

Hunter Centre for Entrepreneurship

University of Strathclyde

**How Entrepreneurship Education Shapes
Entrepreneurial Mindset Toward
Entrepreneurship Competence Development for
Sustainability**

by Valerie Ingram

This thesis is submitted in partial fulfilment of the requirements for the degree of Doctor of
Philosophy in the Hunter Centre of Entrepreneurship at the
University of Strathclyde

DECLARATION

This thesis is the result of the author's original research. It has been composed by the author and has not been previously submitted for the examination which has led to the award of a degree.

The copyright of this thesis belongs to the author under the terms of the United Kingdom Copyright Acts as qualified by the University of Strathclyde Regulation 3.50. The due acknowledgement must always be made of the use of any material contained in, or derived from, this thesis.

Signed:

A handwritten signature in black ink, appearing to read 'Valter L. J. P.', is written on a light grey rectangular background.

Date: 30.9.25

ABSTRACT

Entrepreneurship Education in Universities is becoming a busy research space. It offers an avenue for education that encourages new and innovative ideas to ameliorate the problems the planet is now facing. Arguably, these problems result largely from the human drive for profit without thought to the cost to future generations. My research explored how Entrepreneurship Education (EE) can foster an Entrepreneurial Mindset (EM) that explores innovative ideas but has an environmental, social or economic conscience that informs the approach to profit-making. My research focused on a particular example of EE, which was one class called the Social Challenge class run by the Entrepreneurship Department. Changes that occurred were analysed in the journeys of students in that class. The focus of the changes was because of the combination of thoughts, feelings and behaviour raised by the topics discussed in the context of the educational setting of the class and the experiences participants gained.

The findings are based on an interpretivist, qualitative research methodology. Data is collected through in-depth semi-structured interviews a year after the entrepreneurship education Social Challenge class has taken place. The data collection process involved 30 interviews with students. Interviews were recorded, and then the transcription was cleansed and coded. The transcription was manually coded and recoded to try to uncover common themes using a Gioia methodology.

The novelty of the findings reveals how an EE programme can be used as an effective tool to foster an EM that brings about indicative behavioural change, indicating that sustainability was being considered. A model was developed of the findings, which fostered changes in an EM to indicate that behaviour feeds back into thoughts and feelings so that the whole process is circular. These findings advance entrepreneurship education as a place to shape an EM for societal good, which can stir graduates to make changes for the benefit of society in a deep and meaningful way. The rigour of these findings is that each student, a year later, had made changes to their individual journeys, which is already benefiting society in their actions and plans. These findings could contribute to future EE programmes in the UK and more widely.

ACKNOWLEDGEMENTS

To God be all the glory!

Thank you to the University of Strathclyde, Hunter Centre for Entrepreneurship, for the privilege of a scholarship to study. To my supervisors, Dr Lucrezia Casulli and Dr Suzanne Mawson, thank you so much for your guidance and for generously sharing your knowledge. I appreciate how you have challenged and supported me throughout this journey. Dr Paul Laselle and Dr Sarah Dodd, thank you for your comments during my reviews. Thank you to my peers. I appreciate your encouragement, support, generosity, and friendship that I hope will endure a lifetime. To our previous head of department, Professor Jillian MacBryde, and the Hunter Centre staff, thank you for your support.

I would also like to extend my sincere appreciation to all the undergraduate student participants who volunteered their time and contributed to this study. Your openness and willingness to share your experiences have been invaluable, and without this, this research would not have been possible.

Last but certainly not least, my deepest gratitude goes to my husband James, my son, Joel, my daughter-in-law Katie, my brother-in-law Doug and my twin daughters Lydia and Miriam. Thank you for your unwavering support, for cheering me on during the troughs and peaks, and for making it easy for me to follow my dreams. May my loved ones be encouraged by my experience.

With deepest gratitude

Valerie

TABLE OF CONTENTS

ABSTRACT	ii
ACKNOWLEDGEMENTS	iii
TABLE OF CONTENTS	iv
LIST OF FIGURES	ix
LIST OF TABLES	x
PROLOGUE	1
CHAPTER 1: INTRODUCTION	2
1.1 Introduction	2
1.2 Definitions of Key Terminology	4
1.3 Problem Statement	6
1.4 Value of the Research to Theory	7
1.5 Value of the Research to Practice	8
1.6 Statement of Purpose	8
1.7 Research Questions	11
1.8 Rationale and Significance	17
1.9 Overview of Methodology	19
1.10 Structure of Thesis	19
CHAPTER 2: LITERATURE REVIEW	21
2.1 Introduction	21
2.2 Gaps in the Literature	22
2.3 How Do Cognition, Emotion and Behaviour Shape an Entrepreneurial Mindset	24
2.3.1. Educational Conditions	24
2.3.2 The Approach of Thinking and Feeling to Evoke a Change in Behaviour	25
2.3.3 How Can Behaviour Be Changed	29
2.3.4 Summary of Cognition, Emotion and Behaviour on Mindset	35
2.4 How Does Teaching and Education Shape an Entrepreneurial Mindset	36
2.4.1 Overarching Pedagogical Approaches	37
2.4.2 Overarching Class Structures	40

2.4.3 The Social Challenge Class	41
2.4.4 Pedagogical Nudging	45
2.4.5 Summary of Teaching and Education as an Intervention to Shape Entrepreneurial Mindset	46
2.5 How Can an Entrepreneurial Mindset Be Shaped Toward Entrepreneurial Competence Development for Sustainability	47
2.5.1 The Ethics in Entrepreneurial Competence Development for Sustainability	50
2.5.2 Entrepreneurial Mindset Toward Entrepreneurship Competence Development for Sustainability	50
2.5.3 Thinking and Feelings Toward Entrepreneurship Competence Development for Sustainability	51
2.5.4 Why is Impact Important	52
2.5.5 Be Accountable and Use the Sustainable Development Goals to Offer a Path	54
2.5.6 Development in Entrepreneurship Pedagogies for Sustainability	55
2.5.7 Summary of Mindset Shaped toward Entrepreneurship Competence Development for Sustainability	56
2.6 Conclusions and Implications	57
CHAPTER 3: RESEARCH METHODOLOGY	60
3.1 Introduction	60
3.2 Rationale for Research Approach	60
3.2.1 Ontology	61
3.2.2 Epistemology	62
3.2.3 Axiology	65
3.2.4 Research Design	66
3.2.5 Research Methods	67
3.3 Alternative Methodologies and Reasons for Rejection	69
3.3.1 Action Research	70
3.3.2 Ethnography	70
3.3.3 Grounded Theory	70
3.4 Research Sample	71
3.5 Data Collection	72

3.5.1 Participant Recruitment	72
3.5.2 Overarching Pedagogical Strategy	72
3.5.3 Baseline Survey at the Beginning and End of Class to Uncover Mindset	74
3.5.4 Interview Methods	74
3.5.5 Ethical Considerations	77
3.6 Data Analysis Methods	78
3.6.1 Coding	80
3.6.2 Interview Questions and Literature Review	81
3.6.3 Narrative Analysis	82
3.6.4 Data Analysis Process	83
3.7 Limitations of Methodology and Avenues for Future Research	86
3.8 Summary and Implications	87
CHAPTER 4: DATA ANALYSIS	88
4.1 Introduction	88
4.2 Analysis Leading to Entrepreneurship Competence Development for Sustainability	88
4.2.1 Cross Case Analysis	88
4.2.2 1st Order Concepts	90
4.2.3 Aggregate Dimensions	103
4.3 Findings	113
4.3.1 Introduction to Themes from Research Question 1	114
4.3.1.1 Student-led discussions about social issues	114
4.3.1.2 Supportive facilitator Toward open discussions	114
4.3.1.3 Surprised by my personal qualities	115
4.3.1.4 Surprise at what an EM is	115
4.3.1.5 Surprise and insight into volunteering	116
4.3.2 Introduction to Themes from Research Question 2	116
4.3.2.1 Realisation of EM creating value	117
4.3.2.2 Reflection-induced future thinking	117
4.3.2.3 Small steps thinking induces self-analysis	118

4.3.2.4 Evaluation of self	118
4.3.2.5 Creative skills developed	118
4.3.2.6 Personal value evaluation	118
4.3.2.7 Realised the benefit of group work for social good	119
4.3.2.8 Group work challenged personal views	119
4.3.3 Introduction to Themes from Research Question 3	119
4.3.3.1 Changed buying habits	120
4.3.3.2 Changed assessment of actions towards sustainability	120
4.3.3.3 Changes actions Toward sustainability	120
4.3.3.4 Changed perceptions of an EM	120
4.3.3.5 Changed to thinking about tackling sustainability issues	120
4.3.3.6 Changed attitude Toward sustainability	121
4.3.3.7 Changed perception of the value of people's opinions	121
4.4 The Findings Model	122
4.5 Summary and Implications	125
CHAPTER 5: DISCUSSION	127
5.1 Introduction	127
5.2 Research Findings: Questions and Answers	127
5.3 Educational Conditions to Support Entrepreneurial Mindset Shift	128
5.3.1 Conversations Enabled about Social Issues	128
5.3.2 Initial Thoughts and Feelings about Myself	136
5.3.3 Introduction to EM and Volunteering	138
5.4 Entrepreneurial Mindset Shift and Personal Value Creation	140
5.4.1 Awareness of Personal Societal Impact	140
5.4.2 Awareness of Developing Thoughts and Feelings about Personal Value	143
5.4.3 Challenged Beliefs and Assumptions about Group Work	145
5.5 Indicative Changes in Behaviour for Sustainability	147
5.5.1 New Entrepreneurship Actions Toward Sustainability	148
5.5.2 Changed Perspectives about Personal Value Creation for Society	150
5.5.3 Changed Beliefs and Assumptions about Group Work	151

5.6 Summary	151
CHAPTER 6: CONCLUSIONS	153
6.1 Introduction	153
6.2 Research Findings Conclusions	153
6.2.1 Research Question 1: How do cognition, emotion and behaviour shape an Entrepreneurial Mindset?	154
6.2.2 Research Question 2: How does Teaching and Education Shape an Entrepreneurial Mindset?	155
6.2.3 Research Question 3: How can an Entrepreneurial Mindset be Shaped toward Entrepreneurship Competence Development for Sustainability?	157
6.3 Contributions of the Study, Theoretically and Practically	158
6.3.1 Theoretical Contribution	158
6.3.2 Practical Contributions	160
6.3.3 Policy and Practice Contributions	162
6.4 Limitations and Avenues for Future Research	163
6.8 Summary	166
EPILOGUE	167
GLOSSARY OF TERMS	168
BIBLIOGRAPHY	
APPENDIX 1: Full Interviews Mapping to Literature (Interviews 1,10 and 30)	
APPENDIX 2: Mindset at the Start	
APPENDIX 3: Class Descriptor	
APPENDIX 4: Summaries of Participant Journeys	
APPENDIX 5: Cross-Case Analysis	

