and how best it is to be learnt and taught. The application of the threshold concept framework places subject specialists in the centre of curriculum inquiry (Cousin, 2008a).

The CTCs in entrepreneurship also have potential for application in a wider context. They offer a means to develop programmes for cultural change to create more entrepreneurial organisations outside the educational context. They offer a means to explore the acceleration of successful start-up formation and growth in the form of structured development programmes in incubators and accelerators. CTCs in entrepreneurship offer framework which can be used by individuals who wish to become more entrepreneurial in whatever occupation or task they choose, be it starting a business, exploring the impact of climate change or seeking a greater work/life balance for example.

In summary, this research makes a contribution to the development of a conceptual approach to entrepreneurship education and offers CTCs in entrepreneurship to explain what makes entrepreneurship distinctive. It suggests approaches to educating students in entrepreneurship within a framework of engagement and a means of assessing students' experiences of learning entrepreneurship. By identifying CTCs in entrepreneurship and gathering perspectives on effective ways to educate students in them; the bounded and integrative characteristics of threshold concepts have enabled a definition of entrepreneurship, and informed the development of entrepreneurship curricula.

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Appendices

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Appendix 1. Relevant publications to date

Journal article

Hatt, L. 2017. Threshold Concepts in Entrepreneurship – the Entrepreneurs' Perspective. *Education + Training*. 60(2), pp.155-167.

Book Chapters

Hatt, L. (forthcoming) Threshold Concepts at the Sharp Edge – Entrepreneurship Curriculum Redesign. In J. A. Timmermans & R. Land (Eds.), *Threshold Concepts on the Edge.* Leiden: Brill | Sense.

Hatt, L. (2019) What does it mean to think as an entrepreneur? Using the Threshold Concept Framework to Inform Entrepreneurship Education, in David Higgins, Paul Jones, Pauric McGowan (ed.) *Creating Entrepreneurial Space: Talking Through Multi-Voices, Reflections on Emerging Debates (Contemporary Issues in Entrepreneurship Research, Volume 9B)* Emerald Publishing Limited, pp.27 - 44

Conference presentations

Hatt, L. (2019) Using concept maps to assess the effectiveness of entrepreneurship education. Paper presented at ISBE2019 (*Institute for Small Business and Entrepreneurship)*, Newcastle, 14th – 15th November

Hatt, L (2019). Using the threshold concept framework to inform entrepreneurship education. *Imagining Better Education – Durham School of Education Post Graduate Conference*, Durham, July 12-13th

Hatt, L (2019). Threshold Concepts in Entrepreneurship. *Advance HE Teaching and Learning Conference 2019* Northumbria University, Newcastle-upon-Tyne July 2nd – 4th

Hatt, L. (2019). Using the threshold concept framework to define entrepreneurship as an academic discipline. *Threshold Concepts in Action*, University of Dundee, Dundee, June 27th

Hatt, L. (2018) Learning to become an entrepreneurial practitioner at university – getting off to a good start, or A Conceptual Framework for Entrepreneurship Education. Paper presented at ISBE2018 (*Institute for Small Business and Entrepreneurship)*, Birmingham, 7th – 8th November

Hatt, L (2018). Learning to become an entrepreneur: integrating the threshold concept approach and social learning theory in Higher Education. *Imagining Better Education – Durham School of Education Post Graduate Conference*, Durham, July 6 – 7th 2018 http://dro.dur.ac.uk/27695/

Hatt, L. (2017). Threshold Concepts in Entrepreneurship Education. Interactive parallel session at *IEEC2017 (International Entrepreneurship Educators Conference – Enabling Enterprise for All)*, Glasgow.

Hatt, L. (2016). "A proposed approach to the design of a doctoral study to identify threshold concepts in Entrepreneurship education and the implications of these for the curricula and pedagogy of Entrepreneurship programmes in Higher Education." Paper presented at *6th Biennial Threshold Concept Conference*, 15th – 17th June, Halifax, Nova Scotia, Canada.

Hatt, L. (2016). "What's Distinctive About Entrepreneurship and Entrepreneurship Education? Threshold Concepts and Expertise" Practitioner Development Workshop delivered at *3E (ESCB Enterprise Educators Conference)* Leeds, 11th May [Awarded Best PDW]. Later submitted as a guest blog for ECSB Research blog (Oct)

Hatt, L. (2015). Staff perspectives of threshold concepts in the context of an undergraduate entrepreneurial business degree programme. Developmental paper. *BAM2015 (British Academy of Management)* Portsmouth, 8th – 10th September.

Key note presentation

Hatt, L. (2017). Educating for Entrepreneurship. 31st Annual Businet Conference Vilamoura, Portugal 8th - 11th November.

Appendix 2. Stage 1 Ethical Approval

Durham University
School of Education

Shaped by the past, creating the future

11 April 2016

Lucy Hatt
PhD

Lucy.E.Hatt@durham.ac.uk

Dear Lucy

Delphi Study with expert entrepreneurs to identify threshold concepts in thinking as an entrepreneur.

I am pleased to inform you that your application for ethical approval for the above research has been approved by the School of Education Ethics Committee. May we take this opportunity to wish you good luck with your research.

P. M. Holmes

Dr. P. Holmes
Chair of School of Education Ethics Committee

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Appendix 3. Stage 1 Participant Information Sheet

Durham University
School of Education

Participant Information Sheet

Title: Entrepreneurship Education

You are invited to take part in the first stage of a doctoral research project to define what it means to think "as an entrepreneur" in order that entrepreneurship might be more effectively developed in students of entrepreneurship programmes in higher education. Please read this form carefully and ask any questions you may have before agreeing to be in the study.

The research is being conducted by Lucy Hatt as part of her PhD studies at Durham University, and is supervised by Professor Ray Land (ray.land@durham.ac.uk) and Dr Nicola Reimann (nicola.reimann@durham.ac.uk) from the School of Education.

If you agree to be take part in this study, you are agreeing to take part in a recorded interview (30 – 40 minutes), and then to complete a series of quick evaluative tasks drawing on your judgement via email, in order to reach an expert consensus. If the researcher needs further clarification of your responses, you may also be contacted by telephone and asked to give further context to your contributions and perspective. Your participation in this study will take approximately 2 hours in total.

You are free to decide whether or not to participate. If you decide to participate, you are free to withdraw at any time without any negative consequences for you.

All responses you give and any other data collected will be kept confidential. The strength of the chosen research method depends on the anonymity of the contributors so you are kindly requested not to discuss your participation with anyone until the ranking tasks have been completed.

The records of this study will be kept secure and private. All files containing any information you give will be password protected. In any research report that may be published, no information will be included that will make it possible to identify you individually. There will be no way to connect your name to your responses at any time during or after the study.

If you have any questions, requests or concerns regarding this research, please contact me via email at Lucy Hatt, Lucy.Hatt@durham.ac.uk or by telephone at 0773 421 8412.

This study has been reviewed and approved by the School of Education Ethics Sub-Committee at Durham University (11/04/2016).

Lucy Hatt

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Appendix 4. Stage 1 Declaration of Informed Consent

Durham University
School of Education

Declaration of Informed Consent

- I agree to participate in this study, the purpose of which is to define what it means to think "as an entrepreneur" in order that entrepreneurship might be more effectively developed in students of entrepreneurship programmes in higher education.
- I have read the participant information sheet and understand the information provided.
- I have been informed that I may decline to answer any questions or withdraw from the study without penalty of any kind.
- I have been informed that data collection will involve the use of recording devices.
- I have been informed that all of my responses will be kept confidential and secure, and that I will not be identified in any report or other publication resulting from this research.
- I have been informed that the investigator will answer any questions regarding the study and its procedures. Lucy Hatt, School of Education, Durham University can be contacted via email: Lucy.E.Hatt@durham.ac.uk or telephone: 0773 421 8412.
- I will be provided with a copy of this form for my records.

Any concerns about this study should be addressed to the School of Education Ethics Sub-Committee, Durham University via email to ed.ethics@durham.ac.uk.

Date Participant Name (please print) Participant Signature

I certify that I have presented the above information to the participant and secured his or her consent.

Date Signature of Investigator

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Appendix 5. Stage 2 Ethical Approval

Durham University
School of Education

Shaped by the past, creating the future

5th April 2017

Lucy Hatt
lucy.e.hatt@durham.ac.uk

Dear Lucy

A multi-stage transactional curriculum inquiry to develop entrepreneurship curricula – semi structured interviews with groups of educators and associated document analysis (on and off-line)

I am pleased to inform you that your ethics application for the above research project has been approved by the School of Education Ethics Committee.

May we take this opportunity to wish you good luck with your research.

Yours sincerely,

Dr Nadin Beckmann
School of Education Ethics Committee Chair

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Appendix 6. Stage 2 Participant Information Sheet

Durham University
School of Education

Participant Information Sheet

Title: Entrepreneurship Education

You are invited to take part in the second stage of a doctoral research project to define what it means to think "as an entrepreneur" in order that entrepreneurship might be more effectively developed in students of entrepreneurship programmes in higher education. Please read this form carefully and ask any questions you may have before agreeing to be in the study.

The research is being conducted by Lucy Hatt as part of her PhD studies at Durham University, and is supervised by Professor Ray Land (ray.land@durham.ac.uk) and Dr Nicola Reimann (nicola.reimann@durham.ac.uk) from the School of Education.

If you agree to be take part in this study, you are agreeing to take part in a recorded semi-structured programme team interview (45 – 60 minutes). You will be sent a sample of representative questions in advance so you have time to consider your responses. The questions will cover

- your teaching model, namely the learning and teaching underpinnings of your pedagogical initiative/s
- the key concepts you believe must be grasped by students in order to think entrepreneurially
- your perspective on key entrepreneurial concepts that have identified from interviews with entrepreneurs

You are free to decide whether or not to participate. If you decide to participate, you are free to withdraw at any time without any negative consequences for you. All responses you give and any other data collected will be kept confidential. The records of this study will be kept secure and private. All files containing any information you give will be password protected. In any research report that may be published, no information will be included that will make it possible to identify you or your institution individually. There will be no way to connect your name to your responses at any time during or after the study. All the information gathered will be used in this research project only and findings will be shared with all research participants so all may benefit from participation.

If you have any questions, requests or concerns regarding this research, please contact me via email at Lucy Hatt, Lucy.Hatt@durham.ac.uk or by telephone at 0773 421 8412.

This study has been reviewed and approved by the School of Education Ethics Sub-Committee at Durham University (date of approval: 05/04/2017)

Lucy Hatt

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Appendix 7. Stage 2 Declaration of Individual Consent

Durham University
School of Education

Declaration of Informed Consent

- I agree to participate in this study, the purpose of which is to define what it means to think "as an entrepreneur" in order that entrepreneurship might be more effectively developed in students of entrepreneurship programmes in higher education.
- I have read the participant information sheet and understand the information provided.
- I have been informed that I may decline to answer any questions or withdraw from the study without penalty of any kind.
- I have been informed that data collection will involve the use of recording devices.
- I have been informed that all of my responses will be kept confidential and secure, and that I will not be identified in any report or other publication resulting from this research.
- I have been informed that the investigator will answer any questions regarding the study and its procedures. Lucy Hatt, School of Education, Durham University can be contacted via email: Lucy.E.Hatt@durham.ac.uk or telephone: 0773 421 8412.
- I will be provided with a copy of this form for my records.

Any concerns about this study should be addressed to the School of Education Ethics Sub-Committee, Durham University via email to ed.ethics@durham.ac.uk.

Date Participant Name (please print) Participant Signature

I certify that I have presented the above information to the participant and secured his or her consent.

Date Signature of Investigator

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Appendix 8. Stage 3 Ethical Approval

Durham University
School of Education

Shaped by the past, creating the future

31/01/2018

Lucy Hatt
Lucy.e.hatt@durham.ac.uk

Dear Lucy

A multi-stage transactional curriculum inquiry to develop entrepreneurship curricula – Stage 3: Student concept mapping workshops

Reference : 2955

I am pleased to inform you that your ethics application for the above research project has been approved by the School of Education Ethics Committee.

May we take this opportunity to wish you good luck with your research.

Yours sincerely,

Dr Nadin Beckmann
School of Education Ethics Committee Chair

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Appendix 9. Stage 3 Participant Information Sheet

Durham University
School of Education

Participant Information Sheet

Title: A multi-stage transactional curriculum inquiry to develop entrepreneurship curricula –

Stage 3: Student concept mapping workshops

You are invited to take part in a research study of entrepreneurship education. Please read this form carefully and ask any questions you may have before agreeing to be in the study.

The study is conducted by Lucy Hatt as part of her Post Graduate studies at Durham University. This research project is supervised by Dr Julie Rattray (julie.rattray@durham.ac.uk) and Dr Nicola Reimann (nicola.reimann@durham.ac.uk) from the School of Education at Durham University.

The purpose of this study is to identify what it means to think as an entrepreneur from a student perspective. Ultimately your perspectives will be compared and contrasted with that of the entrepreneur and the educator (data collected in earlier stages of the research study) in order to suggest ways in which entrepreneurship courses at University can be improved. The research objective of this stage of the research is to identify Entrepreneurship Concepts through the creation of concept maps.

No prior knowledge of concept mapping is required to participate in this workshop, all you need to know will be shared with you at the time.

If you agree to be in this study, you will be asked to take part in a workshop where you will be taught how to construct a concept map and then asked to work with your peers from the same year group to construct your own concept map of entrepreneurship. There is no “right answer” - all research outputs will be relevant and interesting. The concept maps resulting from the workshops will not be evaluated for "accuracy" or "quality" but analysed to determine how you interpret the concept of entrepreneurship.

This concept mapping workshop will have benefits for you as it will give you an opportunity to examine and reflect on your own beliefs and assumptions about entrepreneurship. The workshops will be enjoyable and interesting, and of relevance to you in your study of entrepreneurship in higher education.

Your decision to participate or not participate will have absolutely no impact on the perception or evaluation of your performance on your current programme of academic study. Your participation in this study will take approximately 120 minutes. You are free to decide whether or not to participate. If you decide to participate, you are free to withdraw at any time without any negative consequences for you.

All responses you give or other data collected will be kept confidential. The records of this study will be kept secure and private. All files containing any information you give are password protected. In any research report that may be published, no information will be included that will make it possible to identify you individually. There will be no way to connect your name to your responses at any time during or after the study.

If you have any questions, requests or concerns regarding this research, please contact me via email at Lucy.E.Hatt@durham.ac.uk or by telephone at 07734218412.

This study has been reviewed and approved by the School of Education Ethics Sub-Committee at Durham University (date of approval: 31/01/2018)

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Appendix 10. Stage 3 Declaration of Individual Consent

Declaration of Informed Consent

- I agree to participate in this study, the purpose of which is to identify entrepreneurship concepts from the students' perspective
- I have read the participant information sheet and understand the information provided.
- I have been informed that I may decline to answer any questions or withdraw from the study without penalty of any kind.
- I have been informed that all of my responses will be kept confidential and secure, and that I will not be identified in any report or other publication resulting from this research.
- I have been informed that the investigator will answer any questions regarding the study and its procedures. Lucy Hatt, School of Education, Durham University can be contacted via email: lucy.e.hatt@durham.ac.uk or telephone: 07734218412.
- I will be provided with a copy of this form for my records.

Any concerns about this study should be addressed to the School of Education Ethics Sub-Committee, Durham University via email to ed.ethics@durham.ac.uk.

Date Participant Name (please print) Participant Signature

I certify that I have presented the above information to the participant and secured his or her consent.

Date Signature of Investigator

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Appendix 11. Node Structure Report – Stage 1 Entrepreneurs

30/11/2016 13:55

Node Structure
Expert Entrepreneur Interviews
30/11/2016 13:55

Hierarchical Name	Nickname	Aggregate	User Assigned Color
Node			
Nodes\\People			
Nodes\\People\\Alastair Mosley		No	None
Nodes\\People\\Ariella Montague		No	None
Nodes\\People\\Barry Marchbank		No	None
Nodes\\People\\Bart Franklin		No	None
Nodes\\People\\Bruce Anker		No	None
Nodes\\People\\Clarence Severini		No	None
Nodes\\People\\Darius Bernard		No	None
Nodes\\People\\Denis Carey		No	None
Nodes\\People\\Douglas Thalman 22nd June 2016		No	None
Nodes\\People\\Emiline Chekov		No	None
Nodes\\People\\Eric Conroy		No	None
Nodes\\People\\Inez Demone		No	None
Nodes\\People\\Lennie Ferreri		No	None
Nodes\\People\\Menard Lebowitz 26th April 2016		No	None
Nodes\\People\\Robin D'Angelo 25th April 2016		No	None
Nodes\\People\\Sayer Flanigan		No	None
Nodes\\Tree Nodes			
Nodes\\Tree Nodes\\Candidate Threshold Concept		Yes	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\\Business Fundamentals		Yes	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\\Deviance		Yes	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\\Deviance\\Constraint resistance		No	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\\Deviance\\Individualism		No	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\\Deviance\\leadership		No	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\\Focus		Yes	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\\Focus\\Persuasive		No	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\\Focus\\Prioritisation		No	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\\Focus\\Seeing the big picture		No	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\\Focus\\Stubborn		No	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\\Focus\\Vision		No	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\\Impact		Yes	None

Node Structure Report – Stage 1 Entrepreneurs (continued)

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Hierarchical Name	Nickname	Aggregate	User Assigned Color
Nodes\\Tree Nodes\\Candidate Threshold Concept\Impact\Success Focused		No	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\Innovation		No	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\Learning		Yes	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\Learning\Creating opportunities to		Yes	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\Learning\Entrepreneurship education		No	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\Learning\Learning from experience		No	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\Learning\Learning from failure		No	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\Learning\Learning from others		No	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\Opportunity		Yes	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\Opportunity\Change orientation		No	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\Risk		Yes	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\Risk\Decision Making		No	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\Risk\Distrust of data on its own		No	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\Risk\Healthy scepticism, being		No	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\Risk\Listening skills		No	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\Risk\Objectivity		No	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\Self-Efficacy		Yes	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\Self-Efficacy\Challenge orientation		No	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\Self-Efficacy\Entrepreneurial aspiration and intent		No	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\Self-Efficacy\I'm lucky!		No	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\Self-Efficacy\Optimism		No	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\Self-Efficacy\Persistant, determined, overcomes obstacles		No	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\Self-Efficacy\Self confidence, almost arrogance		No	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\Self-Efficacy\Self Doubt, imposter syndrome		No	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\Self-Efficacy\Self Knowlege, limitations, playing to your strengths		No	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\Self-Efficacy\Solution orientation		No	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\Self-Efficacy\Tolerance of mistakes		No	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\Team		Yes	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\Team\Reliance on network for information to support decision making or backing		No	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\Work		Yes	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\Work\Work (Energy and Passion)		No	None
Nodes\\Tree Nodes\\Candidate Threshold Concept\Work\Work (Need for interest in)		No	None
Nodes\\Tree Nodes\\Criticism of Advisers to Entrepreneurs		No	None
Nodes\\Tree Nodes\\Entrepreneurial motives		Yes	None
Nodes\\Tree Nodes\\Entrepreneurial motives\Competency		No	None
Nodes\\Tree Nodes\\Entrepreneurial motives\Creative outlet		No	None
Nodes\\Tree Nodes\\Entrepreneurial motives\Doing the deal, playing the game, winning		No	None
Nodes\\Tree Nodes\\Entrepreneurial motives\Money		No	None
Nodes\\Tree Nodes\\Entrepreneurial motives\Need for control		No	None

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Hierarchical Name	Nickname	Aggregate	User Assigned Color
Nodes\\Tree Nodes\\Entrepreneurial motives\Philanthropy		No	None
Nodes\\Tree Nodes\\Entrepreneurial motives\Quality of life		No	None
Nodes\\Tree Nodes\\Entrepreneurial motives\visibility		No	None
Nodes\\Tree Nodes\\Entrepreneurs and Stress		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Admired individuals		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Admired individuals\Reasons for Admiration of other Entrepreneurs		Yes	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Admired individuals\Reasons for Admiration of other Entrepreneurs\Brought on other entrepreneurs behnd them		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Admired individuals\Reasons for Admiration of other Entrepreneurs\business as people		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Admired individuals\Reasons for Admiration of other Entrepreneurs\calmer, level headed, sensible, organised		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Admired individuals\Reasons for Admiration of other Entrepreneurs\clarity of thinking		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Admired individuals\Reasons for Admiration of other Entrepreneurs\cleverer than most		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Admired individuals\Reasons for Admiration of other Entrepreneurs\Doing something for the region		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Admired individuals\Reasons for Admiration of other Entrepreneurs\Family orientated		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Admired individuals\Reasons for Admiration of other Entrepreneurs\Generous with time to help me		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Admired individuals\Reasons for Admiration of other Entrepreneurs\Had a great team behind them		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Admired individuals\Reasons for Admiration of other Entrepreneurs\I admire people who are successful		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Admired individuals\Reasons for Admiration of other Entrepreneurs\Keeping your children grounded - not spoiled, setting a good example		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Admired individuals\Reasons for Admiration of other Entrepreneurs\not a one trick pony		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Admired individuals\Reasons for Admiration of other Entrepreneurs\Overcame the odds		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Admired individuals\Reasons for Admiration of other Entrepreneurs\Passion		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Admired individuals\Reasons for Admiration of other Entrepreneurs\Philanthropy		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Admired individuals\Reasons for Admiration of other Entrepreneurs\Risk takers		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Admired individuals\Reasons for Admiration of other Entrepreneurs\similarity to self		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Admired individuals\Reasons for Admiration of other Entrepreneurs\Spotted a niche in the market		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Admired individuals\Reasons for Admiration of other Entrepreneurs\True to personal values		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Advantages of starting up in other places		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Attitude to other Entrepreneurs in General		Yes	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Attitude to term -		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Criticism of other		Yes	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Criticism of other entrepreneurs\Charismatic - no substance		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Criticism of other entrepreneurs\Starters - they don't stay and run the business		No	None

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Hierarchical Name	Nickname	Aggregate	User Assigned Color
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Criticism of other entrepreneurs\They can only suceed in one business area		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Difficulty of generalising about entrepreneurs		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Entrepreneurs born not made		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Family Background		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Scepticism of early success in others		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Traits inhibiting		Yes	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Traits inhibiting entrepreneurship\Arrogance		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Traits inhibiting entrepreneurship\Blaming others, feeling life's unfair, victim of circumstance		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Traits inhibiting entrepreneurship\Can't cope with uncertainty, lack of structure		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Traits inhibiting entrepreneurship\detail orientation		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Traits inhibiting entrepreneurship\Failure to adapt fast enough		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Traits inhibiting entrepreneurship\Failure to delegate		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Traits inhibiting entrepreneurship\Failure to grasp business fundementals		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Traits inhibiting entrepreneurship\Healthy scepticism, being discerning		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Traits inhibiting entrepreneurship\Lifestyle entrepreneurs		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Traits inhibiting entrepreneurship\nepotism		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Traits inhibiting entrepreneurship\No balls		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Traits inhibiting entrepreneurship\not open minded		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Traits inhibiting entrepreneurship\not people people		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Traits inhibiting entrepreneurship\Slow to make decisions		No	None
Nodes\\Tree Nodes\\General comments on Entrepreneurs\Traits inhibiting entrepreneurship\Stupidity		No	None
Nodes\\Tree Nodes\\Response to Key Concepts		No	None

Appendix 12. Entrepreneur Delphi survey questions, Round 1

The first round of the Delphi survey consisted of semi-structured interviews conducted with entrepreneurs. The overarching aim of the interviews was to answer the question, "What is distinctive about thinking like an entrepreneur?" The interview guide was constructed to explore this question and elicit as much relevant interview data as possible.

The first question validated the respondents as experts in entrepreneurship.

1) **Please tell me about the companies you have founded (number of employees, average annual sales growth, highest annual sales, venture capital investment, date of incorporation, flotation, role since founding for example).**

The second question was designed to encourage reflection on the attributes of other entrepreneurs admired by the participants. It was felt it would be easier, especially at this early stage of the interview where trust was being established, to ask them to talk about other people rather than themselves.

2) **Of all the entrepreneurs that you've met, which do you most admire and why?**

A follow up question was added:

2a. Who is most entrepreneurial and why?

This was because reasons for admiration of others given in the pilot interviews appeared to be more related to the personal values of the participants, rather than what distinguished the admired individuals as entrepreneurs.

The third, fourth and fifth questions were intended to encourage the interviewees to remember what things had been like when they had started out and what they had had to learn. If these lessons had been memorable, the experience of learning could perhaps indicate that a threshold concept had become understood irreversibly and new approaches would be adopted from that point on.

In asking the interviewees to reflect on mistakes, it was hoped that this would also highlight lessons learned, as they would only have been categorised as mistakes in retrospect.

3) **What were the most important things you had to get your head around when you were setting up the business? and subsequently?**
4) **What mistakes did you make?**
5) **How might you have done things differently in retrospect?**

The key question of the interview was then posed:

6) **What do you feel it means to think "as an entrepreneur"?**

Additional questions were then asked to ensure that no other nuggets of data relevant to the research question remained to be flushed out.

7) **What differentiates a novice from an expert entrepreneur?**

Participants were asked the next question about "key" rather than "threshold" concepts to avoid alienating the participants by having to educate them in the academic definition of threshold concepts.

8) **What key concepts must be grasped in order to think like an entrepreneur?**

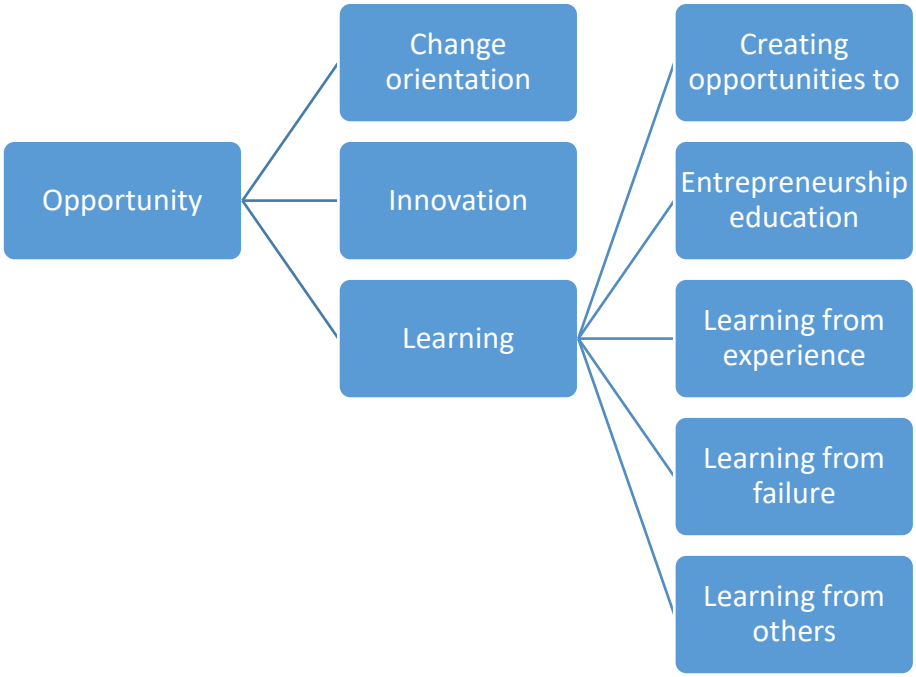
Finally, interviewees were asked how they might recognise an entrepreneur, to draw out perspectives on their distinguishing characteristics.

9) **How can you tell if someone is an entrepreneur?**

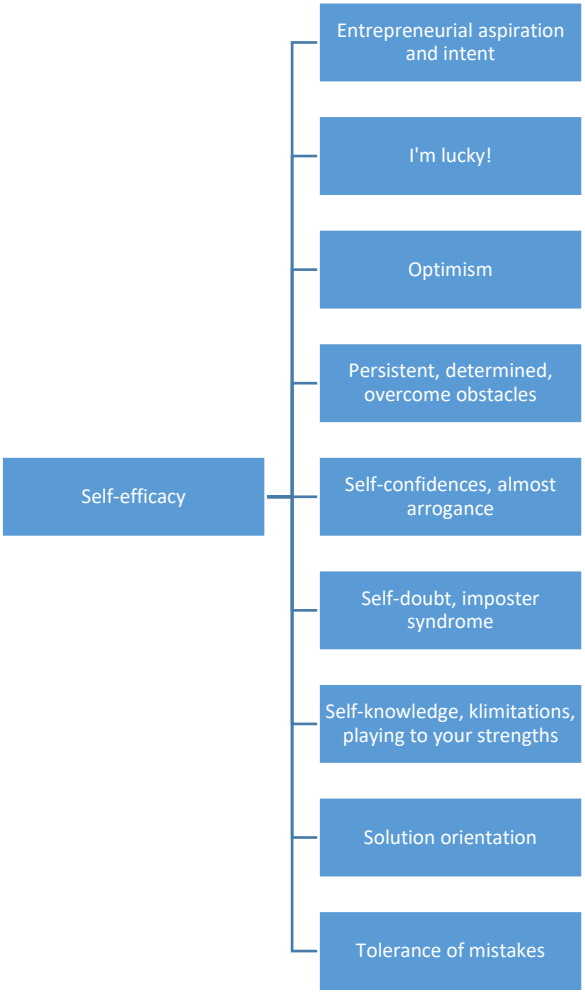
Appendix 13. Themes and sub-themes for candidate threshold concepts (entrepreneurs)

Theme hierarchy -Deviance, Focus and Impact

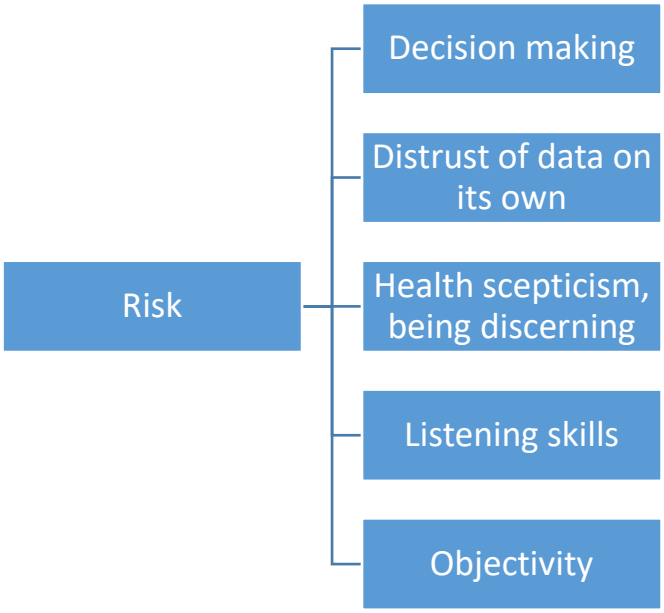
Theme hierarchy – Opportunity



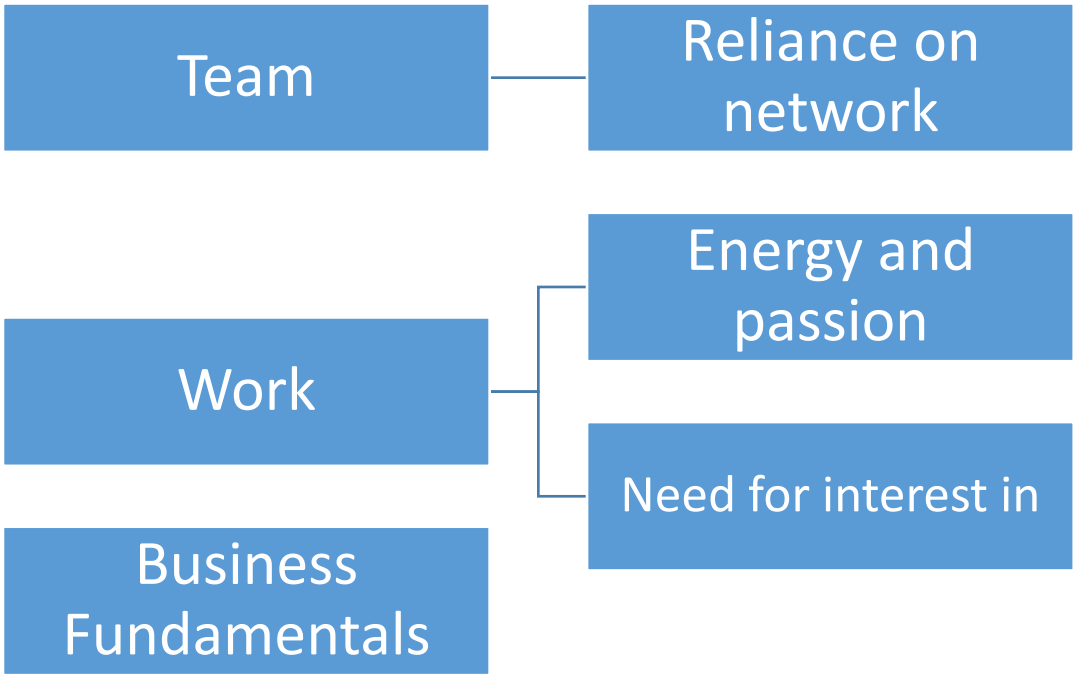
Theme hierarchy - Self efficacy



Theme hierarchy - Risk



Theme hierarchy - Team, Work and Business Fundamentals



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Appendix 14. Round 2 Delphi survey online rating questionnaire

A Delphi Study of Entrepreneurship Threshold Concepts

1. Please confirm you are a business founder

    - If no, please state your occupation and the nature of your interactions with entrepreneurs
    - If yes, please state the numbers of employees in your business at its peak
    - If yes, please state the turnover of your business at its peak
    - If yes, please state the year you incorporated your business
    - If yes, please state the number of years you personally were actively involved in the business as Founder, Chief Executive or similar.

2. Self-Efficacy: Self-efficacy is about thinking "I can do this" whilst being highly self-aware, self-controlled and conscious of one's own strengths and weaknesses. It is about accepting mistakes as part of learning, and always being interested in knowing more.

    How important do you think Self-efficacy is to thinking as an entrepreneur?

    - It is not related to thinking as an entrepreneur
    - It has little relevant to thinking as an entrepreneur
    - It has some relevant to thinking as an entrepreneur
    - It is important to thinking as an entrepreneur
    - It is critical to thinking as an entrepreneur

    Please add any comments you have about this concept or its description.

3. Focus: Focus is about making choices, having a clear vision and passionately driving towards it. It implies effective prioritisation, appropriate delegation and never switching off. Focus means intense, single-minded determination.

    How important do you think Focus is to thinking as an entrepreneur?

    - It is not related to thinking as an entrepreneur
    - It has little relevant to thinking as an entrepreneur
    - It has some relevant to thinking as an entrepreneur
    - It is important to thinking as an entrepreneur
    - It is critical to thinking as an entrepreneur

    Please add any comments you have about this concept or its description.

4. Deviance: Deviance is about being unconsciously unconventional, able to resist the pressure to conform or do what family and society expects. It implies a degree of strong mindedness and can sometimes be perceived as being difficult or arrogant.

    How important do you think Deviance is to thinking as an entrepreneur?

- It is not related to thinking as an entrepreneur
- It has little relevant to thinking as an entrepreneur
- It has some relevant to thinking as an entrepreneur
- It is important to thinking as an entrepreneur
- It is critical to thinking as an entrepreneur

Please add any comments you have about this concept or its description.

5. Risk: Risk is regarded as a sign of a potential opportunity, something to be understood - even sought out - rather than necessarily avoided. It implies quick wits, requires discernment and is not reckless.

   How important do you think Risk is to thinking as an entrepreneur?

   - It is not related to thinking as an entrepreneur
   - It has little relevant to thinking as an entrepreneur
   - It has some relevant to thinking as an entrepreneur
   - It is important to thinking as an entrepreneur
   - It is critical to thinking as an entrepreneur

   Please add any comments you have about this concept or its description.

6. Opportunity: Opportunity is about seeing commercial potential where others do not. It is associated with intuition, making patterns and connections. It implies future orientation and a focus on possibilities for improvement.

   How important do you think Opportunity is to thinking as an entrepreneur?

   - It is not related to thinking as an entrepreneur
   - It has little relevant to thinking as an entrepreneur
   - It has some relevant to thinking as an entrepreneur
   - It is important to thinking as an entrepreneur
   - It is critical to thinking as an entrepreneur

   Please add any comments you have about this concept or its description.

7. Impact: Impact is about making things happen and taking action on a grand scale combined with a sense of urgency and a desire to make a difference. It requires courage and implies a degree of compulsion.

   How important do you think Impact is to thinking as an entrepreneur?

   - It is not related to thinking as an entrepreneur
   - It has little relevant to thinking as an entrepreneur
   - It has some relevant to thinking as an entrepreneur
   - It is important to thinking as an entrepreneur
   - It is critical to thinking as an entrepreneur

   Please add any comments you have about this concept or its description.

8. Work: Work is not a distinct bounded set of activities, but integral to and indistinguishable from living and playing. It implies incredible effort invested by choice which is intrinsically motivated.

   How important do you think Work is to thinking as an entrepreneur?

- It is not related to thinking as an entrepreneur
- It has little relevant to thinking as an entrepreneur
- It has some relevant to thinking as an entrepreneur
- It is important to thinking as an entrepreneur
- It is critical to thinking as an entrepreneur

Please add any comments you have about this concept or its description.

9. Team: An effective team is prerequisite to success. Team is about knowing that the team can do more than the collection of individuals combined, not feeling threatened by the capabilities of others, but seeking out others abler than you.

   How important do you think Team is to thinking as an entrepreneur?

   - It is not related to thinking as an entrepreneur
   - It has little relevant to thinking as an entrepreneur
   - It has some relevant to thinking as an entrepreneur
   - It is important to thinking as an entrepreneur
   - It is critical to thinking as an entrepreneur

   Please add any comments you have about this concept or its description.

10. Business Fundamentals: Having fundamental business knowledge in sales & marketing, finance and human resources.

    How important do you think Business Fundamentals is to thinking as an entrepreneur?

    - It is not related to thinking as an entrepreneur
    - It has little relevant to thinking as an entrepreneur
    - It has some relevant to thinking as an entrepreneur
    - It is important to thinking as an entrepreneur
    - It is critical to thinking as an entrepreneur

    Please add any comments you have about this concept or its description.

11. Please rank the concepts below in order of how important they are to thinking as an entrepreneur, starting with the concept you think is the most important.
    - Self-Efficacy
    - Deviance
    - Focus
    - Risk
    - Opportunity
    - Impact
    - Work
    - Team
    - Business Fundamentals

12. Please rank the concepts below in order of how well they distinguish between thinking as an entrepreneur from not thinking as an entrepreneur, rating the concept that does this best number 1.
    - Self-Efficacy

- Deviance
- Focus
- Risk
- Opportunity
- Impact
- Work
- Team
- Business Fundamentals

13. Please describe any additional concepts that you feel are critical to thinking as an entrepreneur.
14. Please add any other questions or comments you have about this research project

Appendix 15. Delphi survey feedback to panel after Round 2

Research into Entrepreneurship Education
Panel Response

Previously, you were asked to rate the importance of each of 9 concepts proposed as being important to thinking as an entrepreneur. Please find the responses of the panel (12 entrepreneurs) below including your own, together with any qualitative comments that were made.

1.) Self-Efficacy: Self-efficacy is about thinking "I can do this" whilst being highly self-aware, self-controlled and conscious of one's own strengths and weaknesses. It is about accepting mistakes as part of learning, and always being interested in knowing more.

	It is not related to thinking as an entrepreneur	It has little relevance to thinking as an entrepreneur	It has some relevance to thinking as an entrepreneur	It is important to thinking as an entrepreneur	It is critical to thinking as an entrepreneur
Self-Efficacy (Group response Round 1)			1	3	8

Comments:

Some entrepreneurs only carry on because they are not truly self aware but do accept mistakes as part of learning.

If you don't believe you can do it, then nobody else will.

It's very important to know yourself, your strengths and weaknesses, but sometimes a bit of undue overconfidence can be a positive in business.

The successful entrepreneur will recruit a mentor or a series of mentors to help realise this dream.