LIST OF FIGURES

1	Conceptual Framework	13
2	Kuratko, Fisher and Audretsch (2021) Triad of The Entrepreneurial Mindset	27
3	The Discursive Behaviour Triad	30
4	Pittaway and Cope (2007) A Thematic Framework for Entrepreneurship Education	36
5	Hermann and Bossle (2020) Conceptualisation of Entrepreneurially Oriented Sustainability Education	53
6	Saunders, Philip and Adrian (2019) Four (research) Paradigms for Organisational Analysis	63
7	Model of EE triggers for changing EM Toward Sustainability.	123
8	Kuratko, Fisher and Audretsch (2021) Theoretical Development of the EM Model	160

LIST OF TABLES

1.	Entrepreneurship Education and Entrepreneurship Education Toward an Entrepreneurial Mindset	15
2.	Definitions of the Entrepreneurial Mindset Timeline.	27
3.	Interview Schedule	82
4.	1st Order Concepts for How Do Cognition, Emotion and Behaviour Shape an Entrepreneurial Mindset RQ1	92
5.	1st Order Concepts for How Does Teaching and Education Shape an Entrepreneurial Mindset RQ2	95
6.	1st Order Concepts for How Can an Entrepreneurial Mindset Be Shaped Toward Entrepreneurial Competence Development for Sustainability RQ3	98
7.	1st Order Concepts, 2nd Order Themes and Aggregate Dimensions for RQ 1	103
8.	1st Order Concepts, 2nd Order Themes and Aggregate Dimensions for RQ 2	107
9.	1st Order Concepts, 2nd Order Themes and Aggregate Dimensions for RQ 3	111

PROLOGUE

This research was designed to explore how a student's learning journey can unfold during and after an Entrepreneurship Education class. My motivation in this research stems from a passion for what comprises an entrepreneurial mindset (EM). I am also keen to explore how a changed EM can revolutionise the way society operates to become a new normal with frequent sustainability innovations and visions for the future. This is combined with being an educator and encouraging people to look after the environment and come up with ways to tackle sustainability issues. These ways of tackling sustainability issues equip society with new ways to operate or production methods that use less of the scarce resources of our planet and stop unnecessary production. This investigation delves into uncovering methods of learning and teaching that contribute to EE discussions and policy development.

CHAPTER 1: INTRODUCTION

1.1 Introduction

This introductory chapter starts with a brief look at key literature about how entrepreneurship education (EE) can shape an entrepreneurial mindset (EM). It then looks at literature about how an EM can be shaped towards behaviour which displays entrepreneurship and sustainability. This introduction section is followed by a section on definitions of key terminology used throughout, then the value of the research follows, then the statement of purpose, research questions, the rationale and overview, before concluding with the structure of the thesis.

This research explores how EE can trigger a change in EM. Scholars have proposed that a combination of entrepreneurial cognitions (thinking) and entrepreneurial emotions (feelings) brings about entrepreneurial behaviour (Kuratko, Fisher and Audretsch, 2021) and that these are all components of what the authors described as ‘The triad of the EM’. For this study, unless this research specifically refers to this triad as ‘the EM’, it will be referred to in this study as ‘an EM’. The distinction is made between ‘the EM’ and ‘an EM’ in recognition that there is no agreed definition of an EM. Firstly, an examination of the triad of the entrepreneurial mindset (Kuratko, Fisher and Audretsch, 2021) is undertaken. Then there is an exploration of the meaning of EE. Finally, there is a study of what constitutes entrepreneurial behaviour. To narrow the focus of this research on specific behavioural outcomes, there is an initial consideration of the EntreComp Framework and its fifteen competencies, with the focus being on one competence, which is the ethical and sustainable thinking competence. The latter GreenComp framework developed competencies to cover four areas with three prescribed competencies for each area, with a detailed description for each competence included in the framework (Bianchi, Pisiotis and Cabrera Giraldez, 2022).

The EntreComp and GreenComp frameworks were both developed by the Joint Research Centre of the European Commission. The EntreComp was specified to be a ‘tool to improve the entrepreneurial capacity of European citizens and organisations’ (Bacigalupo *et al.*, 2016, p. 2). From this framework, fifteen competencies, learning outcomes and proficiency levels were identified. One of the competencies, the ‘Ethical and Sustainable Thinking competence’ (Bacigalupo *et al.*, 2016, pp. 26-27), was selected as the one most aligned to this research.

The four threads of the ethical and sustainable thinking competence specify that there are these exact outcomes (Bacigalupo *et al.*, 2016, pp. 26-27):

1. Behave ethically
2. Think sustainably
3. Assess impact
4. Be accountable.

Thread No 2 ‘think sustainably’ is linked to the mindset of the students. The GreenComp Framework further developed the EntreComp framework competence above into four areas with three competencies for each. The objective of the GreenComp framework is to ‘respond to the growing need for people to improve and develop the knowledge, skills and attitudes to live, work and act sustainably’ (Bianchi, Pisiotis and Cabrera Giraldez, 2022, p. 2). This aligns with research question 3 in Section 1.6.

The behaviours of the interviewees as part of my research displayed notable changes after EE that occurred in an EM. These behaviour changes originated from triggers in EE, in terms of behaving ethically and thinking sustainably. Threads 3 and 4 are not covered by the examination of the data in this research, as this would involve quantitative work to uncover the impact and accountability. Quantitative research on threads 3 and 4 above on assessing impact and being accountable is included in Section 6.4 as a recommendation for future study. The philosophical framing for this examination, as described in quantitative work, is positivist and is outside the scope of this study, as my research is purely qualitative. This research explores rich data through a narrative analysis. The EntreComp framework competence is being used as the indicative behaviour outcome as a boundary for the narrative analysis undertaken in Chapter 4. This is because of the value of current ethical and sustainable thinking, and is in line with the UN Sustainable Development Goals (United Nations, n.d.), which ultimately seek to promote sustainability.

A conclusion from the EntreComp framework requested that competencies be empirically tested (Bacigalupo *et al.*, 2016, p. 8). This thesis is not specifically testing the competence but using the definition of the ethical and sustainable competence to examine if changes in behaviour have been steered towards it by threads 1 and 2, by thinking sustainably or behaving ethically. This thesis explores the outcomes/competencies that evolved from EE, the changes that took place in an EM, and the following behaviour change because of

changes in an EM. This was the lens through which the changes in behaviour were analysed, which is aligned with the entrepreneurship competence toward sustainability (Bacigalupo *et al.*, 2016). This research uncovers the triggers for change that occurred because of entrepreneurial teaching and education, the change that occurred in behaviour or thoughts and emotions, and how those changes were nudged by pinpointing how that transpired. Also, the data was viewed by uncovering whether there were any links to the gender, culture or experiences of the participants, and although their experiences were evident, there were no cultural or gender differences uncovered. The data was examined with a coding structure derived from interpretations made from the nuances in the narrative, with a specific focus on thoughts and feelings mentioned by the participants. These nuances flagged up interesting insights that present themselves from the complexity of the uniqueness of individual journeys (Gartner and Birley, 2002).

1.2 Definitions of Key Terminology

It is important to define boundaries in terms of the definitions used in this thesis. An examination of the use of the terminology is based on EM, EE and sustainability. The definitions employed in the triad of the entrepreneurial mindset (Kuratko, Fisher and Audretsch, 2021) and the EntreComp framework (Bacigalupo *et al.*, 2016) are used as a guide for the narrative of this thesis. The EntreComp framework has now been ‘widely adopted across Europe’ (Banha *et al.*, 2025, p. 1) and indeed has been specifically referred to in academic literature when discussing EE (Joensuu-Salo, Viljamaa and Varamäki, 2022; Van Gelderen, 2022) and competence development. The EntreComp framework brought a consensus to current discussions about definitions of entrepreneurship and entrepreneurship competencies in any context (Joensuu-Salo, Viljamaa and Varamäki, 2022; Van Gelderen, 2022).

For clarity, the following definition of entrepreneurship was accepted as part of the EntreComp framework, and all references in the thesis are aligned with this definition.

Entrepreneurship

The EntreComp framework adopted the following definition of entrepreneurship:

‘Entrepreneurship is when you act upon opportunities and ideas and transform them into value for others. The value that is created can be financial, cultural or social’ (Vestergaard, Moberg and Jorgensen, 2012, p. 2011). This definition, which requires some form of action,

seems to be representative of how entrepreneurs behave: Section 2.4 will discuss why this definition was used in this thesis.

Sustainability versus Ethics

The EntreComp framework referred to ethical and sustainable entrepreneurship competence development and used ethics and sustainability interchangeably in the descriptor of the competence, and did not define either (Bacigalupo *et al.*, 2016). Nor was mention made of ethics either in the Sustainable Development Goals (United Nations, 2022; United Nations, n.d.). So, for this research, ‘ethics’ is assumed to be part of sustainability, or as research intimated, it is used interchangeably as the ethics of sustainable development (Akrivou and Bradbury-Huang, 2015). This interchange between ethics and sustainability is a limitation of this thesis because ethics might be different from sustainability. Making the distinction is out with the scope of this thesis. For this thesis, ethics is assumed to be the same as sustainability. In Section 6.4, a recommendation is made for future research to distinguish between sustainability and ethics.

The definition of sustainability that will be used throughout this research encompasses the essence of what the researcher for the project in this thesis is aiming for, and that is ‘the principle of ensuring that our actions today do not limit the range of economic, social and environmental options open to future generations’ (Elkington, 1999, p. 20). Other definitions given for sustainability that were used by the scholarly research are featured in the literature review in Chapter 2 and do not digress from these three areas as the framing for EE outcomes. GreenComp, in its framework, referred to sustainability as ‘human activity that does not exceed planetary boundaries’ (Bianchi, Pisiotis and Cabrera Giraldez, 2022, p. 12). Rockström identified nine Earth system processes as planetary boundaries, but did not suggest from what human activity these came from (Rockström, 2009). These three areas of human activity covered by my research are economic, social and environmental actions, and this makes academic sense given the book by Elkington has been widely referred to in scholarly research, in a variety of disciplines (Edgeman and Eskildsen, 2014; Wilhelm *et al.*, 2016; Di Carlo, 2020). The authors have all recognised that this triple bottom line definition applies to the value proposition that combines the needs of profit, people and planet. Although how successful businesses have been at successfully actioning all three areas has been questioned, with profit the researchers identified as being the hardest to action (Elkington, 1999), although some scholars have identified that there is a shift and that

entrepreneurs place less emphasis on the profit motive (Cohen, 2018). Indeed, promoters of regeneration, another conceptual business model that is not covered by this research, questioned whether businesses could be successful given they would have to charge higher prices to be able to restore the environment (Das and Bocken, 2024).

Entrepreneurship Education (EE)

Entrepreneurship Education (EE) is referred to in the EntreComp framework, but no actual definition is provided. This is because there are different definitions of EE. For this research, the definition that is to be used is the one assuming ‘EE as developing the mindset, skill set and practice necessary’ (Neck and Corbett, 2018, p. 8). In this thesis, reference to EE is the context of teaching and/or curriculum in a university setting, being used as an intervention to elicit a behaviour change. The definition of EE adopted in this thesis uses the terms teaching and education interchangeably in the research, but this distinction from the view of changing mindset may be quite different and is an avenue identified in Section 6.4 for future research.