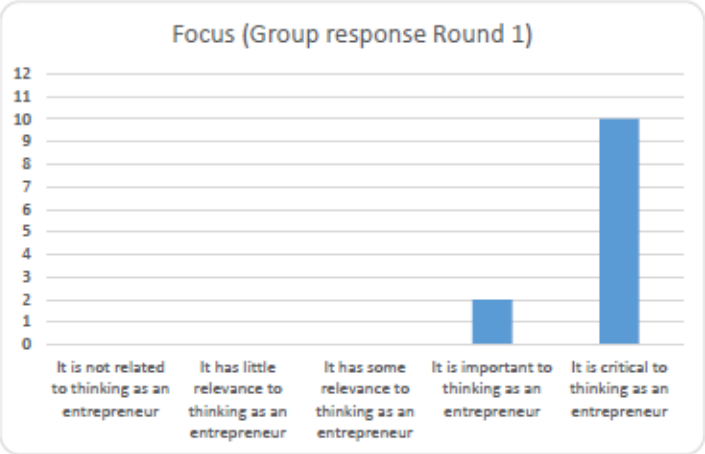
You must have self-belief, but have the right people around you with the right skills. Being aware of your own limitations is pretty fundamental, making, accepting & learning from mistakes is second nature.

The ability to learn from (and accept) mistakes is critical to success as an entrepreneur in my opinion.

You will have to get back up after multiple knock-downs - that never ends!

2.) Focus: Focus is about making choices, having a clear vision and passionately driving towards it. It implies effective prioritisation, appropriate delegation and never switching off. Focus means intense, single-minded determination.

	It is not related to thinking as an entrepreneur	It has little relevance to thinking as an entrepreneur	It has some relevance to thinking as an entrepreneur	It is important to thinking as an entrepreneur	It is critical to thinking as an entrepreneur
Focus (Group response Round 1)				2	10



Comments:

Delegation is not always a trait of a successful entrepreneur.

You need to have a clear view as to what it is you're trying to achieve.

The definition of focus as described above absolutely describes an entrepreneur.

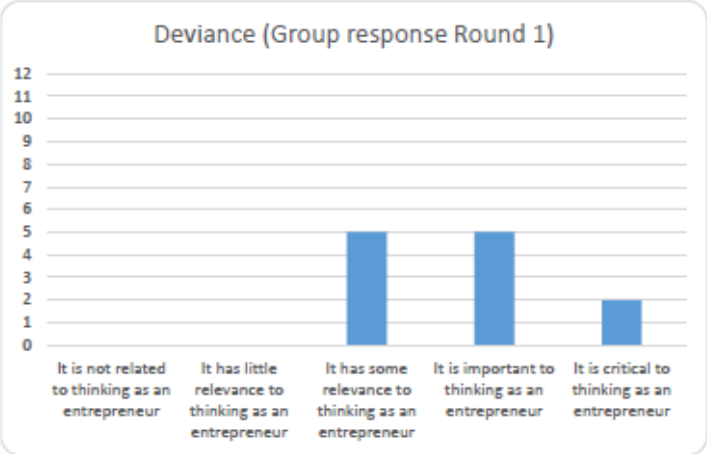
You need to constantly revisit the business plan and ensure you are spending time on the areas of the plan that will make a significant difference to a successful outcome, not get lost in opportunity

Focus is everything

It's all about Vision and Strategy. Vision without Strategy is hallucination

3.) Deviance: Deviance is about being unconsciously unconventional, able to resist the pressure to conform or do what family and society expect. It implies a degree of strong mindedness and can sometimes be perceived as being difficult or arrogant.

	It is not related to thinking as an entrepreneur	It has little relevance to thinking as an entrepreneur	It has some relevance to thinking as an entrepreneur	It is important to thinking as an entrepreneur	It is critical to thinking as an entrepreneur
Deviance (Group response Round 1)			5	5	2



Comments:

This is the ability to see solutions to problems that are not obvious to others; it means you are not a 'me too' business.

Less relevant than "focus"

It is about thinking laterally, do not run into a brick wall, go around

Deviance can be dangerous - you need to keep your partners, customers, shareholders and suppliers on board

4.) Risk: Risk is regarded as a sign of a potential opportunity, something to be understood - even sought out - rather than necessarily avoided. It implies quick wits, requires discernment and is not reckless.

	It is not related to thinking as an entrepreneur	It has little relevance to thinking as an entrepreneur	It has some relevance to thinking as an entrepreneur	It is important to thinking as an entrepreneur	It is critical to thinking as an entrepreneur
Risk (Group response Round 1)				3	9

Comments:

It is not possible to succeed without taking risks. One of the big barriers to success is the fear of failure but in fact failure is part of the journey. Churchill said:- 'Success involves moving from failure to failure without any loss of enthusiasm.

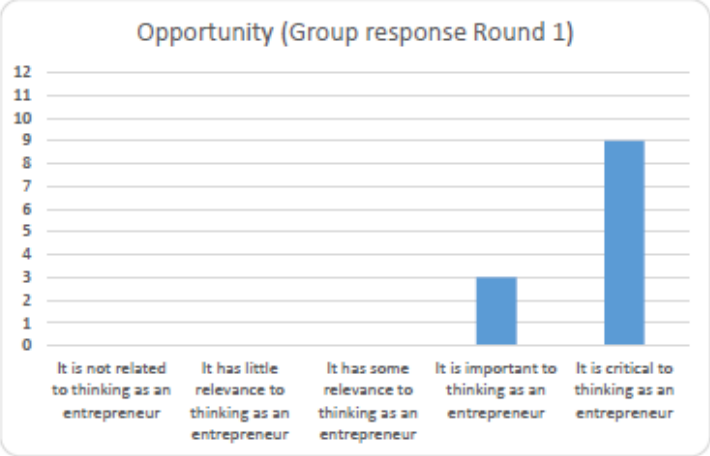
Risk can be managed better with a great mentor and operational team

Balance is also very relevant

I know many very smart people in business who could never start up on their own because they are risk averse. It's the number 1 difference between a business person working for an employer and an entrepreneur.

5.) Opportunity: Opportunity is about seeing commercial potential where others do not. It is associated with intuition, making patterns and connections. It implies future orientation and a focus on possibilities for improvement.

	It is not related to thinking as an entrepreneur	It has little relevance to thinking as an entrepreneur	It has some relevance to thinking as an entrepreneur	It is important to thinking as an entrepreneur	It is critical to thinking as an entrepreneur
Opportunity (Group response Round 1)				3	9



Comments:

In high tech businesses this means understanding the science and market structure of the proposal.

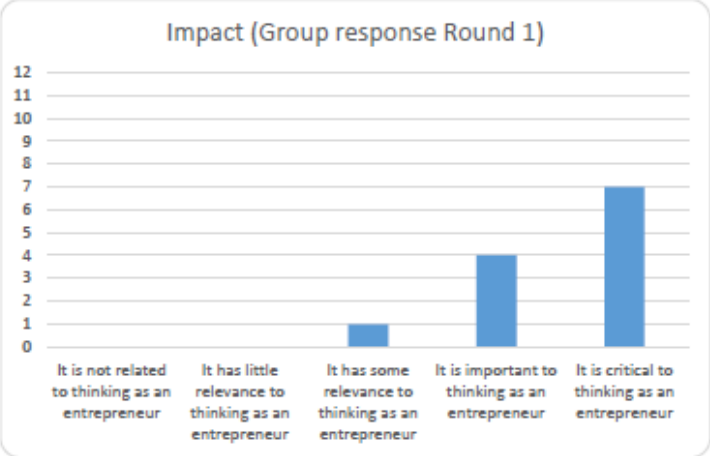
Opportunity lies everywhere, but needs to be spotted and exploited in a commercial sense to create a successful business

Vision and grabbing opportunities key to success

People often look at successful entrepreneurs as lucky, I think they are just really good at taking the opportunities they are presented with.

6.) Impact: Impact is about making things happen and taking action on a grand scale combined with a sense of urgency and a desire to make a difference. It requires courage and implies a degree of compulsion.

	It is not related to thinking as an entrepreneur	It has little relevance to thinking as an entrepreneur	It has some relevance to thinking as an entrepreneur	It is important to thinking as an entrepreneur	It is critical to thinking as an entrepreneur
Impact (Group response Round 1)			1	4	7



Comments:

Not sure action needs to be on a grand scale.

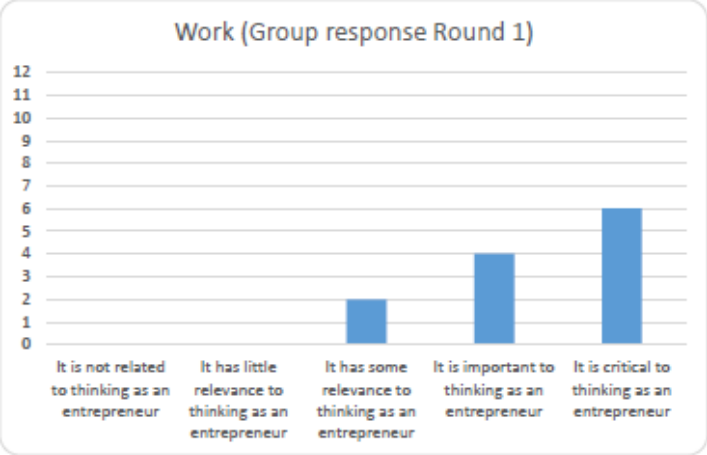
There is no place for shrinking violets but at the same time quiet determination is very powerful as opposed to loud and boisterous.

Entrepreneurs don't always think about size and scale.

Nothing happens by itself

7.) Work: Work is not a distinct bounded set of activities, but integral to and indistinguishable from living and playing. It implies incredible effort invested by choice which is intrinsically motivated.

	It is not related to thinking as an entrepreneur	It has little relevance to thinking as an entrepreneur	It has some relevance to thinking as an entrepreneur	It is important to thinking as an entrepreneur	It is critical to thinking as an entrepreneur
Work (Group response Round 1)			2	4	6



Comments:

The key is to not just work hard but work 'smart'.

To be a huge success their are no boundaries between private and work time

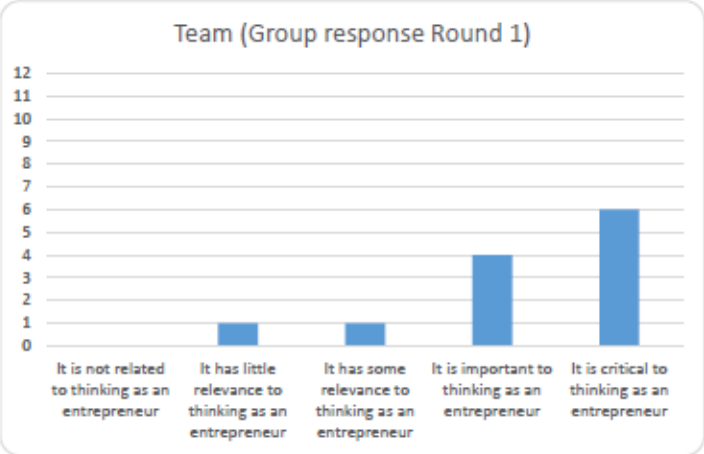
Balance again important

Most successful entrepreneurs I know work incredibly hard, but I know plenty (myself included) who are motivated by reaching a goal that allows them to work less than their peers!

I think that different entrepreneurs are very different in this respect

8.) Team: An effective team is prerequisite to success. Team is about knowing that the team can do more than the collection of individuals combined, not feeling threatened by the capabilities of others, but seeking out others abler than you.

	It is not related to thinking as an entrepreneur	It has little relevance to thinking as an entrepreneur	It has some relevance to thinking as an entrepreneur	It is important to thinking as an entrepreneur	It is critical to thinking as an entrepreneur
Team (Group response Round 1)		1	1	4	6



Comments:

Team work is relevant but an entrepreneur tends to be dominant and drive others, recognition of team work may come later unless the founders were a group of friends.

Without a good team the venture will almost certainly fail.

Team is everything when you have large scale you can't do this on your own and you need to leave a legacy

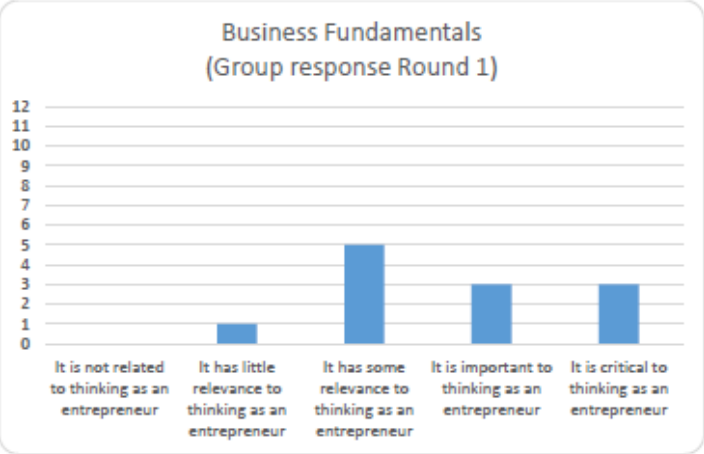
This ties in with the above [work], successful entrepreneurs relish hiring smarter people than themselves as it will lead to an easier life for them.

Entrepreneurs surround themselves with great people. People who have strengths that the entrepreneur doesn't have. Not frightened to employ better people than themselves

Likewise [as work], big variations

9.) Business Fundamentals: Having fundamental business knowledge in sales & marketing, finance and human resources.

	It is not related to thinking as an entrepreneur	It has little relevance to thinking as an entrepreneur	It has some relevance to thinking as an entrepreneur	It is important to thinking as an entrepreneur	It is critical to thinking as an entrepreneur
Business Fundamentals (Group response Round 1)		1	5	3	3



Comments:

They often do their own thing in their own way and are not bound to traditional approaches this comes later but in new IT businesses the old way is sometimes just not relevant

This is where expert help can fill in the gaps.

In the areas of expertise not mastered by the entrepreneur build a team with these skill sets

An advantage but not critical in many aspects of entrepreneurship. I know several MBA's who would be dreadful business owners...

One person can't know and be good at everything but a fundamental understanding is essential

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Appendix 16. Round 3 Delphi survey voting questionnaire

Research into Entrepreneurship Education

Happy New Year!

This is the 3rd and final round of data gathering for this stage of my research and I appreciate your continuing participation very much.

I am adapting an iterative research method that was developed to obtain the most reliable consensus of opinion of a group of experts. My approach involves 3 data gathering rounds, and this is the third and final one involving you as a member of a panel of entrepreneurs.

The activities associated with each round of data gathering are as follows:

- Round 1 – Interviews to develop concepts which could define thinking as an entrepreneur
- Round 2 – Expert panel rating of the proposed concepts, and slight modification of 2 concepts in light of expert comments.
- Round 3 – Expert panel re-rating of the concepts (2 of which have been modified) in light of feedback about the full range of panel responses

Before Christmas, you were asked to rate the importance of each of 9 concepts proposed as being important to thinking as an entrepreneur. Your responses, together with those of the rest of the expert panel, have been provided in the attached document.

Please review the attached document, and in light of this new information, reconsider each of the 9 concepts, 2 of which have been modified in light of expert comment, and indicate again if each one is critical or not to thinking as an entrepreneur.

I would be very grateful of you would reply to this message by Friday 20th January 2017, clicking on the relevant boxes to indicate your responses.

---

1. **Self-efficacy** is about thinking "I can do this" whilst being * self-aware, self-controlled and conscious of one's own strengths and weaknesses. It is about accepting mistakes as part of learning, and always being interested in knowing more.

Is **self-efficacy**, as defined here, critical to thinking as an entrepreneur?

(the word "highly" has been removed)*

a. YES ☐

b. NO ☐

2. **Focus** is about making choices, having a clear vision and passionately driving towards it. It implies effective prioritisation, appropriate delegation and never switching off. Focus means intense, single-minded determination.

Is **focus**, as defined here, critical to thinking as an entrepreneur?

a. YES ☐

b. NO ☐

3. **Deviance** is about being unconsciously unconventional, able to resist the pressure to conform or do what family and society expect. It implies a degree of strong mindedness and can sometimes be perceived as being difficult or arrogant.

Is **deviance**, as defined here, critical to thinking as an entrepreneur?

a. YES ☐

b. NO ☐

4. **Risk** is regarded as a sign of a potential opportunity, something to be understood - even sought out - rather than necessarily avoided. It implies quick wits, requires discernment and is not reckless.

Is **risk**, as defined here, critical to thinking as an entrepreneur?

a. YES ☐

b. NO ☐

5. **Opportunity** is about seeing commercial potential where others do not. It is associated with intuition, making patterns and connections. It implies future orientation and a focus on possibilities for improvement.

Is **opportunity**, as defined here, critical to thinking as an entrepreneur?

a. YES ☐

b. NO ☐

6. **Impact** is about making things happen and taking action * combined with a sense of urgency and a desire to make a difference. It requires courage and implies a degree of compulsion.

Is **impact**, as defined here, critical to thinking as an entrepreneur?

(the words "on a grand scale" have been removed.*

a. YES ☐

b. NO ☐

7. **Work** is not a distinct bounded set of activities, but integral to and indistinguishable from living and playing. It implies incredible effort invested by choice which is intrinsically motivated.

Is **work**, as defined here, critical to thinking as an entrepreneur?

a. YES ☐

b. NO ☐

8. **Team**: An effective team is prerequisite to success. Team is about knowing that the team can do more than the collection of individuals combined, not feeling threatened by the capabilities of others, but seeking out others abler than you.

Is **team**, as defined here, critical to thinking as an entrepreneur?

a. YES ☐

b. NO ☐

9. **Business Fundamentals**: Having fundamental business knowledge in sales & marketing, finance and human resources.

Is **business fundamentals**, as defined here, critical to thinking as an entrepreneur?

a. YES ☐

b. NO ☐

Appendix 17. Stage 2 Semi-structured interview questions for entrepreneurship educators

1. What is your favourite definition of entrepreneurship?
2. What is your favourite definition of an entrepreneur?
3. How do you characterise the role of the educator in entrepreneurship education?
4. How do you define the purpose of teaching in the context of entrepreneurship education?
5. How is content defined or chosen in your entrepreneurship teaching interventions?
6. What are the main objectives/goals of your teaching in entrepreneurship?
7. How are the students assessed?
8. In what other ways are the interventions measured and evaluated? How is the success of the programme measured?
9. What do you consider to be fundamental to a grasp of entrepreneurship?
10. What aspects of curriculum design help and hinder students of entrepreneurship in grasping these fundamental aspects?
11. What do students find difficult to grasp? What don't they "get"? What do you find hard to teach?
12. In what way can mastery change the learners' relation to entrepreneurship? When does this mastery typically happen?
13. Are you expecting transformations in your students? What kind?
14. What do you feel it means to think as an entrepreneur?
15. What differentiates novice from expert entrepreneurs?
16. How can you tell if someone is an entrepreneur?

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Appendix 18. Node Structure Report – Stage 2 Entrepreneurship Educators

Node Structure
Entrepreneurship Educator Interviews
21/05/2019 18:56

Hierarchical Name	Nickname	Aggregate	User Assigned Color
Node			
Nodes			
Nodes\\Areas students struggle with		No	None
Nodes\\Areas students struggle with\Finance		No	None
Nodes\\Areas students struggle with\Hard Work		No	None
Nodes\\Areas students struggle with\Process		No	None
Nodes\\Areas students struggle with\Reading		No	None
Nodes\\Areas students struggle with\Sales		No	None
Nodes\\Areas students struggle with\Team Work		No	None
Nodes\\Attitudes and dispositions desirable for learning entrepreneurship		Yes	None
Nodes\\Attitudes and dispositions desirable for learning entrepreneurship\Achievement orientation		No	None
Nodes\\Attitudes and dispositions desirable for learning entrepreneurship\Ambition		No	None
Nodes\\Attitudes and dispositions desirable for learning entrepreneurship\Confidence		No	None
Nodes\\Attitudes and dispositions desirable for learning entrepreneurship\Curiosity		No	None
Nodes\\Attitudes and dispositions desirable for learning entrepreneurship\Emotional intelligence		No	None
Nodes\\Attitudes and dispositions desirable for learning entrepreneurship\Entrepreneurial self-efficacy		No	None
Nodes\\Attitudes and dispositions desirable for learning entrepreneurship\Growth mindset - open minded		No	None
Nodes\\Attitudes and dispositions desirable for learning entrepreneurship\Optimism		No	None
Nodes\\Attitudes and dispositions desirable for learning entrepreneurship\Persistence		No	None
Nodes\\Attitudes and dispositions desirable for learning entrepreneurship\Resilience		No	None
Nodes\\Challenges associated with Entrepreneurship Education		No	None
Nodes\\Challenges associated with Entrepreneurship Education\Ability to react and respond to needs of students within institutional contraints		No	None
Nodes\\Challenges associated with Entrepreneurship Education\Authentic learning that all can identify with equally		No	None
Nodes\\Challenges associated with Entrepreneurship Education\Becoming part of the [illegible]		No	None
Nodes\\Challenges associated with Entrepreneurship Education\Doing it in three years - time pressure		No	None
Nodes\\Challenges associated with Entrepreneurship Education\Engagement		No	None
Nodes\\Challenges associated with Entrepreneurship Education\Experiential nature of the learning because it's a practice		No	None
Nodes\\Challenges associated with Entrepreneurship Education\Inappropriate space, [illegible]		No	None
Nodes\\Challenges associated with Entrepreneurship Education\Institutional requirements and constraints		No	None
Nodes\\Challenges associated with Entrepreneurship Education\Institutional requirements and constraints\Student Satisfaction (NSS)		No	None

Node Structure Report – Stage 2 Entrepreneurship Educators (continued)

21/05/2019 18:56

Hierarchical Name	Nickname	Aggregate	User Assigned Color
Nodes\\Challenges associated with Entrepreneurship Education\Instrumental approach of students or willingness to invest discretionary effort		No	None
Nodes\\Challenges associated with Entrepreneurship Education\Meaning of words		No	None
Nodes\\Challenges associated with Entrepreneurship Education\Pull from heutagogy back to pedagogy		No	None
Nodes\\Challenges associated with Entrepreneurship Education\Resource hungry		No	None
Nodes\\Challenges associated with Entrepreneurship Education\Risk taking in educational context		No	None
Nodes\\Challenges associated with Entrepreneurship Education\Students' businesses progress at different rates		No	None
Nodes\\Challenges associated with Entrepreneurship Education\Students' desire to be spoon fed but not		No	None
Nodes\\Challenges associated with Entrepreneurship Education\Students progress at different rates		No	None
Nodes\\Challenges associated with Entrepreneurship Education\Students start from different places		No	None
Nodes\\Challenges associated with Entrepreneurship Education\Tension between academic work and experiential learning-doing business		No	None
Nodes\\Definitions		No	None
Nodes\\Definitions\Entrepreneur		No	None
Nodes\\Definitions\Entrepreneurship		No	None
Nodes\\Educator Attitude		No	None
Nodes\\Educator Attitude\Born or Made		No	None
Nodes\\Educator Attitude\Higher purpose		No	None
Nodes\\Educator Attitude\Inclusivity		No	None
Nodes\\Educator Attitude\Instrumental approach		No	None
Nodes\\Educator Attitude\Power		No	None
Nodes\\Educator Attitude\Teacher focus or student focus		No	None
Nodes\\Entrepreneurship Threshold Concepts		No	None
Nodes\\Entrepreneurship Threshold Concepts\Agency		No	None
Nodes\\Entrepreneurship Threshold Concepts\Context as opportunity		No	None
Nodes\\Entrepreneurship Threshold Concepts\Context as Resource		No	None
Nodes\\Entrepreneurship Threshold Concepts\Risk		No	None
Nodes\\Entrepreneurship Threshold Concepts\The entrepreneurial process - continual new venture creation		No	None
Nodes\\Entrepreneurship Threshold Concepts\Value		Yes	None
Nodes\\Entrepreneurship Threshold Concepts\Value\Focus - making choices		No	None
Nodes\\HE Threshold Concepts		No	None
Nodes\\HE Threshold Concepts\Conscious competence		No	None
Nodes\\HE Threshold Concepts\Critical thinking		No	None
Nodes\\HE Threshold Concepts\Linking theory and practice		No	None
Nodes\\HE Threshold Concepts\Personal responsibility, agency		No	None
Nodes\\HE Threshold Concepts\Reflection		No	None
Nodes\\HE Threshold Concepts\Self- awareness		No	None
Nodes\\HE Threshold Concepts\Working in teams		No	None
Nodes\\Measures of success		No	None
Nodes\\Measures of success\Authentic understanding - of entrepreneurship, and		No	None

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Hierarchical Name	Nickname	Aggregate	User Assigned Color
Nodes\\Measures of success\Continuing students		No	None
Nodes\\Measures of success\Employability		No	None
Nodes\\Measures of success\Feedback forms		No	None
Nodes\\Measures of success\Number of student start-ups		No	None
Nodes\\Measures of success\Number of students completing modules and programme, participating in intiatives		No	None
Nodes\\Measures of success\Raised aspirations		No	None
Nodes\\Measures of success\Student Satisfaction		No	None
Nodes\\Measures of success\Value creation		No	None
Nodes\\Programme Design		No	None
Nodes\\Programme Design\Assessments		No	None
Nodes\\Programme Design\Authentic learning		No	None
Nodes\\Programme Design\Co-creation of assignments for example		No	None
Nodes\\Programme Design\Continuous change and evolution		No	None
Nodes\\Programme Design\Credibility of the educator		No	None
Nodes\\Programme Design\Depends on the confidence of the educator to an extent		No	None
Nodes\\Programme Design\Diverse skill set and experience in faculty		No	None
Nodes\\Programme Design\Early wins		No	None
Nodes\\Programme Design\Evolution in the nature of the assessments and the modes of delivery		No	None
Nodes\\Programme Design\Exposure to role models, guest speakers, external visitors		No	None
Nodes\\Programme Design\Feedback including peer feedback		No	None
Nodes\\Programme Design\Functional approach - helpful or hindrance		No	None
Nodes\\Programme Design\Integrating theory and practice		No	None
Nodes\\Programme Design\Interdisciplinarity		No	None
Nodes\\Programme Design\Make the students distinctive		No	None
Nodes\\Programme Design\Multi disciplinary context		No	None
Nodes\\Programme Design\Pedagogy versus Content		No	None
Nodes\\Programme Design\Peer assessment and feeedback and teaching, learning		No	None
Nodes\\Programme Design\Pitching and presentations		No	None
Nodes\\Programme Design\Practicing entrepreneurship - experimenting		No	None
Nodes\\Programme Design\Progression from pedagogy to heutagogy		No	None
Nodes\\Programme Design\Reflective practice		No	None
Nodes\\Programme Design\Responsive		No	None
Nodes\\Programme Design\Team and Group work		No	None
Nodes\\Programme Design\Team and Individual Coaching - Socratic method		No	None
Nodes\\Purpose teaching or educating in entrepreneurship education		No	None
Nodes\\Purpose teaching or educating in entrepreneurship education\Change attitudes		No	None
Nodes\\Purpose teaching or educating in entrepreneurship education\Create viable		No	None
Nodes\\Purpose teaching or educating in entrepreneurship education\Develop entrepreneurial skill set in students through practice		No	None
Nodes\\Purpose teaching or educating in entrepreneurship education\Develop knowledge and understanding of entrepreneurship		No	None

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Hierarchical Name	Nickname	Aggregate	User Assigned Color
Nodes\\Purpose teaching or educating in entrepreneurship education\Develop students as entrepreneurs		No	None
Nodes\\Purpose teaching or educating in entrepreneurship education\Employability and transferable skills		No	None
Nodes\\Purpose teaching or educating in entrepreneurship education\Facilitating self-directed learning		No	None
Nodes\\Purpose teaching or educating in entrepreneurship education\Multiple purposes of entrepreneurship education		No	None
Nodes\\Purpose teaching or educating in entrepreneurship education\New Venture Creation - actual and hypothetical		No	None
Nodes\\Purpose teaching or educating in entrepreneurship education\Personal growth and development		No	None
Nodes\\Purpose teaching or educating in entrepreneurship education\Preparation for the world of work		No	None
Nodes\\Purpose teaching or educating in entrepreneurship education\Raising consciousness - metacognitive skills		No	None
Nodes\\Purpose teaching or educating in entrepreneurship education\Social Structures		No	None
Nodes\\Purpose teaching or educating in entrepreneurship education\Tool to help students decide what they want to do with their lives		No	None
Nodes\\Recognising success		No	None
Nodes\\Recognising success\Attendance		No	None
Nodes\\Recognising success\Changing relationship with educator		No	None
Nodes\\Recognising success\Changing relationship with team		No	None
Nodes\\Recognising success\Clarity about what they want		No	None
Nodes\\Recognising success\Confidence, self belief		No	None
Nodes\\Recognising success\Engagement		No	None
Nodes\\Recognising success\Evidence of deeper learning		No	None
Nodes\\Recognising success\Increased entrepreneurial intention		No	None
Nodes\\Recognising success\Independently putting knowledge into practice in new		No	None
Nodes\\Recognising success\Initative		No	None
Nodes\\Recognising success\Making a sale		No	None
Nodes\\Recognising success\Number of opportunities created		No	None
Nodes\\Recognising success\Pain		No	None
Nodes\\Recognising success\Personal development		No	None
Nodes\\Recognising success\Quicker Action		No	None
Nodes\\Recognising success\Recommendations		No	None
Nodes\\Recognising success\Renewed enthusiasm		No	None
Nodes\\Recognising success\Student feedback (not NSS)		No	None
Nodes\\Researcher positionality		No	None
Nodes\\Researcher positionality\My comments on the process		No	None
Nodes\\Researcher positionality\Participants' comments on the questions		No	None
Nodes\\Role of the Educator		No	None
Nodes\\Role of the Educator\Believer and Champion		No	None
Nodes\\Role of the Educator\Coach		No	None
Nodes\\Role of the Educator\Co-creator		No	None
Nodes\\Role of the Educator\Defender		No	None
Nodes\\Role of the Educator\Enabler		No	None

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Hierarchical Name	Nickname	Aggregate	User Assigned Color
Nodes\\Role of the Educator\Expert		No	None
Nodes\\Role of the Educator\Facilitator		No	None
Nodes\\Role of the Educator\Fixer		No	None
Nodes\\Role of the Educator\Gardener		No	None
Nodes\\Role of the Educator\Guardian		No	None
Nodes\\Role of the Educator\Holistic role - concerned with the student as a whole person		No	None
Nodes\\Role of the Educator\Learner - alongside the students		No	None
Nodes\\Role of the Educator\Mentor		No	None
Nodes\\Role of the Educator\Multiple roles - varied - many different hats		No	None
Nodes\\Role of the Educator\Nuturer		No	None
Nodes\\Role of the Educator\Parental role		No	None
Nodes\\Role of the Educator\Pastoral role		No	None
Nodes\\Role of the Educator\Protector		No	None
Nodes\\Role of the Educator\Reducing the separation between educator and student		No	None
Nodes\\Role of the Educator\Resource - student as customer		No	None
Nodes\\Role of the Educator\Role Model		No	None
Nodes\\Role of the Educator\Story Teller		No	None
Nodes\\Role of the Educator\Supervisor		No	None
Nodes\\Role of the Educator\Supporter		No	None
Nodes\\Role of the Educator\Teacher		No	None
Nodes\\Role of the Educator\Therapist		No	None
Nodes\\Skills associated with being entrepreneurial		No	None

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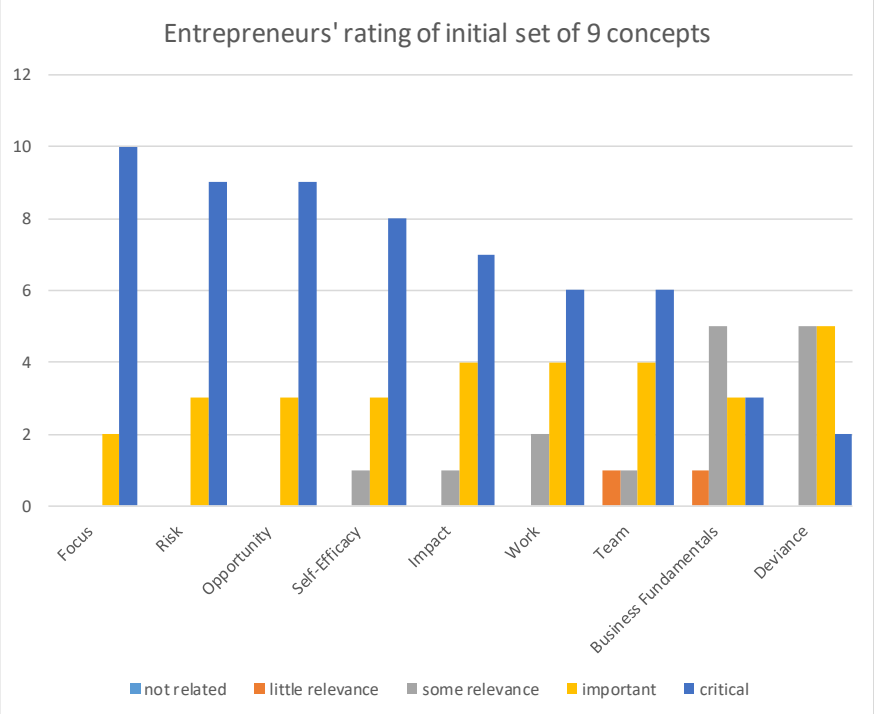
Appendix 19. Tables and graphs of entrepreneur data

Entrepreneurs' rating of initial set of nine concepts

Importance to thinking as an entrepreneur	not related	little relevance	some relevance	important	critical
Focus				2	10
Risk				3	9
Opportunity				3	9
Self-Efficacy			1	3	8
Impact			1	4	7
Work			2	4	6
Team		1	1	4	6
Business Fundamentals		1	5	3	3
Deviance			5	5	2

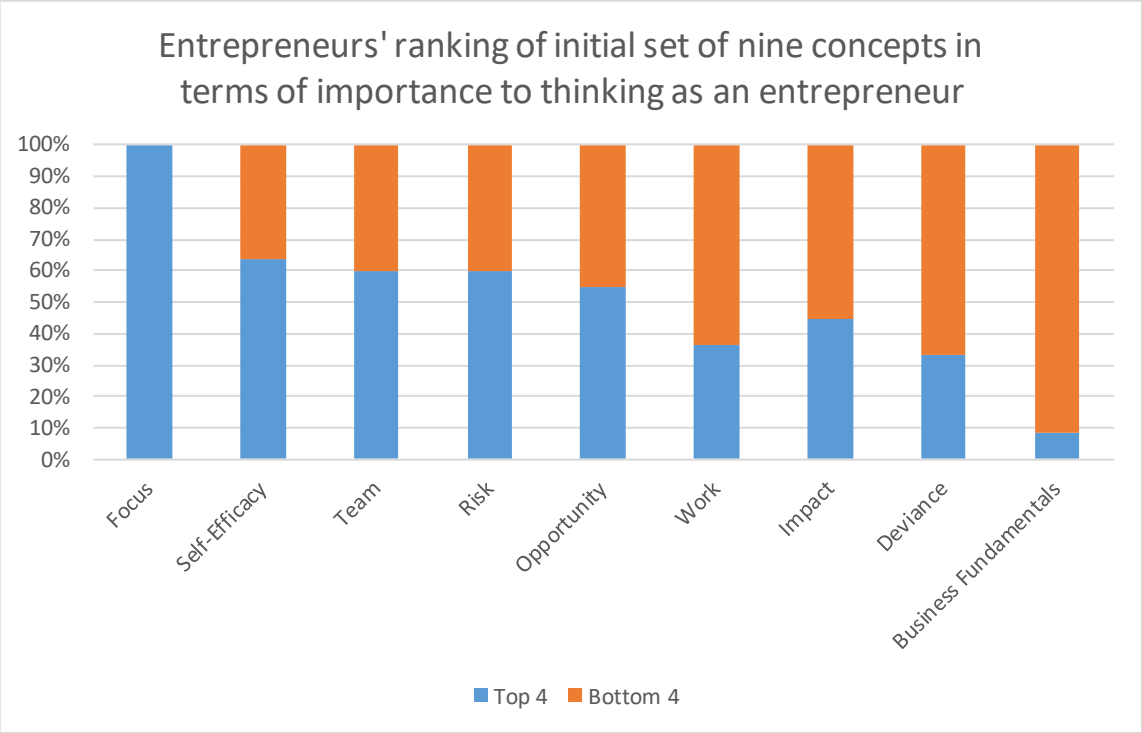
Entrepreneurs' rating of initial set of nine concepts



Entrepreneurs' ranking of initial set of nine concepts in terms of importance to thinking as an entrepreneur

	Top 4	Bottom 4
Self-Efficacy	7	4
Focus	10	0
Deviance	4	8
Risk	6	4
Opportunity	6	5
Impact	4	5
Work	4	7
Team	6	4
Business Fundamentals	1	11

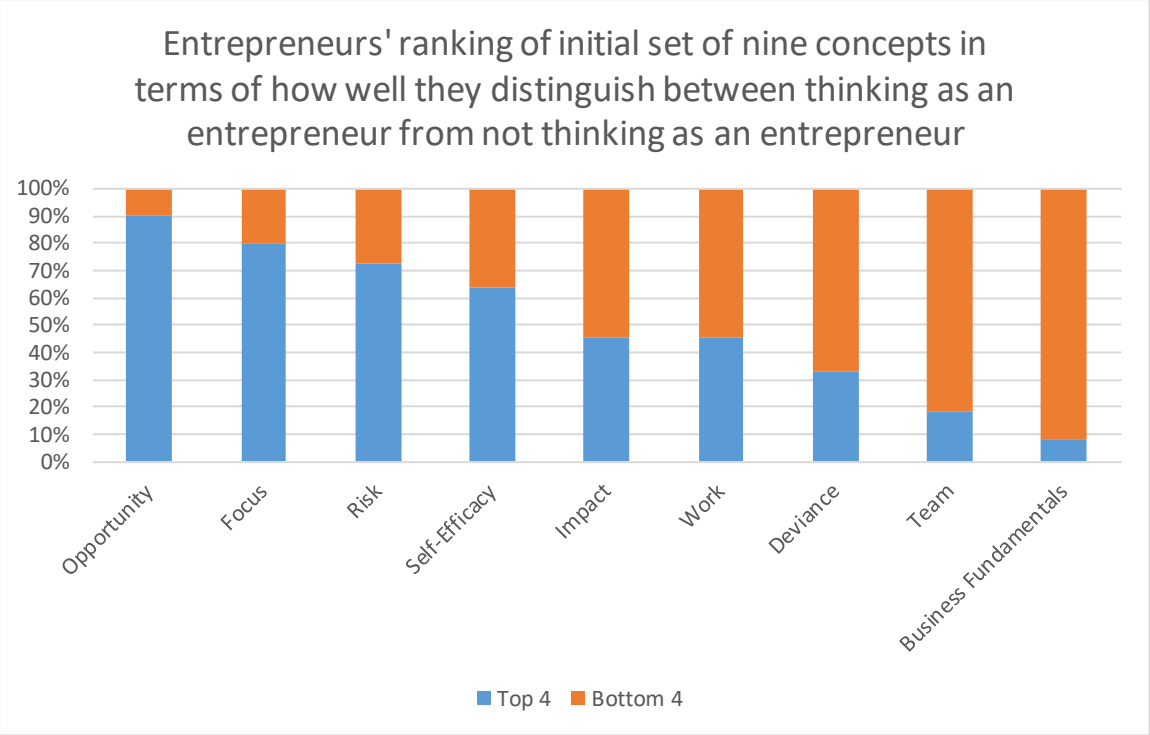
Entrepreneurs' ranking of initial set of nine concepts in terms of importance to thinking as an entrepreneur



Entrepreneurs' ranking of initial set of nine concepts in terms of how well they distinguish between thinking as an entrepreneur from not thinking as an entrepreneur

	Top 4	Bottom 4
Self-Efficacy	7	4
Focus	8	2
Deviance	3	6
Risk	8	3
Opportunity	9	1
Impact	5	6
Work	5	6
Team	2	9
Business Fundamentals	1	11