Entrepreneurial Mindset (EM)

Entrepreneurial Mindset (EM), for this research, is guided by the triad of the entrepreneurial mindset (Kuratko, Fisher and Audretsch, 2021) in Section 2.3.2, Figure 2, page 37. This triad summarises various theories of cognitions (thoughts) (Linton and Klinton, 2019) and emotions (feelings) (Plutchik, 1982) into ‘the triad of the entrepreneurial mindset’, which includes behaviour (Daspit, Fox and Findley, 2021; Kuratko, Fisher and Audretsch, 2021). The definition of EM is depicted as the triad and is the combination of ‘1. the cognitive aspect – how entrepreneurs use mental models to think, 2. the behavioural aspect – how entrepreneurs engage or act for opportunities and finally 3. the emotional aspects – what entrepreneurs feel in entrepreneurship’ (Kuratko, Fisher and Audretsch, 2021, p. 1682). This combination of cognition and emotion includes behaviour, and this frames what is regarded as an EM for the context of this thesis. This research recognises that there is no academic agreement as to what EM comprises. The definition above for an EM is what will be assumed to be the prevalent definition in the pedagogical context of this thesis.

1.3 Problem Statement

The background is the problem of societal challenges attributable to climate change, limited resources, and increasing social disparity. More ways of tackling the issue of sustainability are being required at a faster rate to combat their perceived exponential effects. The context is that entrepreneurship education and sustainability education often fail to recognise that they

can help reduce the effects of these issues with a combined lens. There has been a lack of research on pedagogical approaches which can equip students with perceptions/thinking/mindset which harness the development of the skills required. This space has now become more crowded, but the focus has been on quantitative testing of outcomes (Joensuu-Salo, Viljamaa and Varamäki, 2022; Ripollés and Blesa, 2024; Banha *et al.*, 2025).

Over the years, business schools have been criticised for producing graduates who lack the skills/competencies required in the working world (Bennis and O'Toole, 2005; Minocha, Reynolds and Hristov, 2017; Sadler-Smith and Cojuharenco, 2021). More specifically, the same criticism has been levelled at entrepreneurship education (Matlay, 2008). To address these issues, educators and scholars have been collaborating across countries to find ways to improve the skills and/or competencies of graduates for the quickly changing world of work (Zheng *et al.*, 2025).

That has been the objective of the Transforming Enterprise Education project and research (European Union, n.d.), plus the accompanying publication (Dodd *et al.*, 2022). My research hopes to advance the discussions by demonstrating how students can be triggered to hone skills for generating sustainable and ethical business practices. This research explains how that can be achieved in any context and not just the nature context proposed by the TrEE project. This is based on the premise that students' mindsets were changed, and this led to behavioural outcomes which can potentially harness entrepreneurial individuals. These entrepreneurial individuals then steer a course for society with a focus on sustainability through the skills that have been fostered in an educational programme (Hoppe and Namdar, 2023; Zhang *et al.*, 2024). This thesis aims to demonstrate that teaching and education can shape an entrepreneurial mindset toward sustainable entrepreneurship competence development. The following sub-sections expand on what this research contributes to the field.

1.4 The Value of the Research to Theory

Research has identified that young people are seen as having the potential to make changes by refusing to accept the status quo (Dodd *et al.*, 2022; Hoppe and Namdar, 2023). The recommendations from this body of research are that competencies are developed that drive through action for a cause with EE as the enabler. The starting point was the educational enablers, which were used, with EE, which then provoked thoughts and emotions, which brought about desired behaviours. This thesis adds to this discourse by specifically focusing

on uncovering findings about triggers of changes in thoughts and feelings. These changes in their EM led students to add various values in their personal and professional lives as part of social value creation.

1.5 The Value of the Research to Policy, Practice and Practically.

This thesis uses the triad of the Entrepreneurial Mindset to define and delimit the concept of an EM, and Kuratko *et al.* refer to EM in their research as ‘The Entrepreneurial Mindset’ (Kuratko, Fisher and Audretsch, 2021, p. 1682). The topic is how EE triggers changes in behaviour. This is assessed by analysing narratives surrounding cognitions/thinking and emotions/feelings of individuals. The behaviour change is the development of an entrepreneurship competence toward sustainability. This thesis provides a combination of triggers for how EE is used to develop an EM. This is done by changing cognitions and emotions to bring about changes toward sustainability-oriented actions. The empirical contribution is how EE triggered these changes. Since the EntreComp framework’s publication, this has been a busy place of research (Brentnall and Higgins, 2024; Champenois *et al.*, 2024). There is now a more recent consensus by numerous EE authors that we can derive behaviours that indicate EE is an opportunity to encourage behaviour that is either socially, economically and/or environmentally good for society (Dodd *et al.*, 2022; Hoppe and Namdar, 2023). The practical contribution from this research is that it provides examples of how the behaviour changed and how the change was triggered.

More was uncovered about how an EM can be developed or taught so that it can be nudged toward ethical and sustainable entrepreneurship. This thesis develops what is already known and advances EE. This plan develops an ethical and sustainable entrepreneurial mindset. Scholars have accepted that students can improve their knowledge and skills through a robust EE course (Duval-Couetil, 2013). This thesis advances this discussion about what the pedagogy of the class looks like in EE at the University. There has been a call for EE to use the actions that are being taught as part of courses globally, so that students are steered on a new course through individual reflections to drive society toward sustainable outcomes after they leave university (Lans, Blok and Wesselink, 2014; Hoppe and Namdar, 2023). This research advances that discussion with a set of triggers for changing an EM.

1.6 Statement of Purpose

Although EE is developing its pedagogy surrounding an EM (Mawson, Casulli and Simmons, 2022; Larsen and Neergaard, 2024), little is known about the link to the outcomes of

sustainable entrepreneurship competence development. This is an important advancement in the discussion on how to equip students with the competencies to tackle the current issues that have been discussed at global meetings of politicians.

The reason for setting a boundary in terms of definitions from the EntreComp framework (Bacigalupo *et al.*, 2016) is that this framework was used only as a starting point for this research to examine the academic literature surrounding what the behaviour outcome would look like. The sustainability focus is in harmony with the EntreComp framework and the GreenComp framework (Bianchi, Pisiotis and Cabrera Giraldez, 2022). The teaching in my research project focused on ethical and sustainable issues, which led to new entrepreneurial ideas and visions for sustainability in the future. GreenComp specifically recognises the importance of humans trying to stay within planetary boundaries and this aligns with widely recognised scholarly research on this topic (Rockström, 2009; Bianchi, Pisiotis and Cabrera Giraldez, 2022).

This discussion is specifically centred around the ethical and sustainable thinking competence from the EntreComp framework, and because of the three areas involved in this thesis, namely Entrepreneurship, Education and Sustainability, a narrowing of the focus to this framework was required to meet the word count limitation stipulation and time constraints in its completion. This competence is in harmony with the GreenComp framework, which recognised that competencies can be developed for sustainability, which ‘empowers learners to embody sustainability values’ (Bianchi, Pisiotis and Cabrera Giraldez, 2022, p. 12).

There have been numerous discussions surrounding sustainability with the recent and future planned climate change talks and world leaders pledging net-zero carbon emission targets. These also include scholarly conversations about the impending need for more efficient methods of production, better insulation methods, and a move away from fossil fuels (Kopnina, 2016). Some scholarly research has stated that a lot of what has been developed looks at products or services which provide economic growth, but they describe it as ‘empty innovation’ (Hallonsten, 2023, p. 7). The authors described this as being where products or services are made that are of no value in monetary terms, and this underscores what some other scholars have termed as unsustainable (Kopnina, 2016).

To meet increasing demand from multiple stakeholders for changes to avoid the climate crisis, society needs a workforce that is educated with entrepreneurial skills. These skills are to be applied to convert current thinking into a push for profits that are achieved by

sustainable means. This means that the products or processes they have devised or collaborated on, through EE, have made students personally consider the economic, social, and environmental ramifications of their actions. Scholarly research described this consideration as ‘sustainable stewardship’ for the good of society, ‘social justice’ (Dodd *et al.*, 2022, p. 1). Past and present entrepreneurship education research has largely focused on profitable new venture creation as the main measurable sign of an entrepreneurial outcome. This is because entrepreneurship has been deeply rooted in economic theories. After all, Schumpeter was behind the labelling of innovation as specifically linked to entrepreneurs (Schumpeter, 1934). Indeed, the pursuit of profit and new products and services has come under criticism for not having a sustainability focus (Kopnina, 2016).

Aligning courses to both entrepreneurship and sustainability develops this multi-disciplinary path (Hermann and Bossle, 2020), and indeed, some universities (Glasgow, n.d.; University, n.d.) have gone on to include sustainability in all disciplines. This alignment for all disciplines discussing sustainability is identified by widely cited scholarly research (Rockström, 2009). My research project specifically encouraged the development of entrepreneurs to be actively involved in social or environmental value creation. This was in response to the crisis some scientists say the planet is facing (Soden and Held, 2006; Wunderling *et al.*, 2020). As previously mentioned, Rockström summarised these as planetary boundaries (Rockström, 2009), with the increase in flooding and breaking records of increased temperatures across the globe. As previously mentioned, this description of ‘planetary boundaries’ used to describe the effects of undeterred use of fossil fuels has been specifically adopted by the GreenComp framework (Bianchi, Pisiotis and Cabrera Giraldez, 2022, p. 12).

EE has extended to social entrepreneurship and similar educational strategies that go some way towards sustainable thinking and behaviour. Now it is a case of expanding that even more into the areas of entrepreneurial value creation for sustainability. This extension goes beyond social and environmental ventures toward personal value creation. Personal value creation is different from the well-known value creation definition provided by Lackeus, whereby ‘someone creates something that is both novel and valuable for others’ (Lackeus, 2020, p. 940). Personal value creation extends this to include a personal interest in this creation based on a journey they have travelled, with a focus on real-life problems being tackled (Hoppe and Namdar, 2023). This research advances EE because it uncovers what

worked in a higher education context that can be transferred to different contexts. Who the value is created for is still to be investigated in EE (Larios Hernández, Walmsley and Lopez-Castro, 2022; Champenois *et al.*, 2024).

This idea of economic, social or environmental value creation is connected to sustainability, as can be seen in the definition in Section 1.1.1, which is ‘the principle of ensuring that our actions today do not limit the range of economic, social and environmental options open to future generations’ (Elkington, 1999, p. 20). The term value creation is any benefit to society, which involves reducing depletion of resources, which are social, economic or environmental. Entrepreneurial skills have been a focus of numerous research investigations that can be taught using a competence approach (Duval-Couetil, 2013; Hoppe and Namdar, 2023). The intervention in changing an entrepreneurial mindset and hence changing behaviour has been alluded to by Kuratko *et al.*, albeit toward new venture creation (Kuratko, Fisher and Audretsch, 2021). However, crossing into social venture creation by the individuals is an alternative outcome unexplored by the authors (Kuratko, Fisher and Audretsch, 2021). After all, entrepreneurs have been the acclaimed masterminds of not only ‘opportunity discovery’ but ‘opportunity development’ (Sanz-Velasco, 2006). Targeting future entrepreneurs in this research to develop alternatives to avert the publicised looming climate crisis seems a sustainable venture in its uncovering. Section 1.4 discusses the research questions.

1.7 Research Questions

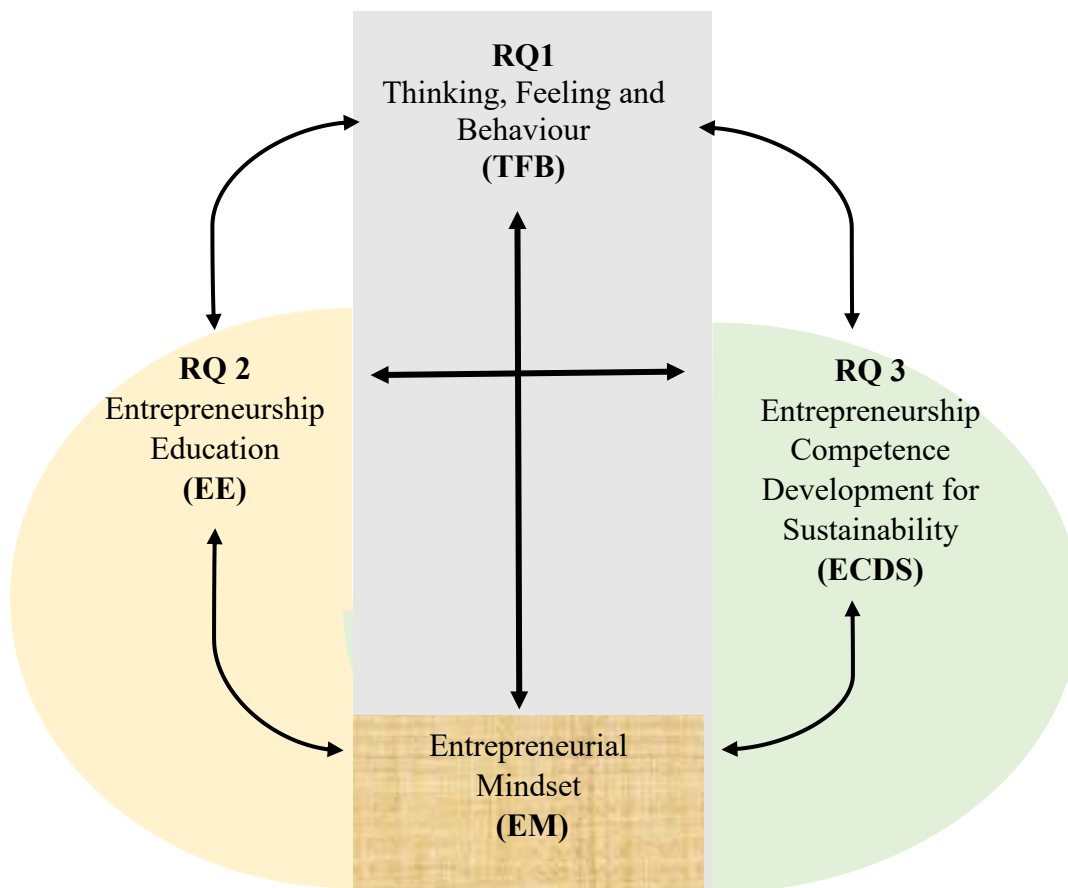
This research is driven by the following objective and overall aim, which is *to investigate how Entrepreneurship Education shapes an Entrepreneurial Mindset Toward Entrepreneurship Competence development for sustainability*. There are three research questions, and these are discussed.

Research Question 1: How Do Cognition, Emotion and Behaviour Shape an Entrepreneurial Mindset?

The first research question is how cognition, emotion and behaviour shape an entrepreneurial mindset. This was developed from research by Kuratko *et al.* (Kuratko, Fisher and Audretsch, 2021), and these authors depict a definition of an EM as a triad. This ‘triad of the entrepreneurial mindset’ (Kuratko, Fisher and Audretsch, 2021, p. 1682) summarises various theories into a definition of the EM, and they depict this summary using a triad of the entrepreneurial mindset, see Figure 2, page 61. This triad indicates that the EM, as mentioned

previously in Section 1.1.1, is comprised of thinking/cognitions and emotions/feelings, and behaviour/actions which can be changed by the context it operates in. Knowledge of how to change an EM may help sharpen business and policy development in the future. Research on an entrepreneurial mindset has previously been either focused on the cognitive/thinking aspect (Naumann, 2017) or the emotional aspect (Cardon *et al.*, 2012). The triad model of the Entrepreneurial Mindset (Kuratko, Fisher and Audretsch, 2021) fused both aspects of scholarly thinking, with behaviour/action being included in this. Kuratko *et al.* argue that cognition and emotion are each involved to a greater or lesser extent in any behaviour change.

The context of this research specifically examines how EE drives a shift in a student's mindset toward entrepreneurship competence development for sustainability in students. The conceptual framework that was used to drive this research is titled How Entrepreneurship Education Shapes an Entrepreneurial Mindset Toward Entrepreneurship Competence Development for Sustainability. Figure 1 on page 13 substantiates how cognition, emotion and behaviour were changed. This was done by a combination of two approaches to answer research question 1 about thinking, feeling and behaviour, shortened to TFB under research question 1 in Figure 1 on page 13. The first approach included in research question 1 was the use of educational conditions in the class, which facilitated behaviour changes. This approach proposes that educational conditions are determinants of behaviour in that they act as traffic light signals on the preferred behaviour. The premise was that when individuals believe that they are supported, the desired behaviour is encouraged (Tanu and Parker, 2018).



The green colour = The competencies from the GreenComp

The yellow colour = How EE is working

The brown colour = The overlapping of all the colours

The grey colour = This is the thoughts, feelings and behaviour.

Figure 1: A Conceptual Framework. How Entrepreneurship Education Shapes an Entrepreneurial Mindset Toward Entrepreneurship Competence Development for Sustainability.

The second approach that was combined and used to answer research question 1 is the theory of planned behaviour. The planned behaviour approach is that there are beliefs which, when taken together, can bring about certain behaviour. It is assumed that the intention leads to behaviour as long as there has not been a stimulus or intervention which disrupts this outcome (Ajzen, 1991). The intervention used in this thesis is education/teaching as covered by research question 2 in Figure 1, page 13. This second approach has been applied by the emotion, cognition and behaviour triad proposed by Kuratko *et al.* (Kuratko, Fisher and Audretsch, 2021), whereby emotion and cognition combine to elicit behaviour. These approaches cross over in that they both argue that they shape behaviour, and they both argue that a stimulus or intervention in terms of education can change behaviour. The approaches

differ in that the educational enablers/conditions approach focuses on having the right conditions during EE to change the cognitions, emotions and behaviour whereas the theory of planned behaviour looks at how thinking and emotion can bring about a change in behaviour. This thesis combines the two approaches in a holistic approach.

Research has indicated that an entrepreneurial mindset is changed by entrepreneurs learning through having a goal and achieving that goal through a variety of cognitive iterations to achieve it (Lynch and Corbett, 2023). Knowledge of this and how an entrepreneurial mindset can be shaped by entrepreneurship education enables the educator to shape it in a particular direction (Mawson, Casulli and Simmons, 2022; Lynch and Corbett, 2023).

Research Question 2: How Does Teaching and Education Shape an Entrepreneurial Mindset?

The second research question, which examines how EE shapes an entrepreneurial mindset, was examined under pedagogical nudging, and this was shortened to EE in Figure 1, page 13. Figure 1 illustrates how EE is being used to shape changes in EM. This was used to determine what happens through EE, and a nudge was anything that changes behaviour (Thaler and Sunstein, 2008). More recently, scholars have intimated that pedagogical nudging can be used to shape the mindset through EE, and this was such an intervention (Neergaard, Robinson and Jones, 2021). Education and the use of nudging were specifically mentioned by the original authors as a context for nudging. This is in response to research which called for entrepreneurship education to use pedagogies which involve individual reflection (Hoppe and Namdar, 2023) and personal learning (Lynch and Corbett, 2023). These learning approaches were a more effective means of achieving the desired outcomes, and these were processes that harnessed the nudging mechanism. This research recognises that the nudging process is temporal, and it has economic and political underpinnings, but this can apply to future-proofing an education agenda.

Entrepreneurship Education is different from Entrepreneurship Education Toward an Entrepreneurial Mindset, as can be seen from Table 1, page 15. This is where EE Toward EM is more focused on adding value as opposed to new business ventures.

Table 1: Entrepreneurship Education versus Entrepreneurship Education Toward an Entrepreneurial Mindset

Entrepreneurship Education	Entrepreneurship Education Toward an Entrepreneurial Mindset
New Business Startup (Neck and Corbett, 2018)	Focus on Competence Development (Mawson, Casulli and Simmons, 2022)
Entrepreneurial Outcomes (Bacigalupo <i>et al.</i> , 2016)	Competencies developed for Sustainability (Bianchi, Pisiotis and Cabrera Giraldez, 2022)
Only changes in Behaviour/Outcomes considered (Fayolle, Gailly and Lassas-Clerc, 2006)	Changes in thoughts, feelings and behaviours are considered (Kuratko, Fisher and Audretsch, 2021).
Teacher-led Approach (Duval-Couetil, 2013)	Collaborative approach with Educator facilitating discussions (Blundel, 2021)
Case Studies and Business Owners as guest speakers provide information (Fayolle, Gailly and Lassas-Clerc, 2006)	Service Learning/Learning by doing (Larsen and Neergaard, 2024)

The distinction between Entrepreneurship Education and Entrepreneurship Education Toward Entrepreneurship Competence Development for Sustainability has been compared in Table 1 above. The table highlights that a more collaborative approach was needed to discuss more complex issues surrounding sustainability.

Research Question 3: How Can an Entrepreneurial Mindset be Shaped Toward Entrepreneurship Competence Development for Sustainability?

The third research question, represented in Figure 1, page 13, called entrepreneurship competence development for sustainability and shortened to ECDS, can be seen to derive from a suggestion that future research can investigate what specifically impacts learning and its direction and subsequent action. The specific ethical behaviours of the sustainability competence, specified in level 1 of the EntreComp Framework, are ‘integrity, honesty, responsibility, courage and commitment’ (Bacigalupo *et al.*, 2016, p. 26).

The direction of my research was toward sustainability competence development for the good of humanity (Dodd *et al.*, 2022), with the outcomes looking like the twelve competencies

identified from the GreenComp framework (Bianchi, Pisiotis and Cabrera Giraldez, 2022), see page 18 for the list. Competence development was first used by the EntreComp framework as an outcome of an EE programme. This has become a popular label for a learning outcome at school and university in preparation for the world of work (Bacigalupo *et al.*, 2016). This is in line with current scholarly research mentioned above that specifically refers to competence development as an outcome of an EE programme (Hermann and Bossle, 2020; Mets, Holbrook and Läänelaid, 2021).