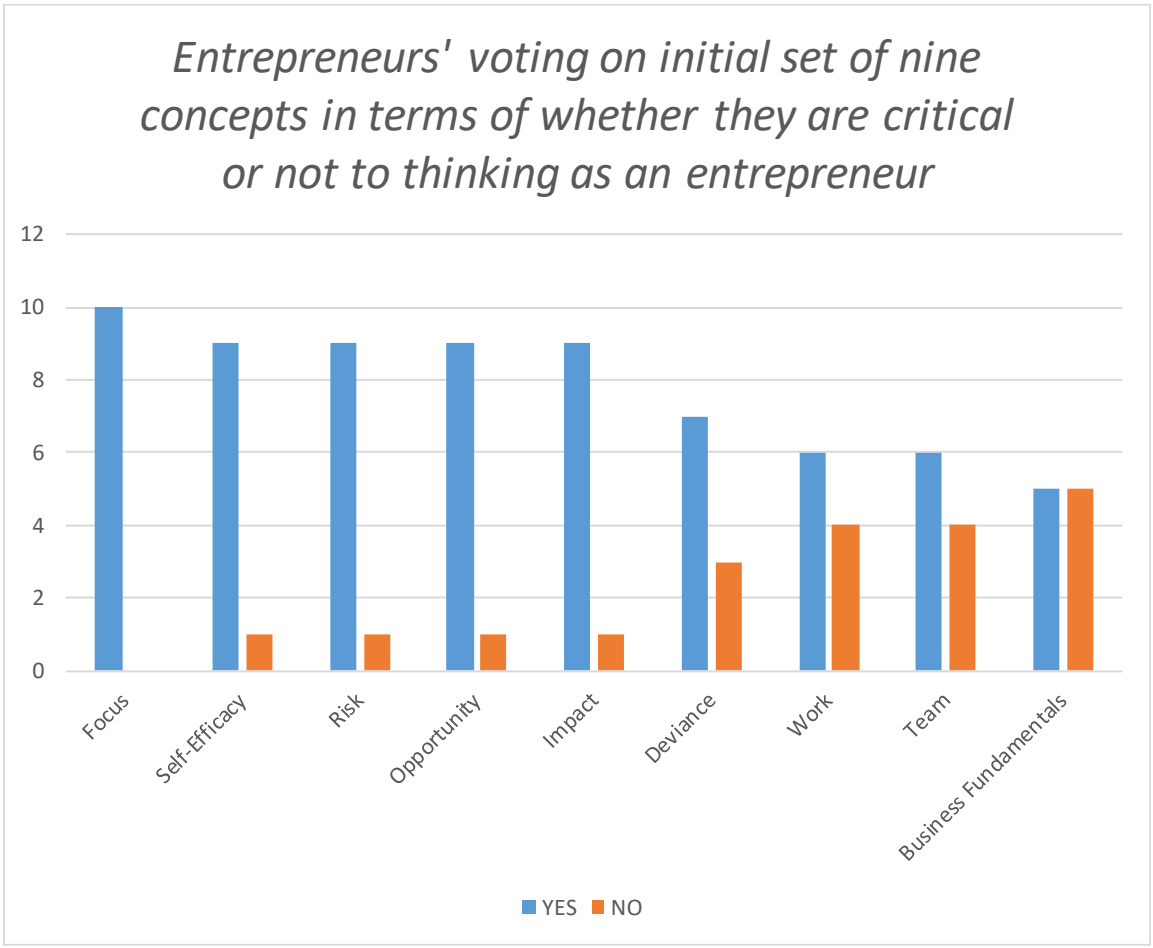
Entrepreneurs' ranking of initial set of nine concepts in terms of how well they distinguish thinking as an entrepreneur from not thinking as an entrepreneur



Entrepreneurs' voting on initial set of nine concepts in terms of whether they are critical or not to thinking as an entrepreneur

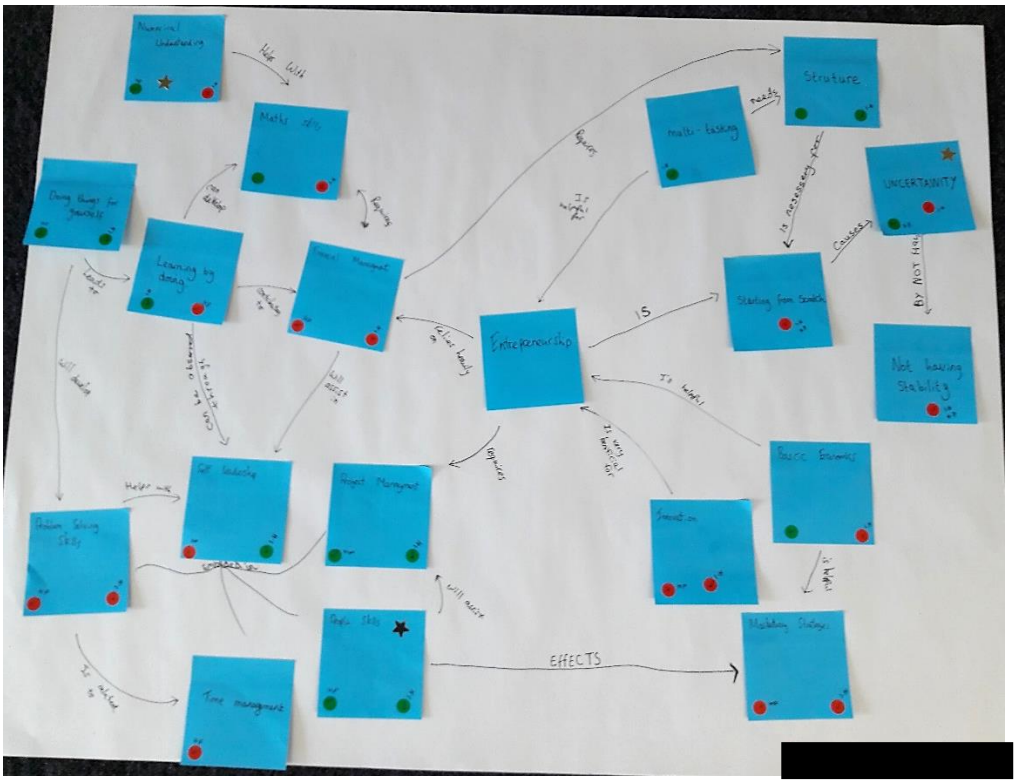
Critical to thinking as an entrepreneur	YES	NO
Focus	10	0
Self-Efficacy	9	1
Risk	9	1
Opportunity	9	1
Impact	9	1
Deviance	7	3
Work	6	4
Team	6	4
Business Fundamentals	5	5

Entrepreneurs' voting on initial set of nine concepts in terms of whether they are critical or not to thinking as an entrepreneur