The triad of the entrepreneurial mindset model (Kuratko, Fisher and Audretsch, 2021) was developed around the idea of venture creation. This research looks at it through the lens of individuals creating value by recognising opportunities which lead to the benefit of society sustainably and ethically (Grégoire, Barr and Shepherd, 2010), which includes venture creation. EE is derived from the definition of entrepreneurship, which is ‘when you act upon opportunities and ideas and transform them into value for others. The value that is created can be financial, cultural or social’ (Vestergaard, Moberg and Jorgensen, 2012, p. 11) and is about equipping students to think and act entrepreneurially. The reason this research adopts this definition of actions which add value as the lens for viewing this research is that education is not effective if students come away from a class having learned nothing that can help them grow in their development as a person. There is some takeaway by the student if it has been effective. Research reviewed suggests that even some action as a result of entrepreneurship education should be an outcome (Neck and Corbett, 2018).

Intention has been recognised as a link to behaviour under the theory of planned behaviour, as mentioned above (Ajzen, 2002). Intention does not always lead to action/behaviour because something could stand in the way of the action happening (Piderit, 2000). It was suggested by Ajzen that the stronger the intention, the greater the chance of the action/behaviour occurring. It is also linked to when the next opportunity becomes available, as well as the outcome of that intention. The theory of EE being used to nudge entrepreneurs toward sustainable development opportunities (Neergaard, Robinson and Jones, 2021) was found to initiate intention and is based on the advantages the entrepreneur has identified would be gained from taking this approach (Lourenço, Jones and Jayawarna, 2012). This seems to indicate that the entrepreneur has used some personal analysis or reflection of the possible benefits they will get, and this reflection, spurred by an educator, was a form of nudging.

The third research question combines the first two research questions by focusing on educating the mindset in the specific context of sustainability competence development. This was done by exploring what the intention of the learning was and linking this to the Sustainable Development Goals (SDGs), which were developed by the United Nations (United Nations, n.d.). This is about developing competencies which, when put into action, ensure that ‘the actions today do not limit the range of economic, social, and environmental options open to future generations’ (Elkington, 1999, p. 20). This is a popular scholarly definition and is in harmony with the EntreComp framework’s definition of ethical and sustainable competence. The definition by Elkington is about preserving the planet’s resources (Elkington, 1999; Bacigalupo *et al.*, 2016). This is also in harmony with the definition used in the GreenComp framework, which defines sustainability as ‘prioritising the needs of all life forms of the planet by ensuring that human activity does not exceed planetary boundaries’ (Bianchi, Pisiotis and Cabrera Giraldez, 2022, p. 12).

In summary, the three research questions used to drive this research are based on the above.

1. How do cognition, emotion and behaviour shape an entrepreneurial mindset?
2. How does teaching and education shape an entrepreneurial mindset?
3. How can an entrepreneurial mindset be shaped toward entrepreneurship competence development for sustainability?

The research questions have been depicted in the conceptual framework, see Figure 1, page 13. Figure 1 depicts how the two approaches are combined to shape behaviour and subsequently the development of sustainability competencies. In Figure 1, page 13, all the research questions provide feedback to arrive at the shaping of an EM, which is constantly being shaped.

1.8 Rationale and Significance

This research is significant because knowledge of how entrepreneurship education can shape behaviour/action arms educators with informed pedagogy. This informed pedagogy can be utilised to foster an awareness of a mindset that can add value. This value can be directed toward sustainability competencies, which develop products, processes, and services which use renewable resources, although developing products, processes and services has come under criticism for being unsustainable (Kopnina, 2016). These students, through entrepreneurship education, can help discover ways for businesses they start up, take over or work in to make profits. The differentiating factor is that these profits will be made by

optimising the use of the scarce resources available to society (Dodd *et al.*, 2022). ‘Research has indicated that providing sustainability-related content in entrepreneurship education and business start-up programmes is a valuable intervention’ (Lourenço, Jones and Jayawarna, 2012, p. 855) and is needed in response to climate issues. The research about EE providing sustainability-related content is aligned with this research, and there is a move away from considering maximising profit to be the overarching goal (Cohen, 2018). The new goal considers three indicators of sustainability, and these are social, economic and environmental factors. This is the triple bottom line referred to in a widely cited scholarly research book on climate change (Elkington, 1999). The three indicators of sustainability have been widely recognised in scholarly research (Lans, Blok and Wesselink, 2014). The scholarly research above still recommends that profit is considered, but not at the expense of the resources of the planet. This research uncovers when and how sustainability competencies are taught as part of an entrepreneurship education programme.

As a starting point, the sustainability competencies were considered as likely to be fostered during EE, and these are the twelve mentioned in the GreenComp framework (Bianchi, Pisiotis and Cabrera Giraldez, 2022, p. 2). These are framed under four areas with full descriptions for each one. These twelve areas have encapsulated the essence of and expanded the sustainability competence in level one of the EntreComp framework in Section 2.3.3, which are integrity, honesty, responsibility, courage and commitment (Bacigalupo *et al.*, 2016).

Area 1: Embodies sustainability values

1. valuing sustainability
2. supporting fairness
3. promoting nature

Area 2: Embracing complexity in sustainability

4. systems thinking
5. critical thinking
6. problem framing

Area 3: Envisioning sustainable futures

7. futures literacy
8. adaptability

9. exploratory thinking

Area 4: Acting for sustainability

10. political agency

11. collective action

12. individual initiative

As was mentioned previously, the essence of the above sustainability competencies is aligned with the EntreComp Framework ethical and sustainable thinking competence (Bacigalupo *et al.*, 2016).

1.9 Overview of Methodology

This thesis has adopted a philosophical, epistemological, and methodological rationale conducive to uncovering themes from rich data. It followed an interpretive-qualitative-subjective research design using a multiple case study strategy and focused on the narratives of the students by analysing what they said to understand the mix of their emotions and/or cognitions and behaviours in their individual stories and to uncover any critical changes in their journeys during and after the class. This strategy is in line with previous research that is looking into pedagogy. This strategy involves the researcher being immersed in the research to be able to tackle problems as they arise and find ways to uncover the sometimes messiness of data to make sense of it, to obtain the rich data from the characteristics of the phenomena being investigated (Eriksson and Kovalainen, 2016; Saunders, Philip and Adrian, 2019).

1.10 Structure of Thesis

The present chapter has broadly introduced the topic of study and key concepts and described the research problem and purpose statement. This introduction describes the specific research questions that will be investigated in this thesis. This chapter has also identified the research design and methods and outlined the structure of the thesis. The remaining chapters in this thesis are delineated in this section with brief explanations.

Chapter 2 provides a review of extant entrepreneurship literature that situates the present study in previous research and scholarly material about ethical and sustainable thinking. This chapter presents a critical synthesis of literature according to the three research questions that contribute to the conceptualisation of the EntreComp Framework competence and entrepreneurship education that may be conducive to further research. This literature review is composed of a framework that specifically seeks to integrate the target community, the

market, society and the environmental factors as multiple levels and pathways that may impact entrepreneurial performance over time and through reflection on how ‘sustainable long-term social, cultural and economic goals are’(Bacigalupo *et al.*, 2016).

Chapter 3 describes and justifies the philosophical traditions relevant to the research methodology undertaken in the present study to explore developmental phenomena that contribute to entrepreneurship education shaping/nudging the entrepreneurial mindset. Additionally, this chapter provides supporting rationale for the research design, sample and data collection strategies for students using a baseline survey, interviews, observations and diaries. This chapter offers methods and tools used for case analysis and steps taken in the research approach to improve reliability and mitigate potential weaknesses in the overall research design.

Chapter 4 presents an analysis of each research question, which starts with how cognition and emotion shape mindset, followed by how teaching and education shape mindset and finally how mindset can be shaped toward sustainable competence development.

Chapter 5 presents the discussion, which will be drawn from the analysis and findings in Chapter 4.

Chapter 6 presents a summary of the conclusions referred to in the discussion.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The European Commission's EntreComp framework was a starting point for this literature review and is also being used as a boundary for this thesis in terms of the definitions used for entrepreneurship and sustainability, see Section 1.1.1. The reason for starting with the practical approach of the EntreComp framework competence in Ethical and Sustainable Thinking (Bacigalupo *et al.*, 2016) is so that this thesis can apply it to help navigate the complexities of this research. This research crosses Entrepreneurial Mindset (EM), Entrepreneurship Education (EE) and sustainability and finds an intersection in the scholarly research and discovers agreements and debates among scholars as to EM, EE and sustainability and the necessity for discussion now and in the future.

My research is in response to a growth in academic calls for EE to be more relevant to real-world issues (Dodd *et al.*, 2022) in light of a wave of academic literature spawning a growth in discussions and research suggesting climate decay (Elkington, 1999; Rockström, 2009). Indeed, some academics have gone on to request that all business school education be called to promote teaching that helps to sustain the long-term future of the human race (Akrivou and Bradbury-Huang, 2015).

This research adds to the narrative by answering an academic call by academics and practitioners alike that entrepreneurship education needs to be transformed. A recent project called Transforming Entrepreneurship Education (TrEE), funded by the European Union (European Union, n.d.), aims to bring together discussions between entrepreneurship educators about EE by meeting together in person to work out what changes can be made. The project involved a collaboration of entrepreneurship academics across universities who were keen to improve their current teaching methods and class learning outcomes; their shared mission is to change the narrative in EE. This is in line with Dodd *et al.* above, which concludes that it is necessary to change the narrative in EE to make a difference in our society for the future.

A recommendation was made by the authors of the EntreComp framework that the next 'step will be to try the EntreComp Framework out in practice, by implementing and evaluating it in

a specific context and, eventually, if necessary, to amend and refine it according to feedback from practitioners and end-users' (Bacigalupo *et al.*, 2016, p. 9). My thesis does not test competencies but instead uses ethical and sustainability competence as a starting point to investigate how the competence can be triggered.

2.2 Gaps in the Literature

There has been a growth in the discipline of entrepreneurship in universities since the introduction of an entrepreneurship course in 1945, and it is now embedded in business schools worldwide. The challenge has been devising a way of teaching the knowledge/awareness versus the skills of entrepreneurship to students as part of an entrepreneurship education course in universities that will change or nudge behaviour toward ethical and sustainable entrepreneurship. More specifically, there has been a call for education in business schools that teach students to preserve the future of life on earth, and this thesis is progressive and relevant in this context (Akrivou and Bradbury-Huang, 2015; Sachs *et al.*, 2019; Brentnall and Higgins, 2024), and my research advances this discourse. This is part of the aim of my research to uncover students' learning journeys (Klapper and Fayolle, 2023). This thesis also draws on subdisciplines within entrepreneurship in that it involves EE, EM and Entrepreneurship Competence development for sustainability.

It is because of the uncertainties and complexities of the future that there was a call for research by authors to focus on new pedagogies and discourse to shape EM of students going through universities to turn their entrepreneurial spirit toward providing a future for humanity that considers social, economic and environmental factors for sustainable development (Elkington, 1999; Bacigalupo *et al.*, 2016; Eizaguirre, García-Feijoo and Laka, 2019). Some scholars from different countries are currently collaborating under the title of the TrEE project (Transforming Entrepreneurship Education), to enable collaboration on pedagogies to promote the future of humanity (European Union, n.d.). This is in line with a publication by some of the collaborators, which gives recommendations that this collaboration was necessary and should be done (Dodd *et al.*, 2022).

My research aims to focus on a class of undergraduate students who used what has been referred to as transformative learning approaches as part of their overarching pedagogy (Mezirow, 2000; Christensen, Arendt and Hjorth, 2023; Ripollés and Blesa, 2024). Nudging was not tested as part of this research, but learning approaches can be used to nudge an EM toward developing entrepreneurship competencies for sustainability. This was by solving

real-world problems through EE (Landstrom *et al.*, 2016; Neergaard, Robinson and Jones, 2021). More specifically, the students should gain an understanding of their current mindset by examining research on a growth mindset. They were encouraged to read and reflect on their mindset to nudge them toward their choice of personal value creation (Neck and Corbett, 2018; Mawson, Casulli and Simmons, 2022), as defined on page 8.

This thesis was framed around work by Sarah Dodd *et al.*, who look to ‘Transforming Entrepreneurship Education’ through new pedagogies and teaching practices (Dodd *et al.*, 2022, p. 1). This was in response to a wave of sustainability research being funded, which increased collaborations for the sole purpose of preserving the future for humanity (European Union, n.d.). There has been criticism of the idea that economic, social and environmental factors can be achieved simultaneously, suggesting that it will differ by country as to what can be achieved at any one time. This criticism will be recommended as an avenue for future research in Section 6.4 to compare the results of this research (Bali Swain and Yang-Wallentin, 2020).

This thesis also adds to the discussion of an EM amid calls from literature reviews to have a deeper understanding of what the constituent parts of the entrepreneurial mindset are (Naumann, 2017; Kuratko, Fisher and Audretsch, 2021). One literature review called for research from formal institutions on their influence on the Entrepreneurial Mindset (Daspit, Fox and Findley, 2021).

The above analysis from research supports the response of the authors of the EntreComp framework (Bacigalupo *et al.*, 2016), which was used to guide the behaviour outcome (see Figure 2, page 22). This shows behaviour outcomes which emerge and advance discussion around feeding back that information about the framework. The feedback is so that amendments can be made if necessary, and an additional empirical value that could be uncovered, although the main advancement of this contribution is how EE can do this by changes in an EM. The importance of EE to shape an EM being applied to real-world problems is being requested by academics (Landstrom *et al.*, 2016; Brandshaug, 2024). EE as an intervention has recently been tested from a different philosophical underpinning, where hypotheses were made and tested (Zhang *et al.*, 2024). This research suggests that an EM can be changed toward sustainability and not just in terms of venture creation (Neck and Corbett, 2018), but how change can be effected that achieves entrepreneurship competence development has not been explored (Burnette *et al.*, 2020; Brentnall and Higgins, 2024).

There was a suggestion by these authors that it should come from within a person, but how EE should encourage an EM toward sustainability to come from within was not researched. This research project advances the discourse about how EE can change EM toward sustainability. This outcome has only been discussed as being possible without any of the rich detail this research provides.

2.3 How Do Cognition, Emotion and Behaviour Shape an Entrepreneurial Mindset?

This section starts at the beginning of the conceptual framework, Figure 1, page 13. Here, as mentioned in Section 2.2, this thesis examines a combination of two different approaches to how behaviour can be changed. The first is the educational enablers approach applied to education, where the environment is shaped by the teacher. The educator uses certain teaching approaches which act as enabling factors to create the environment that fosters behaviour outcomes set by the educator (Huoponen, 2024). The second approach is the theory of Planned Behaviour, which is about how thinking and emotion can develop behaviour (Ajzen, 2002).

The conceptual framework developed in Figure 1, page 13, is at the cross-section or combination of both. This is because this framework recognises that the two theories need to be combined. This means the learning environment for behavioural change needs the most effective educational conditions. The learning environment also needs facilitation of introspection upon one's own current thoughts and feelings to encourage openness to change. Both approaches to bring about change are compatible in that they both seek to bring about a change in behaviour through a process. Also, both theories have been linked by their authors as being of value in changing behaviour through education and argue that education can be the stimulus required to facilitate that change.

The discussions of the two approaches follow to develop the reasoning for the contribution this research will make in the context of entrepreneurship education, and are focused on Research Question 1, which is 'how do cognition and emotion shape an entrepreneurial mindset', as illustrated by the grey highlighted part in Figure 1, page 13.

2.3.1 Educational Conditions

The first approach is how behaviour is changed by educational conditions in the classroom. This approach proposes that the educational conditions are determinants of behaviour in that they can act as traffic light signals on the preferred behaviour. This is where individuals believe that how they are going to behave is going to be supported, then this is a green light

and encourages the desired behaviour. If they feel they are not supported, then they will not continue with their behaviour, and that is the red light to stop, with amber being somewhere in between.

When looking at educational conditions through a teaching/pedagogical lens, to induce a behaviour change, educators can change the prevailing educational conditions of the classroom to lead the change, and this could harness the potential for individuals to reach their personal goals by challenging themselves from within (Tanu and Parker, 2018; Brentnall and Higgins, 2024; Huoponen, 2024). The classroom educational enablers have been identified by the research as the teacher acting as a guide who encourages the students to take charge of their learning and use it to tackle economic, social and environmental problems that exist. All the students in the classroom are treated equally, and this should promote positive thoughts, emotions and behaviour.

This approach recognises that the educator is the key to encouraging the required behaviour. The enabling factors are conducive to facilitating the required behaviour and refer to the context of the classroom environment led by the educator. The educational enablers approach outlined above has been applied to adolescents, with the resulting behaviour being what they termed as environmental behaviour, which they referred to as behaviour which is good for the environment people live in (Huoponen, 2024). Research specifically on shaping methods on an entrepreneurial mindset was useful to uncover their impact on students' mindsets in terms of subsequent behaviour.

To the educational enablers, it does not seem to matter what the thoughts are behind the behaviour of the student, as their model does not refer to thinking (Huoponen, 2024, p. 681). All that matters is achievements and goals, and it does not consider whether the students understand what they are doing. This possible lack of comprehension by the student may well prove to be damaging to the students, maybe not at the time but in the future, as they might feel that the behaviour was thoughtless (Ramsay, 1993). The above educational enablers approach is the whole story of behaviour change by the teacher providing the enabling, which overlooks the uniqueness of the thinking and feelings/emotions of the individual entrepreneurial mindset, and these will be discussed next in Section 2.3.2.

2.3.2 The Approach of Thinking and Feeling to Evoke a Change in Behaviour

The cognitive perspective adds to the educational enablers approach discussed in 2.3.1 by providing a narrative of how the learner gets shaped from their original behaviour to the

desired behaviour, as it explains the various thoughts and emotions that the learner goes through in the learning process, which coexists with the educational enablers approach (Ansar, Rafi and Rizvi, 2021; Pidduck, Clark and Lumpkin, 2023).

Research stemming from the theory of planned behaviour (Ajzen, 2002) advocates that human behaviour is shaped by three beliefs, and these are the consequences of attitudes, the expectations of other people and obstacles that prevent behaviour. Widely accepted research by Ajzen and Krueger *et al.* agreed that behaviour was formed from an intention to behave in a certain way when the opportunity arose, once that intention had been formulated (Ajzen, 1991; Krueger and Carsrud, 1993). This corresponds to Ajzen's conclusion from empirical evidence that the more determined the intention to action, the behaviour then the higher the chance it will be executed (Ajzen, 1991). This seems too simplistic an answer to a complex situation, given the uniqueness of a person; the actual complexities will be examined next.

The theory of planned behaviour has been developed to predict and explain human behaviour in specific contexts (Ajzen, 1991, p. 181). The theory is built on empirical evidence that supported forecasts of behaviour from attitudes toward that behaviour. The premise behind the theory is that it adds all the elements together that help form the behaviour. The gap that Ajzen recognised in this theory of planned behaviour is that it does not isolate behaviour in a specific situation and recognises that situations could be variable and would affect the predictability of the behaviour. The theory of planned behaviour uncovered that an intervention could produce changes in attitudes, which can then lead to a change in behaviour. This intervention could be entrepreneurship education. Indeed, research has tested Ajzen's theory of planned behaviour on nascent entrepreneurs about links between education and behaviour and found they had a high intention, as much as 65%, to utilise what had been learned (Lourenço, Jones and Jayawarna, 2012).

More recent studies have summarised various theories into a triad that depicts three components of the Entrepreneurial Mindset, see Figure 2 below.

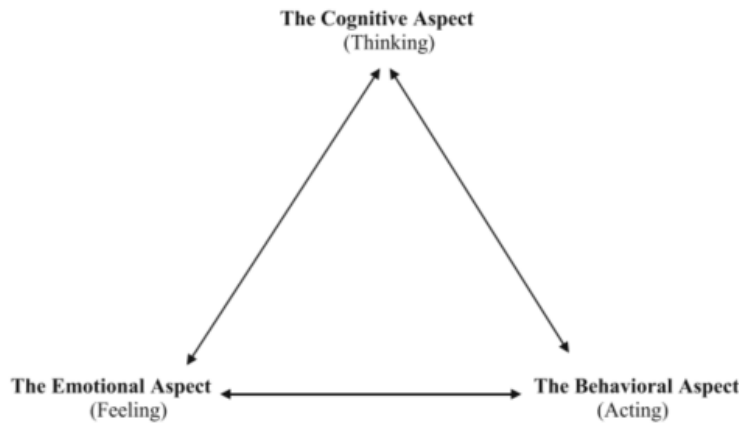


Figure 2: The triad of the entrepreneurial mindset (Kuratko, Fisher and Audretsch, 2021, p. 1882).

This triad purports that emotions/feelings and cognition/thinking and behaviour/actions are all at the same conceptual level. There are a multitude of definitions of an entrepreneurial mindset in use in the literature, as seen in the table below, that have evolved in scholarly research. A subset of definitions is listed (see Table 2, page 27), and they are definitions of an EM. These were the definitions that most aligned with this research. They were selected because they promote EE as the place where EM is talked about. Another reason for selection is that the authors below all recognise that entrepreneurs operate in an uncertain environment, which Naumann referred to as disruptions (Naumann, 2017, p. 168) instead of uncertainty.