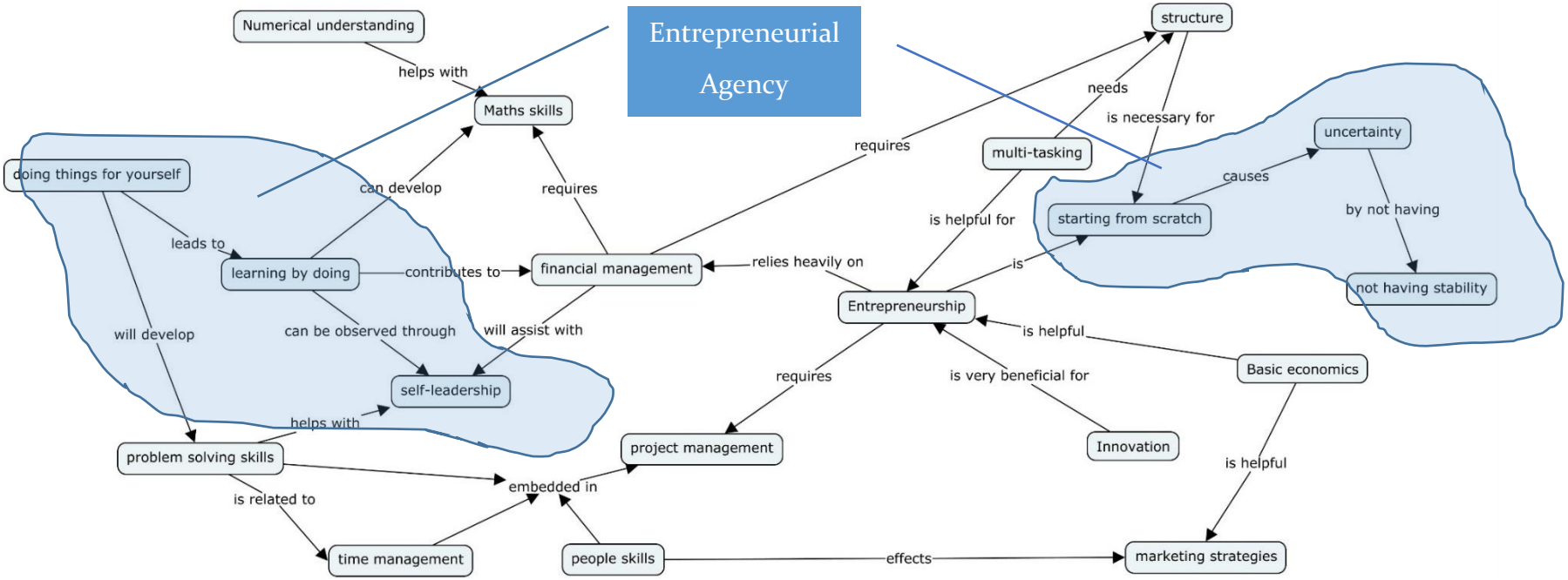


Appendix 20. Concept Map photographs and digital representations

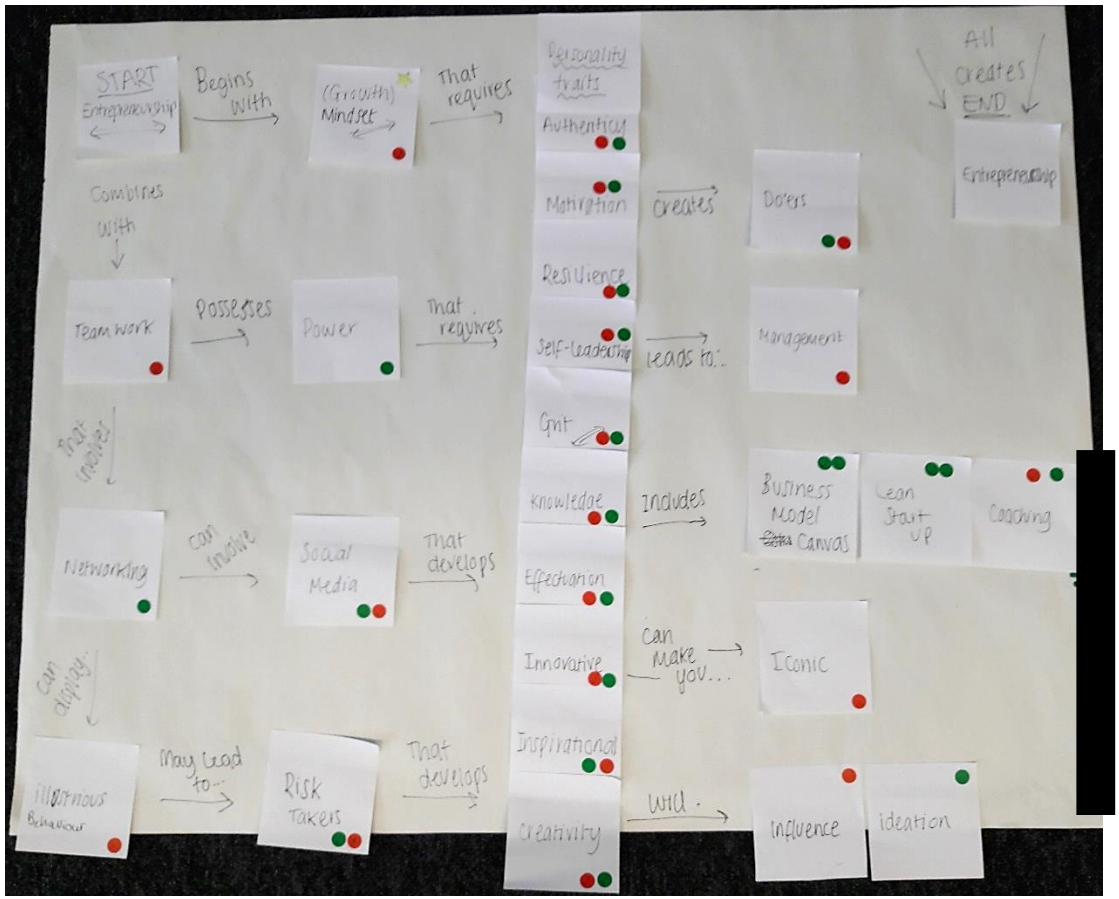
Concept Map Photograph Group AMYR1X2A



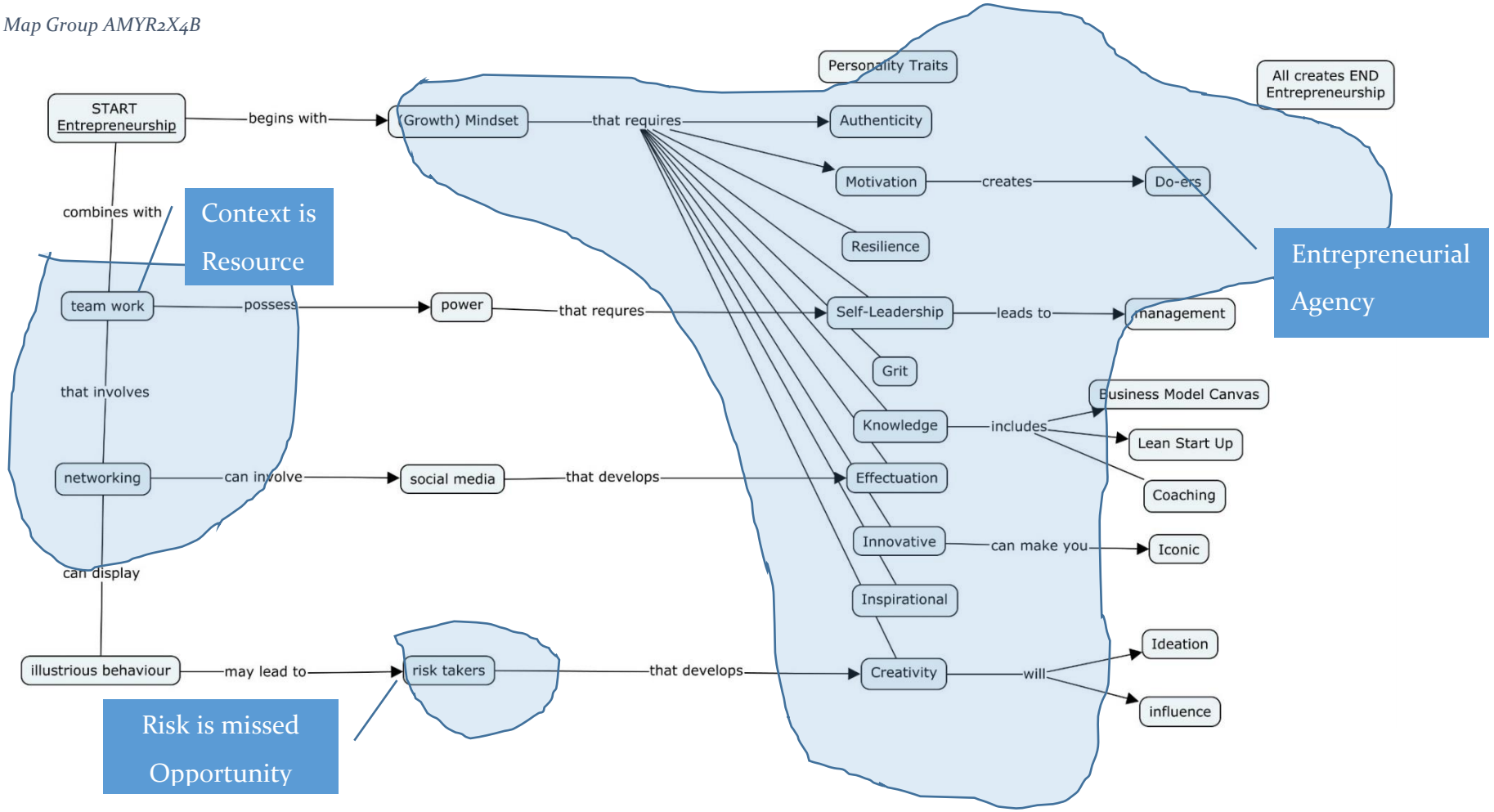
Digital Concept Map Group AMYR1X2A



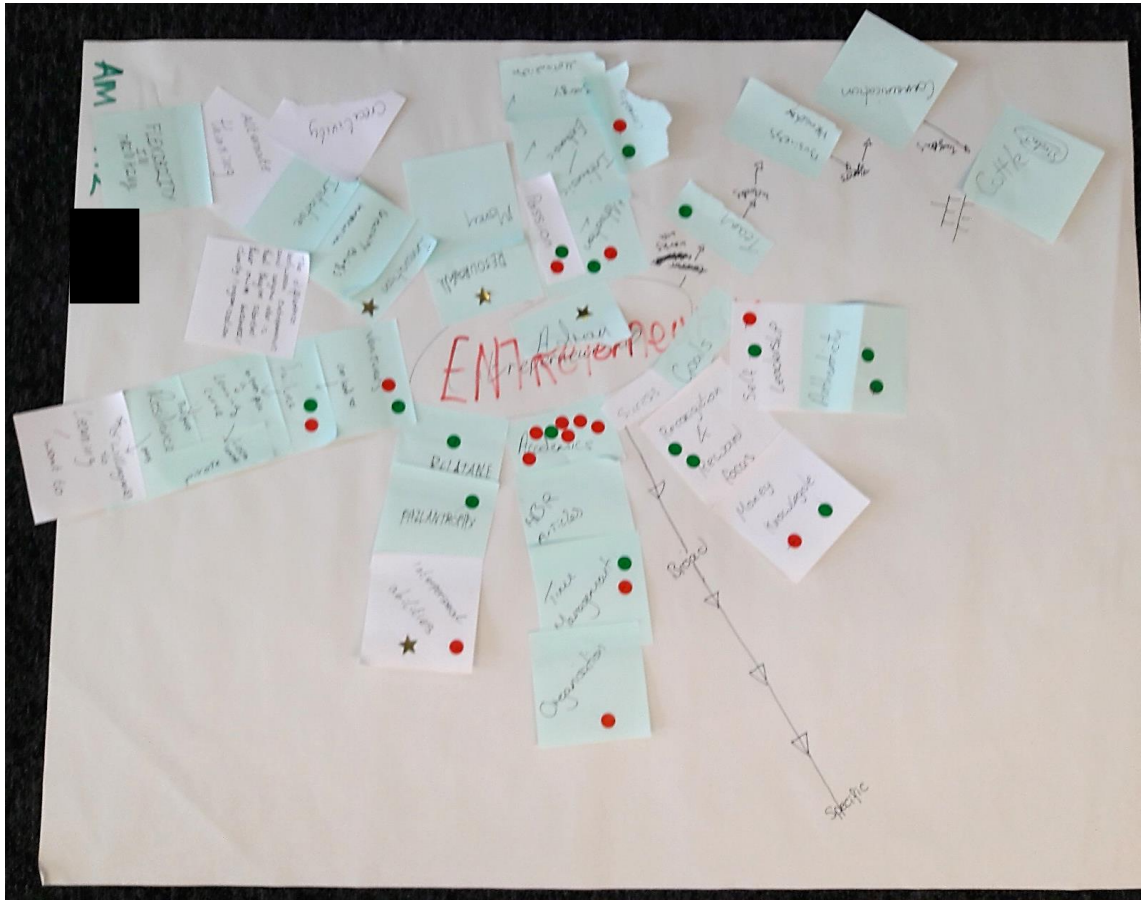
Concept Map Photograph Group AMYR2X4B



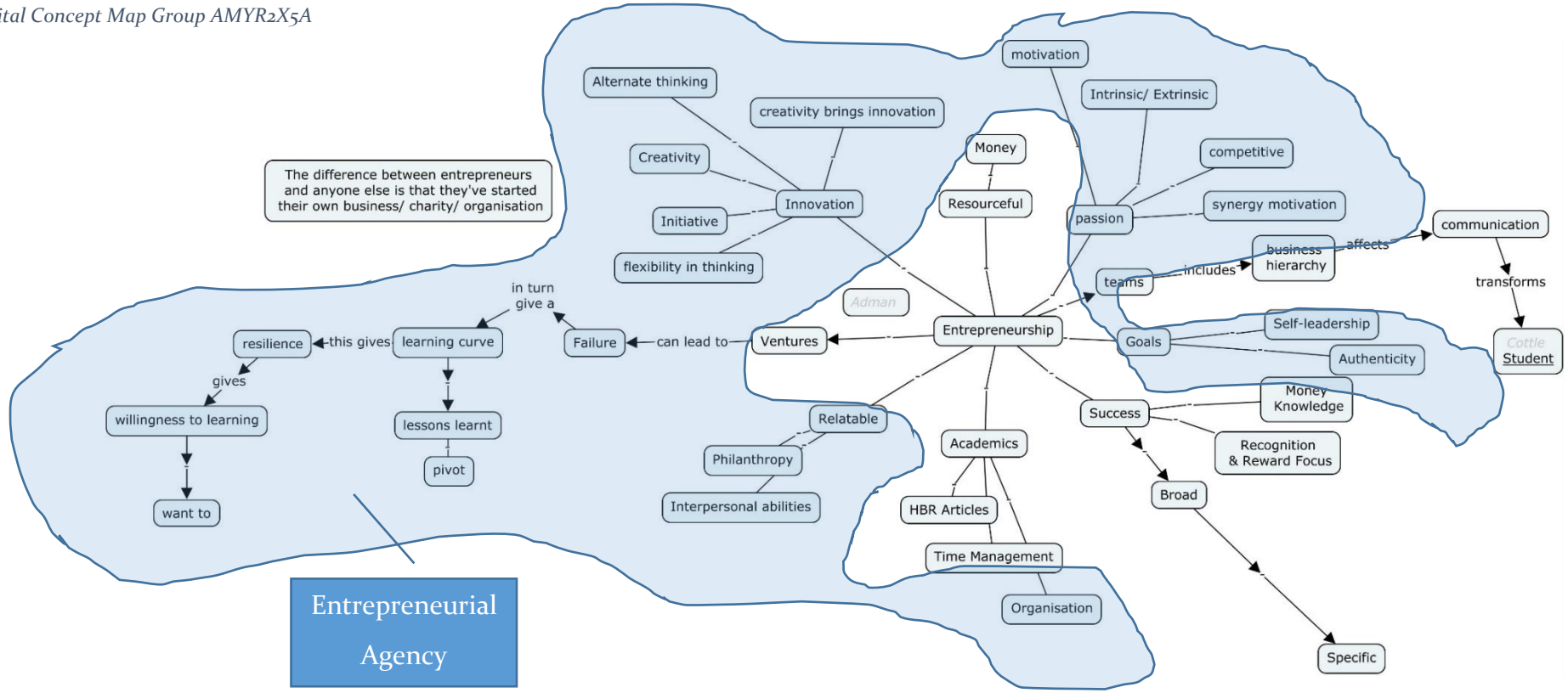
Digital Concept Map Group AMYR2X4B



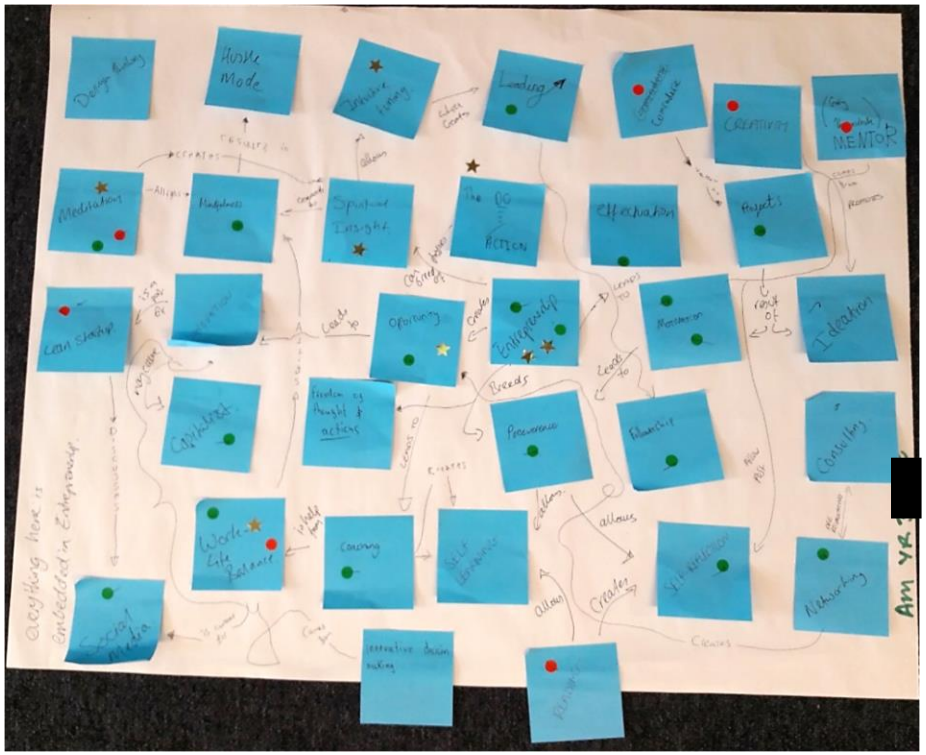
Concept Map Photograph Group AMYR2X5A



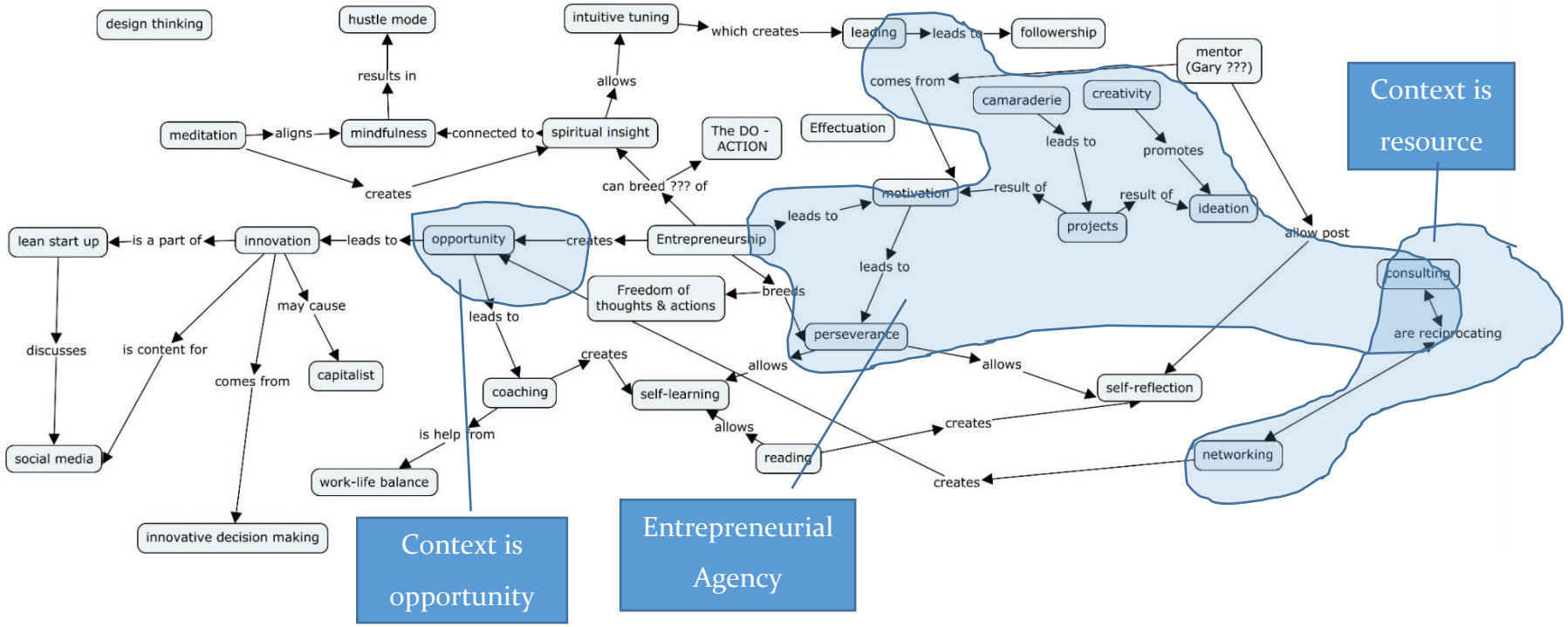
Digital Concept Map Group AMYR2X5A



Concept Map Photograph Group AMYR3X5A

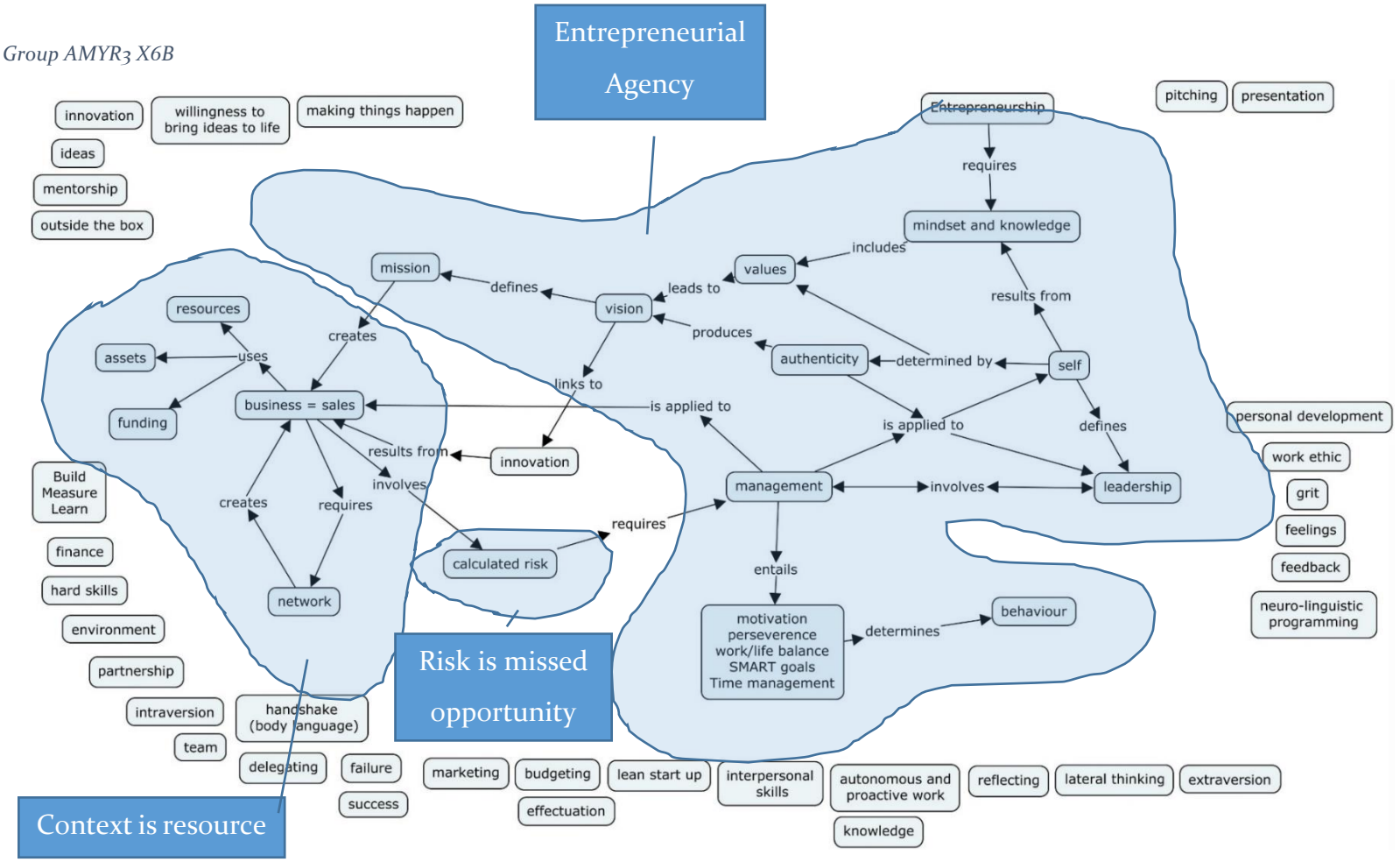


Digital Concept Map Group AMYR3X5A



Concept Map Photograph Group AMYR3 X6B

Digital Concept Map Group AMYR3 X6B



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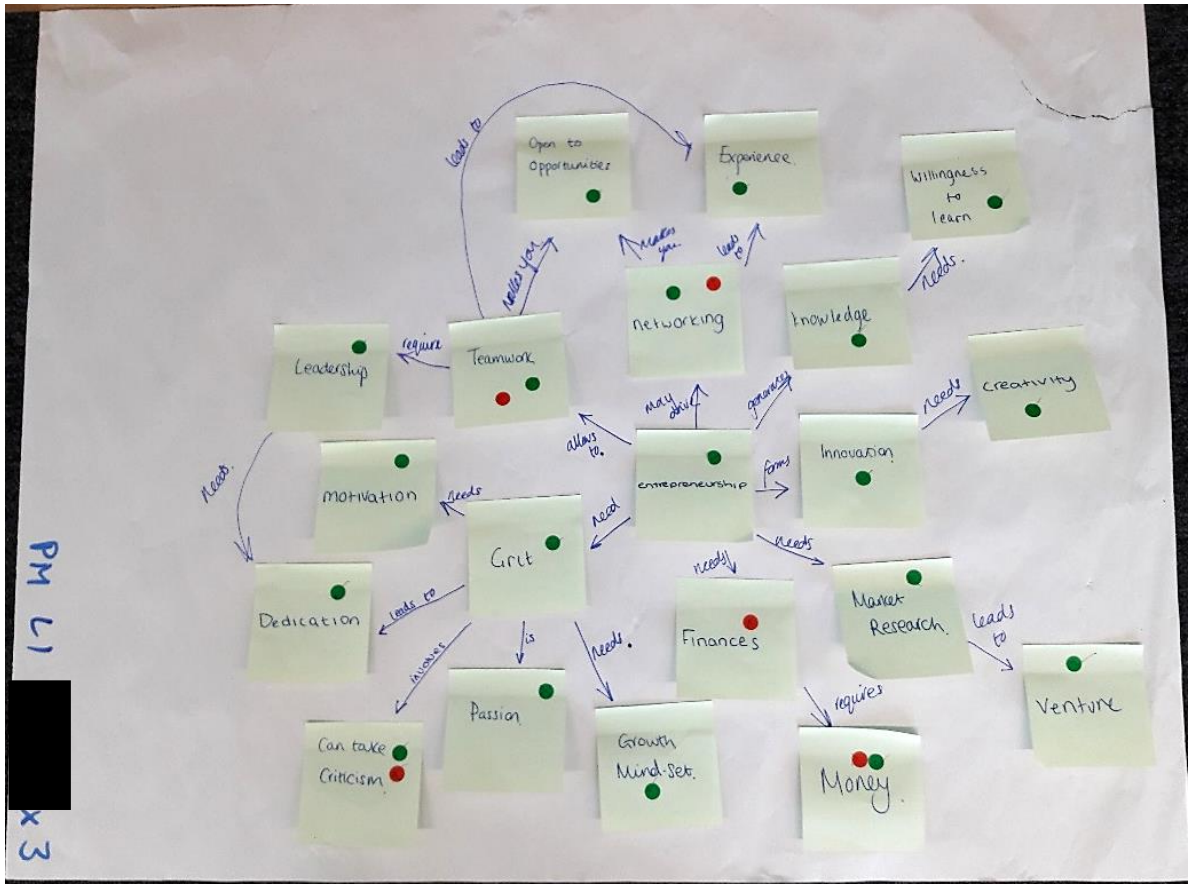

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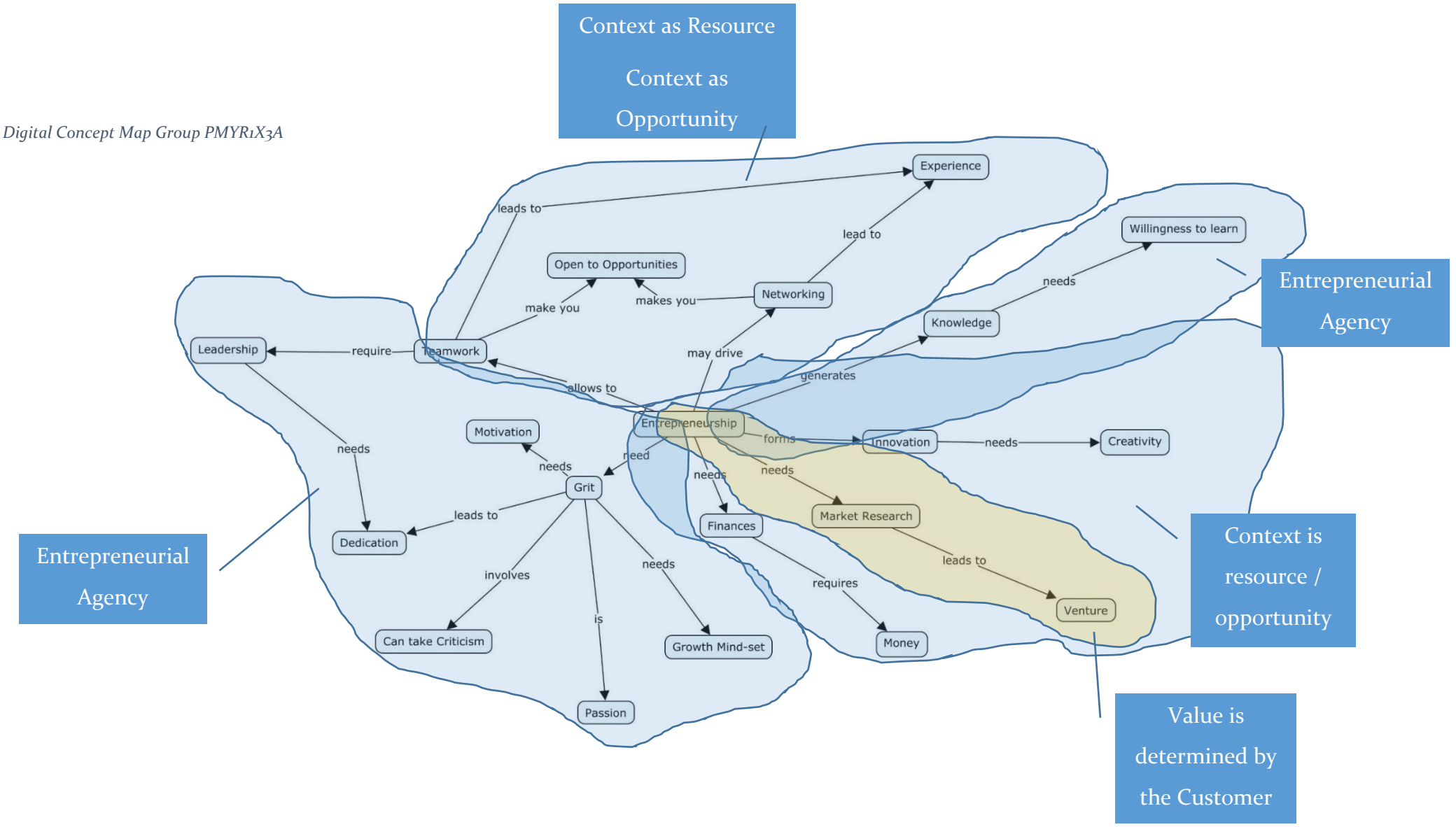

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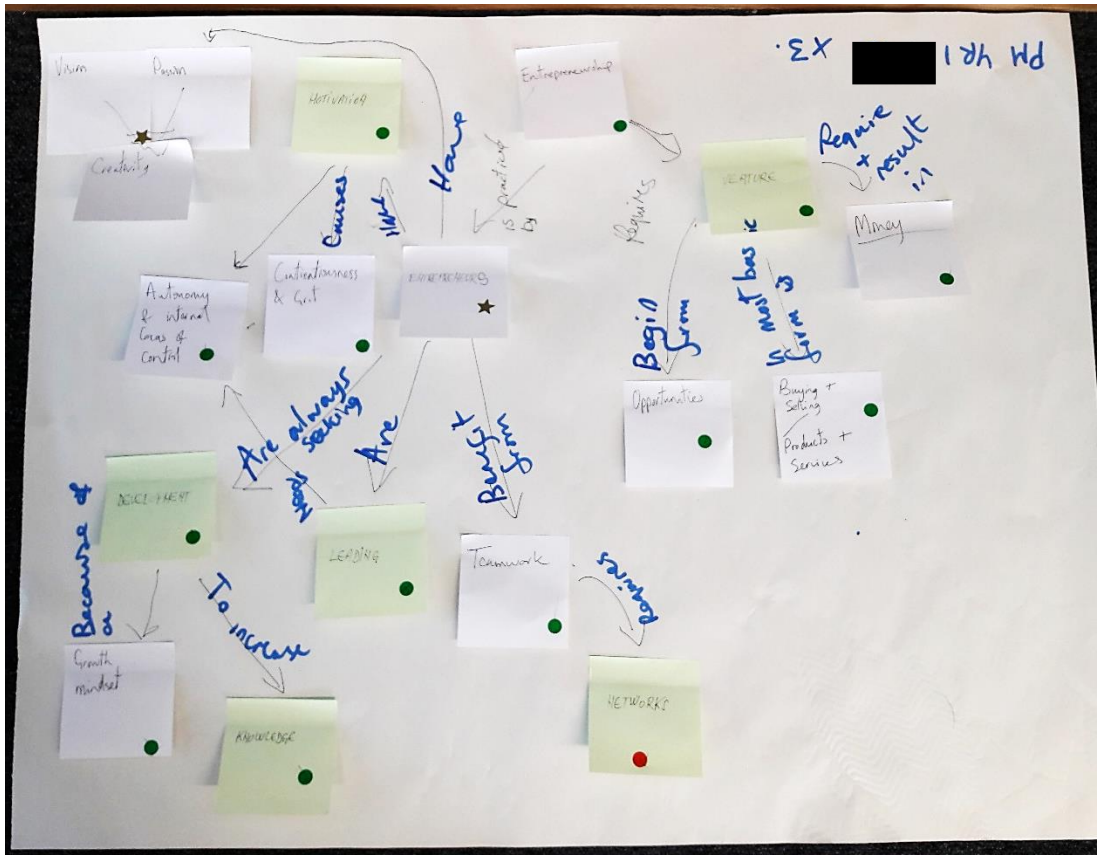

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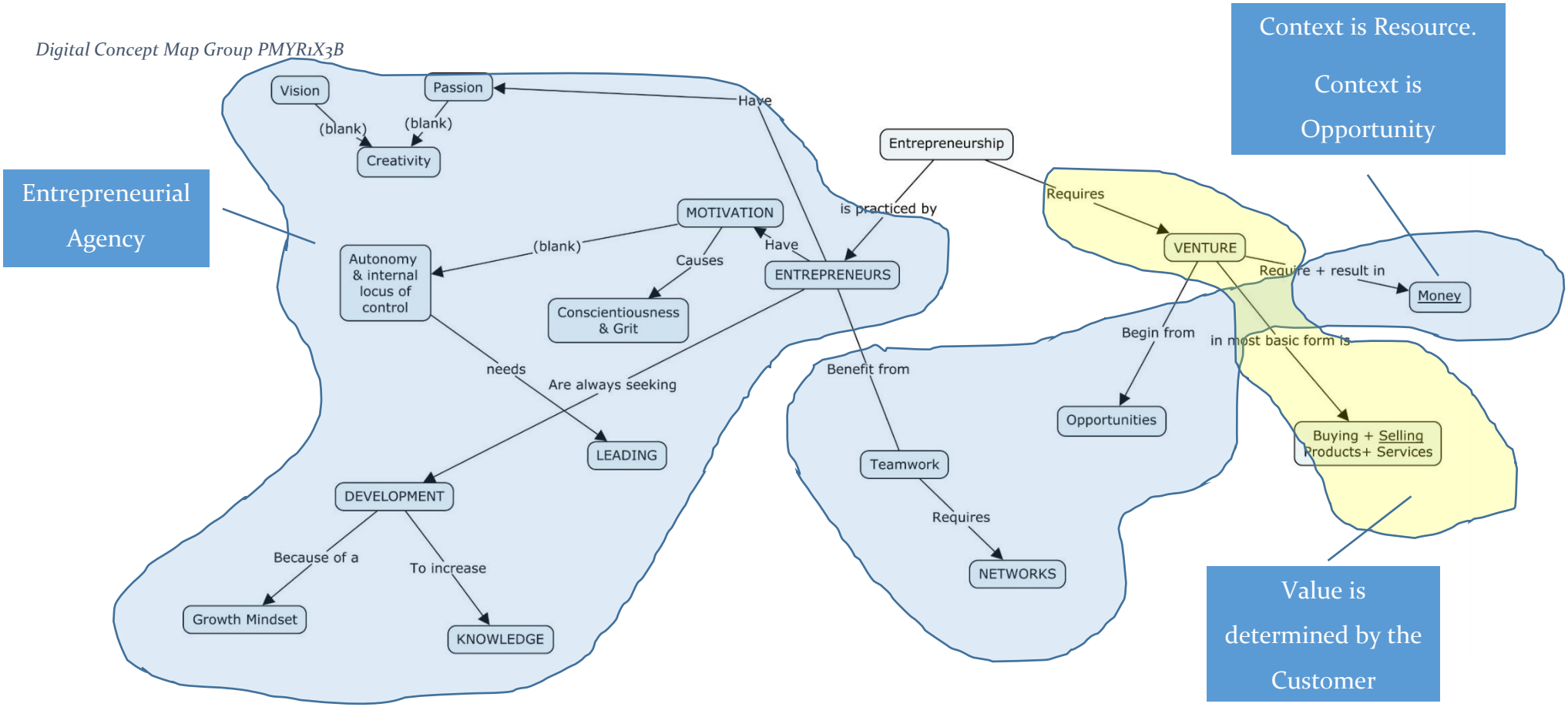

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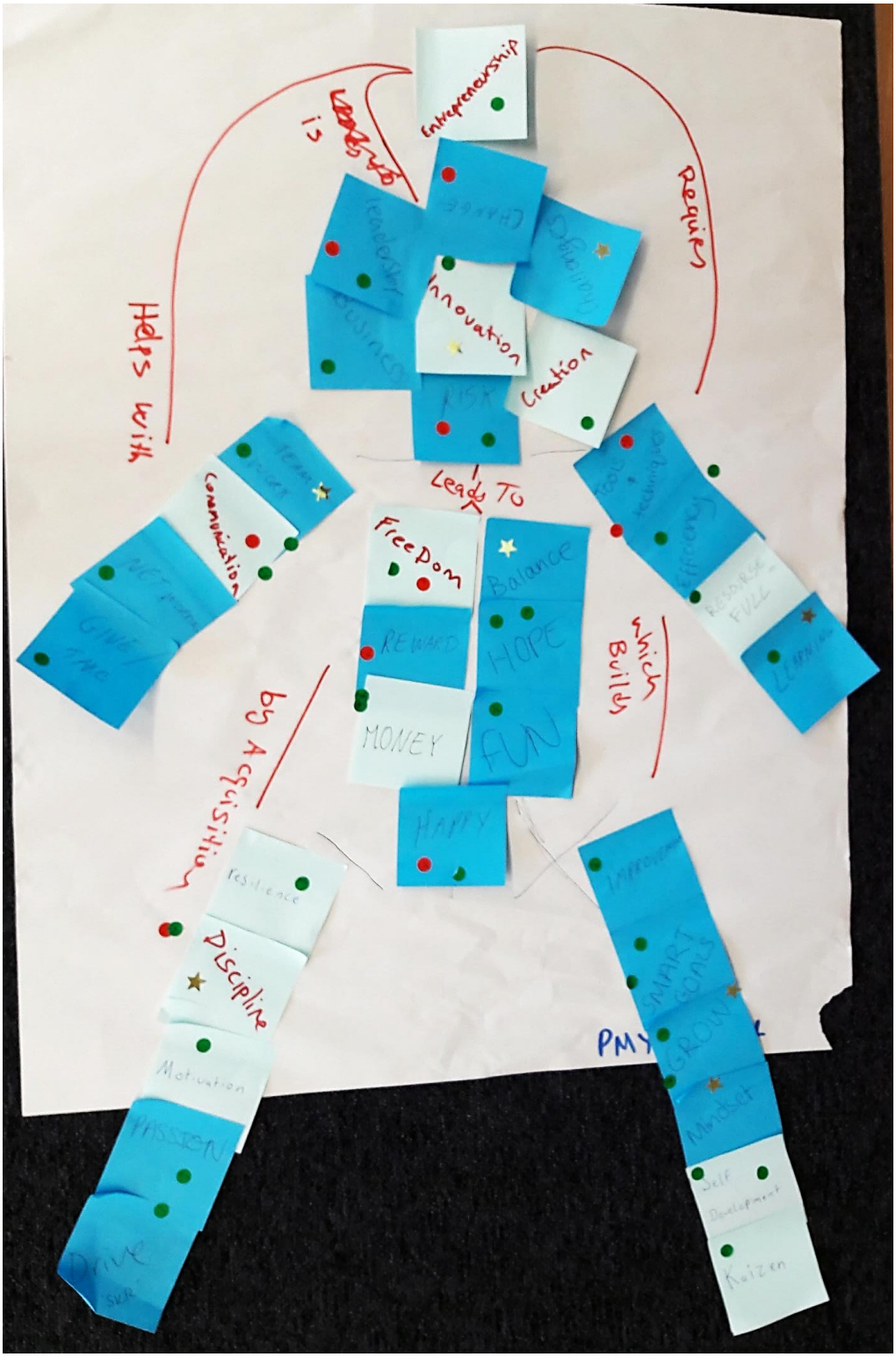

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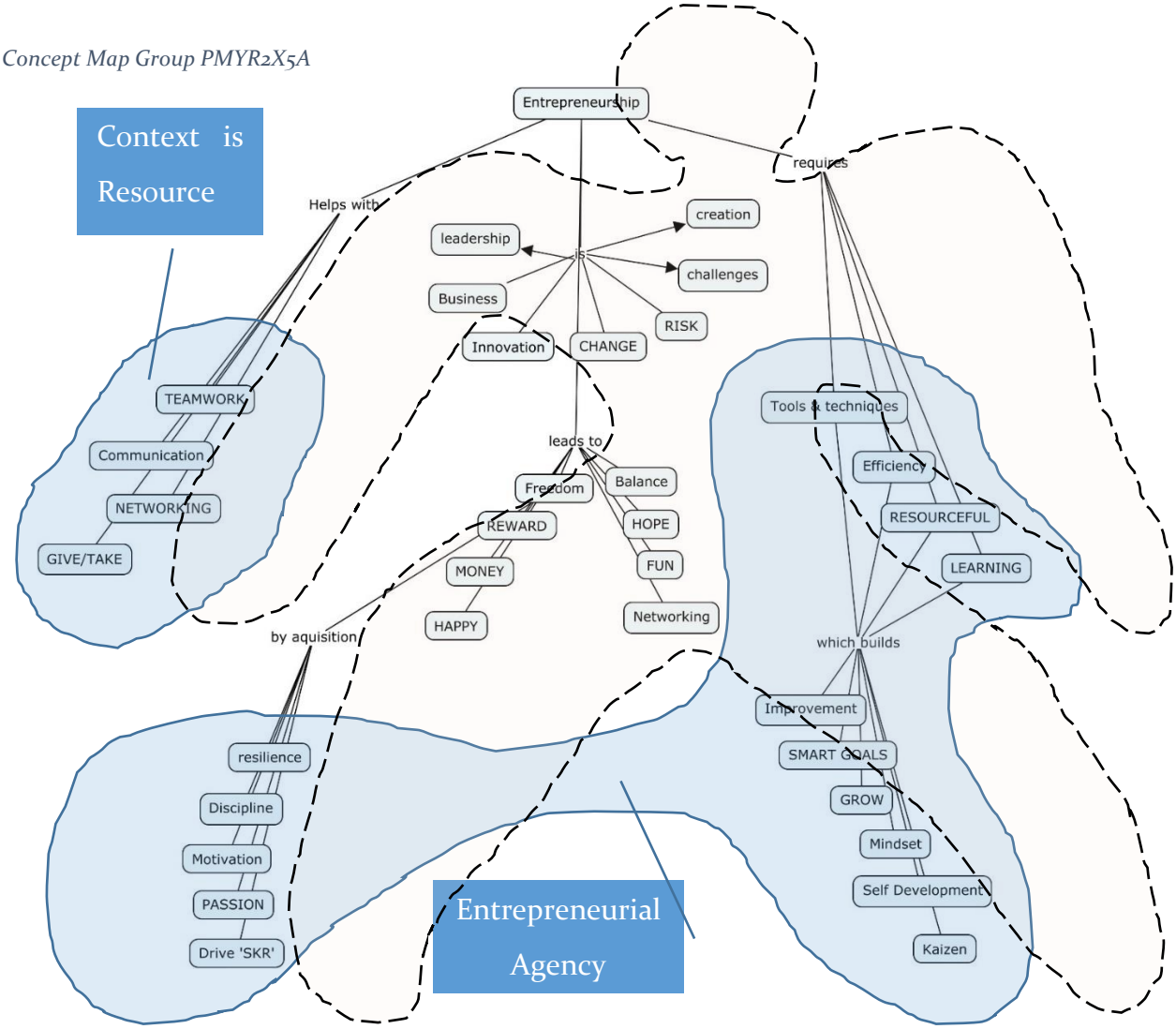

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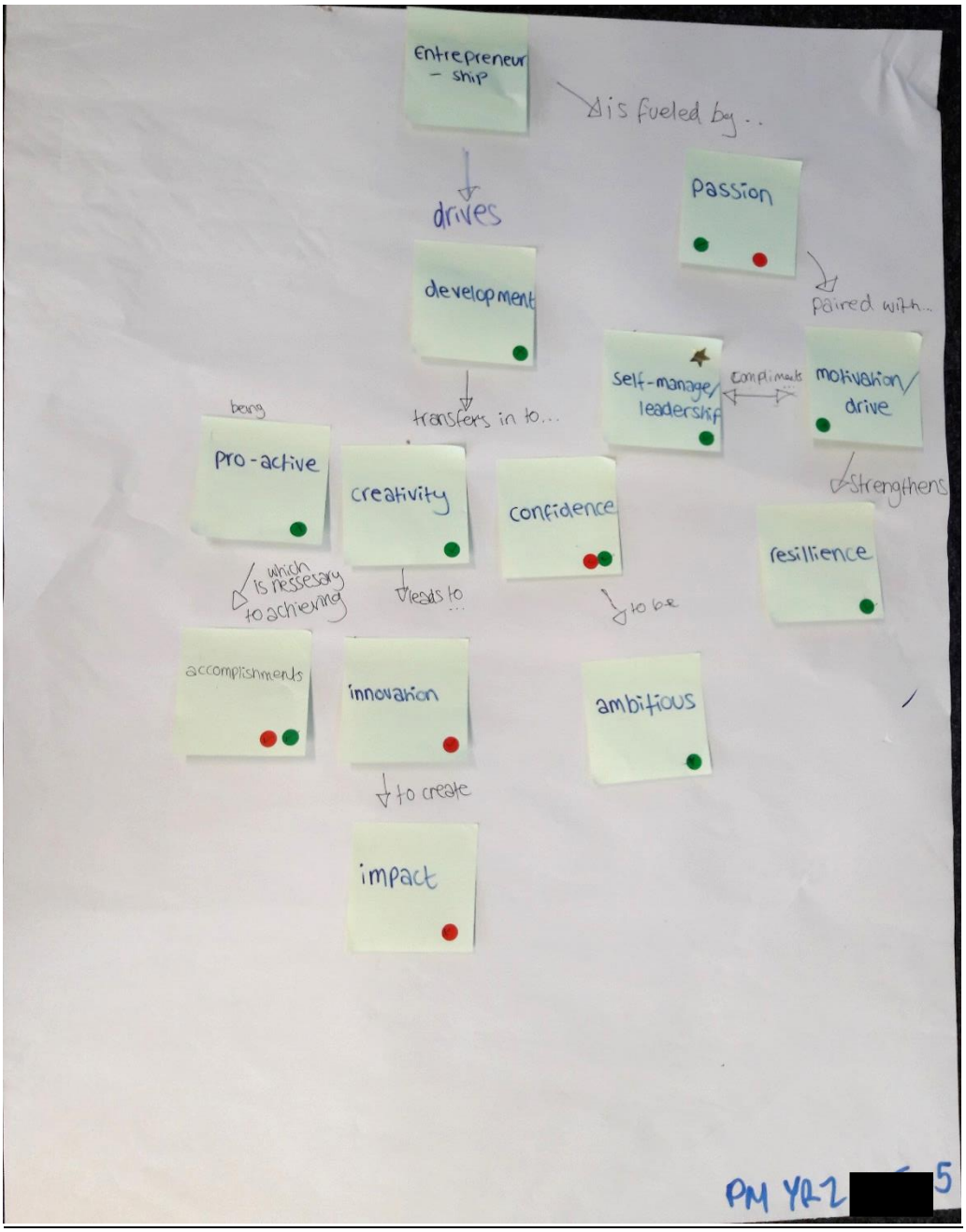

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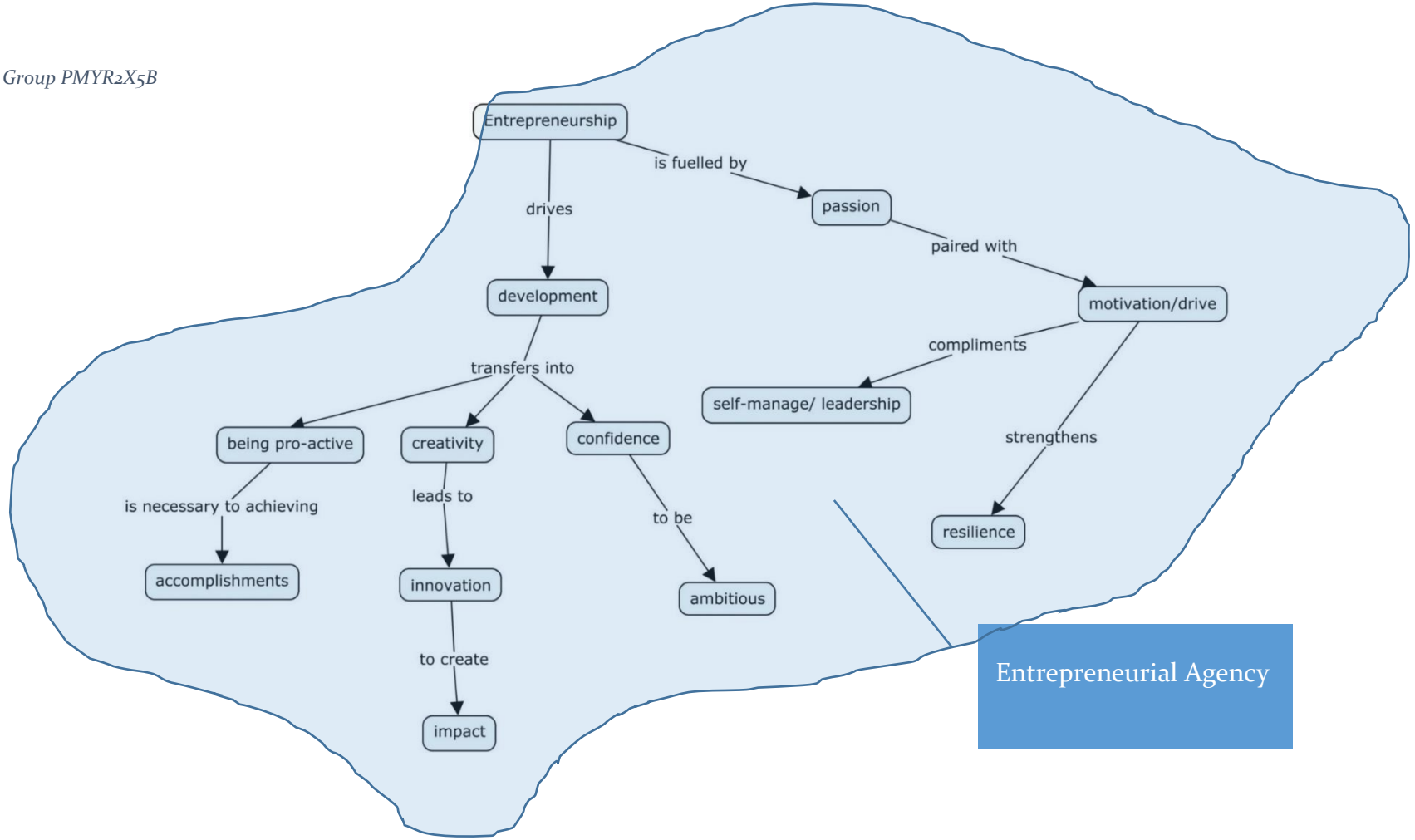