Table 2: Definitions of an Entrepreneurial Mindset Timeline

Definition	Authors
EM 'is the ability to rapidly sense, act and mobilise even under highly uncertain conditions'	McGrath and MacMillan, 2000, p. 15
An EM 'describes metacognitive processing as originating from the conjoint effects of 1) the environment in which the entrepreneur functions and 2) the motivations of the entrepreneur through which the environment is interpreted.'	Haynie <i>et al.</i> , p. 210
EM is 'a cognitive perspective that enables an individual to create value by recognizing and acting on opportunities, making decisions with limited information,	Daspit, Fox and Findley, 2021, p. 6

and remaining adaptable and resilient in conditions that are often uncertain and complex’.	
EM is ‘a set of learnable cognitive and emotional competences conducive to developing and enacting behaviours to support value creation activity’.	Mayson, Casulli and Simmons, 2022, p. 5
Three distinct aspects of the EM exist. ‘As depicted by 1. The cognitive aspect – how entrepreneurs use mental models to think. 2. The behavioural aspect – how entrepreneurs engage or act on opportunities. 3. The emotional aspects – what entrepreneurs feel in entrepreneurship.’	Kuratko, Fisher and Audrestsch, 2021, p. 1682

This thesis will be guided by ‘The triad of the entrepreneurial mindset’ definition of EM, which says ‘three distinct aspects of the EM exist. As depicted by 1. The cognitive aspect – how entrepreneurs use mental models to think. 2. The behavioural aspect – how entrepreneurs engage or act on opportunities. 3. The emotional aspects – what entrepreneurs feel in entrepreneurship’ (Kuratko, Fisher and Audrestsch, 2021, p. 1682). The authors' conclusions led them to propose that more in-depth insights were required to uncover the interdependence of the components, and this is a recommendation for future research that is reiterated in Section 6.4. There is disagreement between researchers as to which is more dominant, whether it is cognition, emotion or behaviour. Daspit *et al.*, during a review of current insights, presented a cognitive dominance argument prevailing in the mindset (Daspit, Fox and Findley, 2021); however, Damasio *et al.* advocated that behaviour can be driven by impulsive acts driven by feelings without any thought (Damasio and Carvalho, 2013). For the scope of this thesis, it is recognised that they can each or both result in intention, which the theory of planned behaviour argues can lead to a change in behaviour. This reasoning of the research question has been developed on work related to the human body (Damasio and Carvalho, 2013). If a stimulus or an intervention is introduced to deliberately induce changes in emotions, cognitions, and behaviour, it is through this lens that the research question is answered.

The intervention that will induce this change is the intervention/stimulus of entrepreneurship education. Students had a choice of what classes they took in their second year, and they picked this class because of its description. Some of them also went on to do a project based

on what they had learned in their fourth year. What makes this entrepreneurial is a recognition of the abilities or competencies or skills entrepreneurs can learn (McMullen, Brownell and Adams, 2021) and these again are debated as the ones outlined in the EntreComp framework (Bacigalupo *et al.*, 2016) involve a process from an idea to value creation which does not necessarily result in venture creation but can add value for society at a personal level (Mawson, Casulli and Simmons, 2022; Hoppe and Namdar, 2023). This corresponds with Ajzen's forecast that interventions can take place to shape intentions and therefore the resulting behaviour, and this will be discussed in Section 2.3.3 (Ajzen, 1991). A more recent study of undergraduate students found that behaviour was shaped using the design of the curriculum at an institutional level, and the class teacher, based on curriculum design, can act as the mediator to moderate students' behaviour in the form of attitudes toward ethical behaviours (Wang, Wang and Wang, 2022); how education can do that will be looked at in Section 2.3.3. Within the frame of the class, the students have the choice to opt in or out of the teaching intervention.

2.3.3 How Can Behaviour Be Changed

The cognitions, emotions and behaviour that form the entrepreneurial mindset will constantly be working on the next plan or target, as these will not stop considering what action or behaviour should be taken; for example, the new product or process that is discovered will require continuous modifications and hence actions and behaviour which will then require modifications of thinking, emotions and behaviour to get to final product or process. The triad of The Entrepreneurial Mindset (Kuratko, Fisher and Audretsch, 2021) could be developed to look like Figure 3, page 30, and will be referred to as a discursive behaviour triad. It is called a discursive behaviour triad because EE, through learning approaches, acts as an intervention on cognitions, emotions and behaviour, which constitutes the EM.

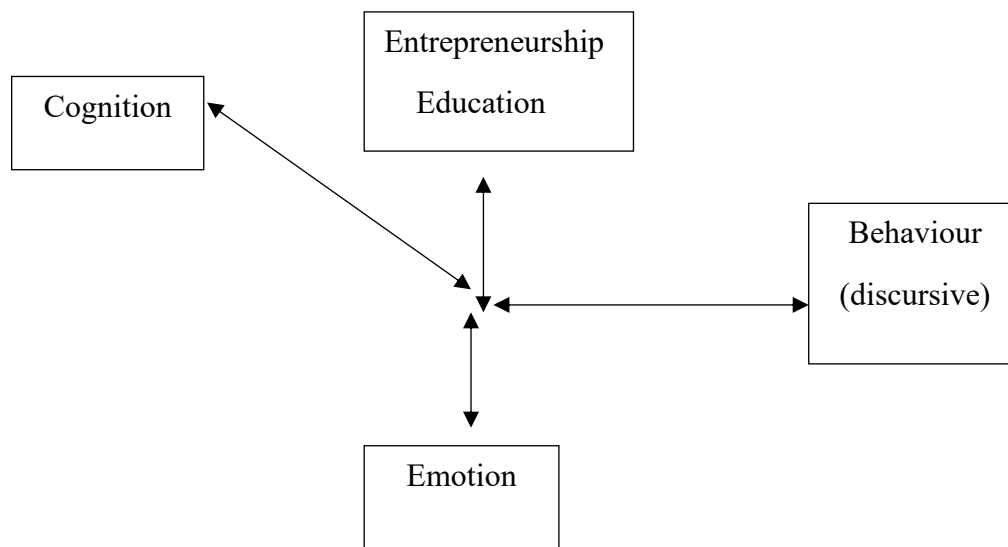


Figure 3: The Discursive Behaviour Triad is based on Figure 2, page 27, ‘The triad of the entrepreneurial mindset’ (Kuratko, Fisher and Audretsch, 2021, p. 1682).

A line is added in Figure 3 above to the triad of the entrepreneurial mindset depicted in Figure 2, page 27 (Kuratko, Fisher and Audretsch, 2021) to represent how EE can bring about resulting behaviours, emotions or cognitions. The stimulus or intervention in this context of entrepreneurship education could trigger the action programme of changing emotions, changing thinking and changing behaviour. This suggests, by way of the teacher as the mediator, that the emotions can be changed, and in turn, the thinking, which will then impact behaviour. This is the reasoning that has been developed on work related to the human body (Damasio and Carvalho, 2013). It proposes that if the stimulus is introduced to induce emotions and cognitions, then behaviour can be deliberately changed. This does seem to play out when we think of the large sums of money raised for famine when images of starving children were shown as singer Bob Geldof launched his Do They Know It’s Christmas song. The stimulus may have been the images, which elicit emotion, and thinking about what to do and the behaviour of buying the song. Damasio went as far as to talk about stimulus intensity and split it into three, ‘subtle’ stimuli with little changes, ‘intermediate’ and ‘major’ (Damasio and Carvalho, 2013, p. 150). This was evident in the response to the intense stimulus, resulting in the sales of the Do They Know It’s Christmas song.

There are constant modifications of behaviour that occur because of pressures from the dynamic environment in which entrepreneurs operate. For this research, the stimulus intensity proposed above is not specifically examined. The focus of this research uncovers a change in behaviour because of the stimulus, and a combination of stimuli is used as opposed to the intensity of any one stimulus. This measure would involve quantitative measures to compare intensities, and this research does not measure stimuli or responses to stimuli. This is articulated in the methodology chapter; the focus of this research uncovers themes emerging from the interviews. This is in response to the combination of learning approaches used as part of an overall pedagogy, and these are the stimuli. This could be an interesting future study to discover which pedagogy or combination of pedagogies has the most influence or the most intensity, and this recommendation for future research is contained in Section 6.4.

Entrepreneurs must keep up to date with market changes in the environment they operate in, and this is why their behaviour may be constantly modified based on objectives that they have thought about and or feel about. Research has shown that entrepreneurs modify their behaviour through opportunity evaluation, which involves assessment of whether an opportunity is worth pursuing (Wood and Williams, 2014, p. 576). Although the context of this extant research is not specifically looking at opportunity evaluation, the idea of the skill development of being able to reflect on whether the action is worth doing is included in the pedagogical approaches used to change mindset in Section 2.4.1. Wood and Williams explored the use of a ‘rule-based decision framework’ to frame the decision-making that entrepreneurs have to undertake in response to the stimulus (Wood and Williams, 2014, p. 576). This framework is simply a step-by-step process used for evaluation at the final stage of behaviour. They delved into the type of rules and identified three categories: ‘demand-side considerations’, which are the potential sales/market, ‘supply-side considerations’, which are the cost of the sales and lastly the entrepreneur’s attitude ‘to risk or return’ (Wood and Williams, 2014, p. 577).

The ideas above that EM can be taught are discussed in Section 2.5. Research has discussed the possibility that stimulus intensity could be used to bring about the behaviour, and this will be discussed in Section 2.5.1 by using EE and examination of a combination of methods to stimulate a change (Damasio and Carvalho, 2013).

The process/intervention/stimulus mentioned in the previous paragraphs for this research will be referred to as entrepreneurship education, and opportunity evaluation in terms of a new business venture will not be covered here simply because there is a scarcity of studies that examine the ‘direct influence of the environment on the entrepreneurial mindset’ (Daspit, Fox and Findley, 2021, p. 11). The influence and impact of the educational conditions on an entrepreneurial mindset are to be uncovered in my research. Maybe they can just be grouped into an entrepreneurial mindset stimulus or input, rather than being grouped into the four proposed by Daspit *et al* as individual, group, venture and environment. It may be possible to question entrepreneurs about what they found to be their stimulus, but if it was unconscious knowledge, then ‘it will always escape investigation’ (Wise, 2011, p. 16). So that might mean we could not measure the stimulus, as it could be unknown to the entrepreneur. This measure of the importance of a stimulus is a recommendation for future research in Section 6.4.

The question of what moves an entrepreneur from cognition to actual behaviour also remains to be formalised (Brännback and Carsrud, 2017). A body of authors (Shepherd and Patzelt, 2018) interested in the creativity of entrepreneurs have examined motivation as the link between cognition and behaviour; no such link was made to emotion, which was not a focus of that particular research. An examination of this link is considered below under emotions’ influence over behaviour, and it is assumed that the discursive triad in Figure 3, page 30, is consistent with this, even with differing views on motivation. The idea of positive factors in terms of the possibility of financial rewards or a need to be different from others can be compared with the negative factors that cause a person to make that change toward an entrepreneurial career. This could be because either they feel they have exhausted other career options or want to make a change to their present situation (Blundel, 2021).