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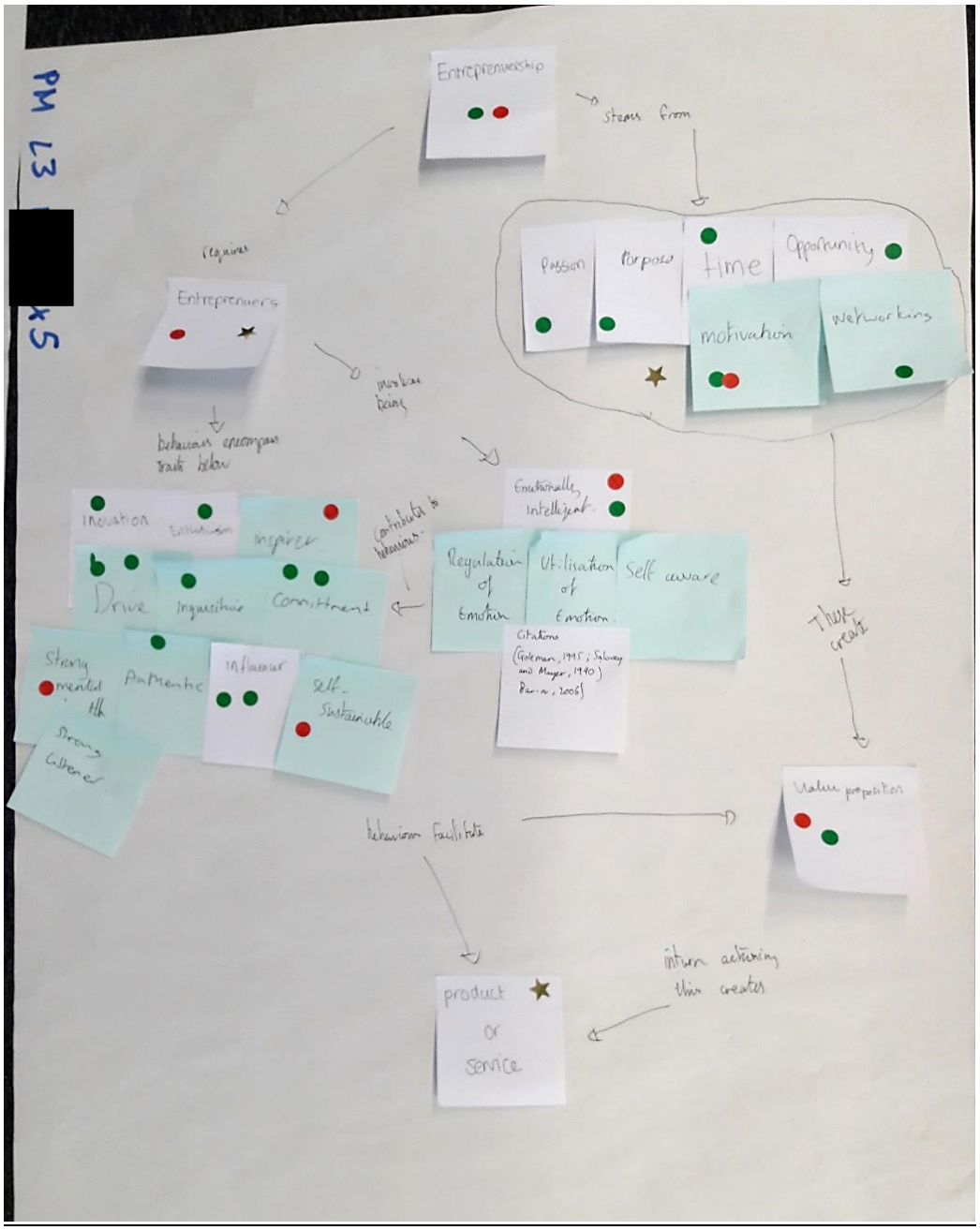

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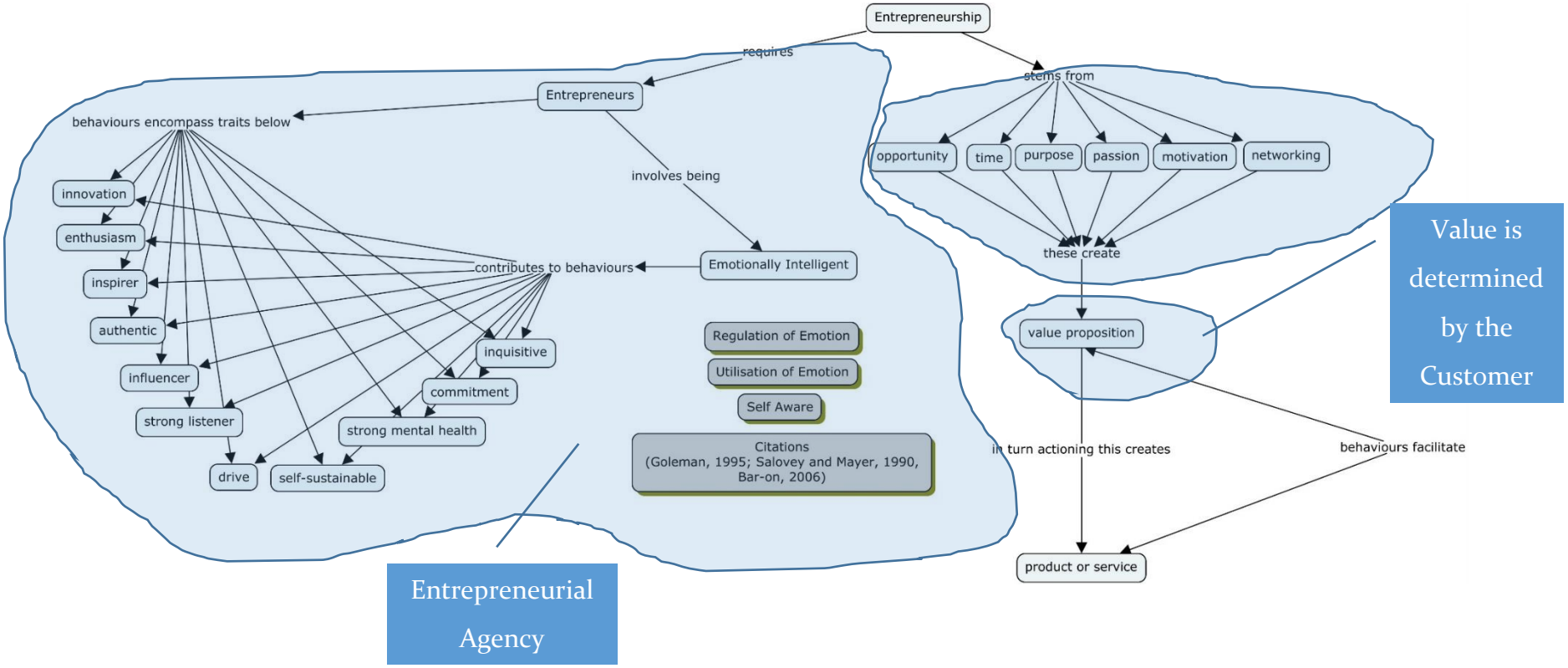

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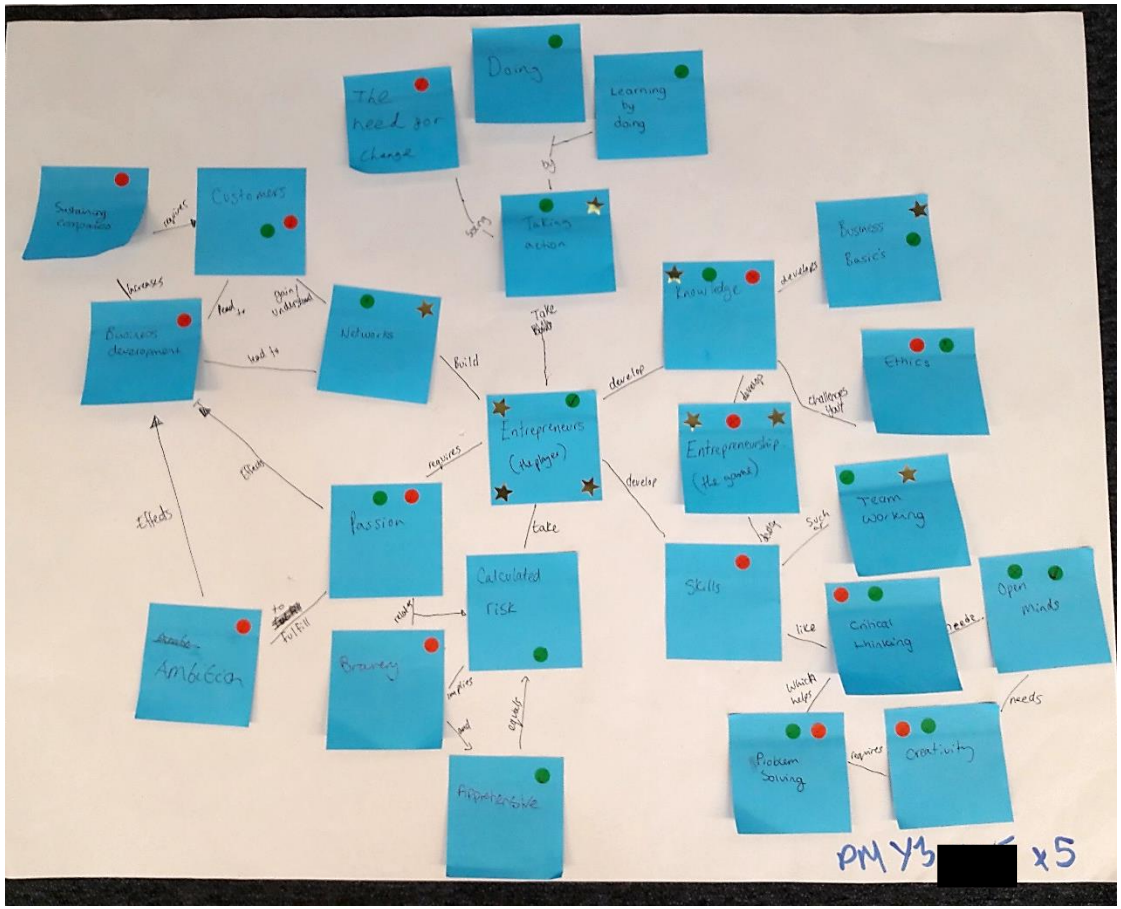

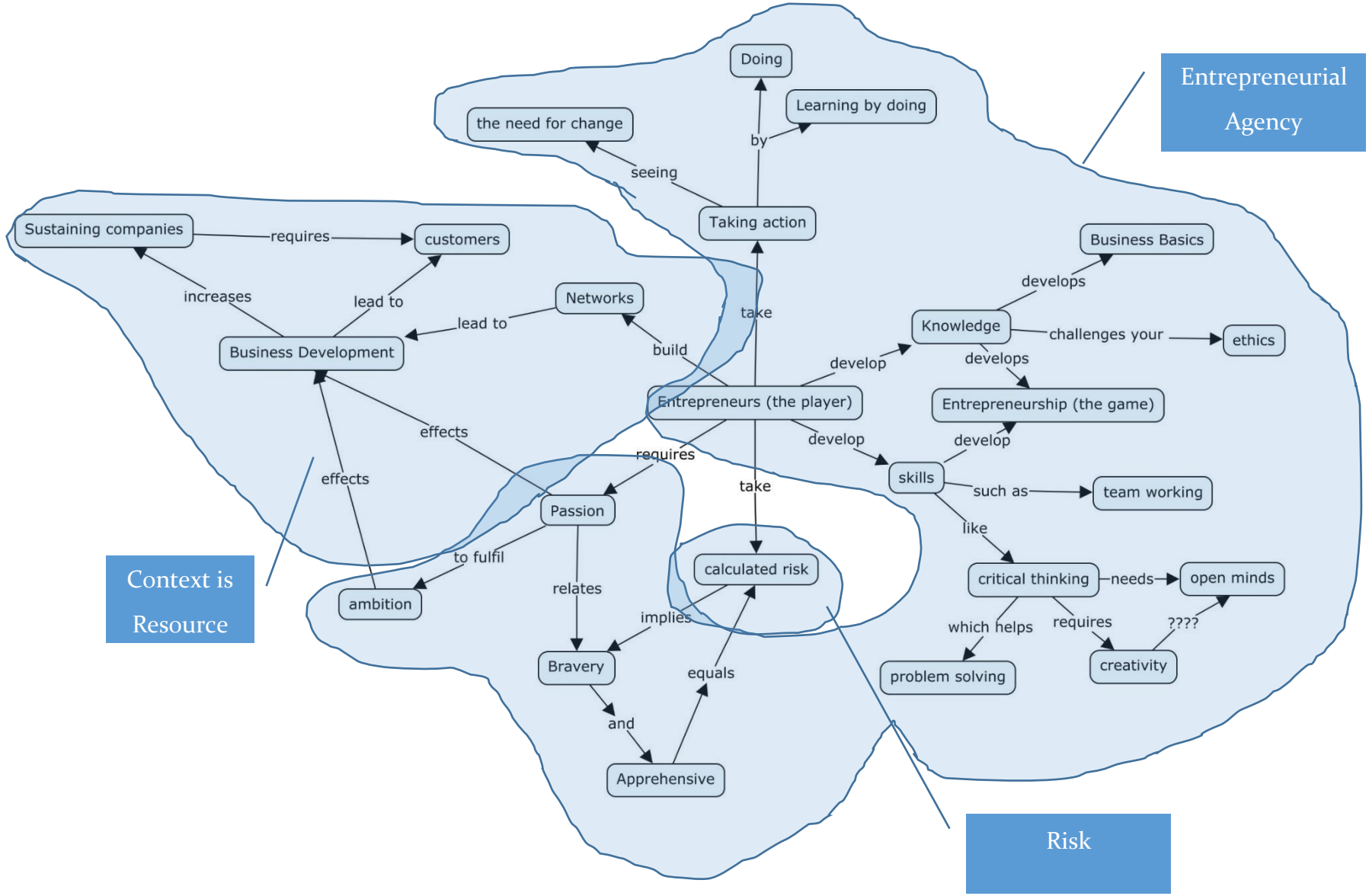
Entrepreneurial Agency
Doing
Learning by doing
by
the need for change
seeing
Taking action
Sustaining companies
requires
customers
increases
lead to
lead to
Networks
Business Development
build
take
Business Basics
develops
Knowledge
challenges your
ethics
develops
develop
Entrepreneurs (the player)
Entrepreneurship (the game)
develop
develop
effects
effects
requires
take
skills
such as
team working
like
Passion
Context is Resource
to fulfil
calculated risk
critical thinking
needs
open minds
relates
ambition
implies
which helps
requires
????
Bravery
equals
problem solving
creativity
and
Apprehensive
Risk

Appendix 21. Relating CTCs to student concepts

Concepts related to 'Entrepreneurial Agency'

Accomplishments	Proactive
Ambition / Ambitious	Product or service
Authentic / Authenticity	Projects
Autonomous / proactive work / internal locus of control	Purpose
Build Measure Learn	Resilience
Business = sales, business development	Self
Buying and Selling Products and Services	Self-leadership
Can take criticism	Self-learning
Challenges	Self-manage/ leadership
Change	Self-sustainable
Commitment	SMART goals
Creation	START Entrepreneurship
Do-ers, doing, doing things for yourself	Starting from scratch
Drive, 'SKR'	Strong mental health
Failure	Success
Goals	Synergy motivation
Hustle mode	Taking action
Impact	The DO - ACTION
Improvement	The need for change
Initiative	Venture, ventures
Making things happen	Vision
Mission	Vision, Passion, Creativity
Motivation, drive	Want to
Motivation perseverance work/life balance SMART goals Time management	Willingness to bring ideas to life
Passion	Work ethic
Passion (TC grouped with purpose, time, opportunity, networking & motivation)	

Concepts related to 'Context is Opportunity'

Innovation	Ideation
Alternate thinking	Innovation, innovative, innovative decision making
Environment	Opportunities, open to opportunities, opportunity
Ideas	Outside the box

Concepts related to 'Context is Resource'

Assets	Mentor, mentorship
Camaraderie	Money
Consulting	Money, money knowledge
Customers	Network, networking
Delegating	Partnership
Effectuation	Recognition & Reward Focus
Followership	Resourceful
Funding	Resources
Give/take	Reward
Influence, influencer	Team, teams, teamwork, team working

Concepts related to 'Risk is Missed Opportunity'

Risk, risk taker, calculated risk	Bravery
Apprehensive	

Concepts related to 'Value is determined by the Customer'

Market Research	Value proposition
Pivot	

Concepts related to general business knowledge content

Academics	HBR Articles

Basic economics	Kaizen
Broad	Knowledge
Budgeting	Lean Start Up
Business, business basics	Marketing, marketing strategies
Business hierarchy	Maths skills
Business Model Canvas	Neuro-linguistic programming
Design thinking	Numerical understanding
Finance, finances, financial management	Project management
Hard skills	Social media

Concepts related to a particular pedagogical approach

Coaching	Feedback
Reflecting	

Concepts related to personal skills and attributes

Balance	Learning curve
Behaviour	Lessons learnt
Communication	Management
Competitive	Meditation
Confidence	Mindfulness
Conscientiousness and Grit	Mindset, mindset and knowledge
Creativity, creativity bring innovation	Multi-tasking
Critical thinking	Not having stability
Dedication	Open minds
Development	Organisation
Discipline	People skills
Efficiency	Perseverance
Emotionally Intelligent	Personal development
Enthusiasm	Personality Traits
Ethics	Pitching
Experience	Presentation
Extraversion	Problem solving, problem solving skills
Feelings	Reading
Flexibility in thinking	Relatable
Grit	Self Development
GROW	Self-reflection
Growth mindset, (growth) mindset	Skills
Inquisitive	Spiritual insight
Inspirational, inspirer	Strong listener
Interpersonal abilities, interpersonal skills	Time management
Lateral thinking	Tools & techniques
Leadership, leading	Uncertainty
Learning	Willingness to learn

Miscellaneous concepts

Entrepreneurs	Illustrious behaviour
Adman*	Intraversion
All creates END Entrepreneurship	Intrinsic/ Extrinsic
Capitalist	Intuitive tuning
Cottle* Student	Philanthropy
Entrepreneurs, entrepreneurs (the player)	power
Entrepreneurship, entrepreneurship (the game)	Specific
Freedom	Structure
Fun	Sustaining companies
Handshake (body language)	The difference between entrepreneurs and anyone else is that they've started their own business/ charity/ organisation
Happy	Time
Hope	Values
Iconic	Work-life balance