There has also been discussion about behaviour which did not appear to have used any thinking time behind it, as decisions were made quickly, and this has been referred to as ‘unreasoned impulse-driven action’ (Lerner, Hunt and Dimov, 2018, p. 57). This appears again to be linked to cognition, where the term ‘gut feeling’ can be used to drive behaviour, and this is based on intuition, which does involve thinking, albeit very quick thinking.

The specific ethical behaviours of the sustainability competence are specified in level 1 as ‘integrity, honesty, responsibility, courage and commitment’ (Bacigalupo *et al.*, 2016, p. 26). In examining recent research on this, it was hard to find research post-2016, and this seemed strange until an article (DeTienne *et al.*, 2021) pointed to the fact that most of the research on

this topic dated back to work by Kohlberg on moral development as far back as 1977 (Kohlberg and Hersh, 1977). The language used in terms of ethical behaviours has changed because conversations have turned to the Sustainable Development Goals. In the last few years, according to a Scopus search, there have been thousands of articles about these goals specifically. The conversations are taking place across all disciplines, and this aligns with the Government's commitment to reducing carbon emissions and the requirement for the supply of data to support carbon reduction claims. Interestingly, and as expected, environmental science publications were the highest in terms of the total number of publications, but all disciplines had publications in recent years which specifically mentioned the Sustainable Development Goals. Indeed, these goals apply to profit and non-profit organisations and individuals alike and applying them is a challenge (Bali Swain and Yang-Wallentin, 2020).

In relation to these three variables of cognition, emotion and behaviour, Weick states that 'the presence of variable connections means that ambiguity is likely to be high' as it is 'difficult to anticipate, plan, implement, coordinate and control' (Weick, 2009, p. 44). However, just because it is ambiguous does not mean it is impossible to uncover the connections.

Cognitive influence over behaviour

Cognition involves thinking and is where 'entrepreneurs must translate data into understanding' (Wood and Williams, 2014, p. 576). This definition is the view of this research. The cognitive aspect has been proven to be important because prior knowledge or beliefs influence cognitions, 'entrepreneurs assess opportunities as favourable when those opportunities relate to one's existing knowledge' (Haynie, Shepherd and McMullen, 2009, p. 353). Recent research has identified the idea of metacognition in this context, and this appears to demonstrate the entrepreneur thinking about the task and forming a method to work on the task: 'Adaptable cognitions are important in achieving desirable outcomes from entrepreneurial actions' (Kuratko, Fisher and Audretsch, 2021, p. 1683). In their book on entrepreneurial cognition, Shepherd and Patzelt stated that 'by understanding how people think, we can do a better job of explaining their actions' (Shepherd and Patzelt, 2018, p. 1).

Emotions influence behaviour

Entrepreneurial emotions refer to the effect, emotions, moods, and/or feelings of individuals or a collective that are antecedent to, concurrent with, and/or a consequence of the entrepreneurial process (Cardon *et al.*, 2012, p. 1). This definition is the view that will be

employed when using the term. Also, in order to determine whether emotions are being displayed or thoughts, Plutchik's widely recognised emotions wheel will be used to determine emotions (Plutchik, 1982).

The role in subsequent behaviour is an area that needs some consideration into how it functions in recognition of opportunity and therefore leads to behaviour to bring about an outcome. Maslow offered a theory of motivation which he termed the basic needs hierarchy (Maslow *et al.*, 1987). Maslow recognises that there are monetary and non-monetary needs, and he proposes that people go through a hierarchy of desires, each of which has to be satisfied before they move onto the next one up. However, individuals likely shift to other types of motivators at some point in the process (Brännback and Carsrud, 2017, p. 213). Maslow's theory agrees with this and links these desires or motivators as a way of achieving the end goals. Motivators are probably not going to be the same for all entrepreneurs, but they play a part in the process, in that they are what drive people into action. These desires have been referred to as the sources of motivation (Blundel, 2021). Interestingly, researchers have argued that emotions are a form of motivation and that there is a clear relation (Brännback and Carsrud, 2017), and this could be interlinked to strong feelings and a drive to achieve the intended outcome as a motivator (Blundel, 2021). This seems to be a reasonable assumption that could be incorporated into this research. The passion some people have for research in academia seems to motivate them to undertake the journey from beginning to end, in what can seem like an unending journey.

The conclusion that motivation and emotion are part of the same process seems to be a reasonable topic for discussion, but this goes beyond the scope of this thesis; for this thesis, they are assumed to be part of the same process. This is because the positives of the gain of financial rewards from entrepreneurial activity, versus the negative situation they are in at present, have encouraged entrepreneurs to grasp an opportunity even knowing that it could involve a lot of time and effort (Shepherd and Patzelt, 2018).

There is a lot more to research in an EM in terms of the stimulus, and how emotions and cognitions can work together to bring about behaviour/intention. What is interesting is the move from discussing motivation to thinking about emotion as the key motivation for changing behaviour. There also appears to be a lack of knowledge about the outcome/action of entrepreneurs, and this might require more research than what currently exists: 'we call for

more research on what entrepreneurs do and that this research be both more rigorous than what we currently have and also more creatively sourced' (Brännback and Carsrud, 2017, p. 379). The outcomes of thinking and emotion and therefore behaviour or action, can be uncovered in more detail and can be added to the discourse on the entrepreneurial mindset (Daspit, Fox and Findley, 2021). This research will be limited to the behaviour or actions of the undergraduate students, and this will be a boundary to the thesis, but research on postgraduate students could be the topic of future research.

Recent research has been about sustainable behaviour, probably in response to various news-worthy scandals rather than ethical behaviour, and that is referred to in Level 8 in the EntreComp framework, which encourages learners to oppose unethical behaviour. Recent research has also split unethical behaviour into two types. One was unethical behaviour done for personal gain, and the other was for the benefit of the organisation (Mishra, Ghosh and Sharma, 2021).

2.3.4 Summary of Cognition, Emotion and Behaviour on Mindset

If emotions are action programmes, then if the stimulus happens, this will elicit the emotion, as the emotion is not a deliberate action; it is 'instinctual' (Damasio and Carvalho, 2013, p. 145). This could mean that a competent stimulus in terms of a cognitive aspect could trigger the action/emotion involuntarily, as a simple cause and effect. Understanding the cognitive/emotional processes has given rise to how learning occurs, but to ignore the educational enablers approach in education, in what the teacher can empower students to do by taking a guiding role and letting the students steer the learning, is crucial to shaping behavioural change (Woollard, 2010; Huoponen, 2024). The view of the researcher here in this research is in harmony with the view that the 'study of emotion and cognition should be integrated' (Storbeck and Clore, 2007, p. 1213). Emotion and cognition will be integrated to initiate action from pedagogies that will be used in EE.

Overall, the gap identified in the literature may be summarised as follows. An intervention in the form of entrepreneurship education can shape the entrepreneurial mindset in terms of emotion and or cognition (Krueger and Carsrud, 1993; Daspit, Fox and Findley, 2021) to elicit certain behaviours with the right educational enablers (Huoponen, 2024), but exactly how this can be done is elusive knowledge at the moment and is examined in this thesis. Also, the enablers used could be found to increase the likelihood of the required behaviour or even a predisposition to act in a certain way in the future, and this will be examined in the

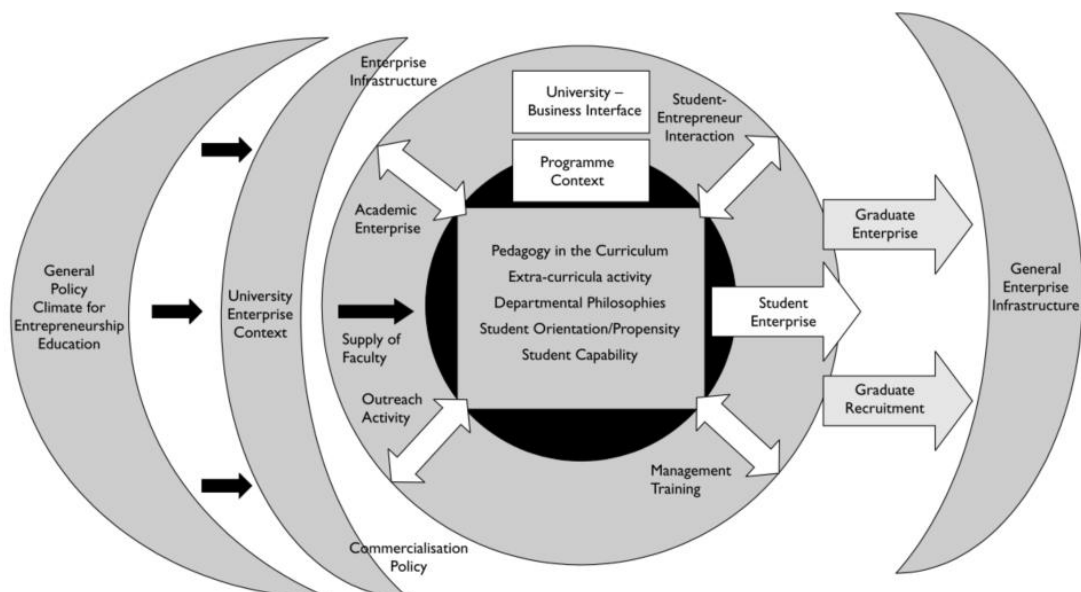
context of the stimulus being education. Following on from this, the intervention/process of entrepreneurship education to shape the mindset will be examined next.

2.4 How Does Teaching and Education Shape an Entrepreneurial Mindset?

One of the ‘key conclusions’ of the EntreComp Framework (Bacigalupo *et al.*, 2016, p. 5) was that it should ‘inspire the reform of curricula in the formal education and training sector’. Currently, EE programmes vary in their content and teaching delivery between countries and between institutions (Fayolle, Gailly and Lassas-Clerc, 2006). This is largely due to the historical stances of the universities, with some being deep-rooted in scientific management and not embracing fully the relatively new discipline of entrepreneurship (Bhatia and Levina, 2020). Bhatia and Levina go as far as to question what is currently being taught in entrepreneurship programmes because they propose that entrepreneurs base decisions on gut feelings and adapt and change the status quo to become the new normal.

Another underlying reason for the diversity of programmes in universities is the variety of definitions proposed for entrepreneurship itself and the contradictions in discourse that have ensued, as discussed in Section 2.3 about an EM. For this study, the EE programmes should therefore be very much focused on the individual, as entrepreneurship can be so varied and encompasses a lot of variations in harnessing the individual for the future. Due to the diversity of individuals, as many as 18 objectives have been proposed for a course relating to the teaching of entrepreneurship (Fayolle, Gailly and Lassas-Clerc, 2006).

To summarise the diversity in EE, research was conducted which examined the different themes within EE (Pittaway and Cope, 2007). Pittaway and Cope proposed a thematic



framework which highlights the variables inherent in the institutional environment which impact entrepreneurship education. See below in Figure 4, page 36.

Figure 4: A Thematic Framework for Entrepreneurship Education (Pittaway and Cope, 2007)

The holistic approach to entrepreneurship education in the framework above suggests that the pedagogy at the classroom level and the students themselves at the centre of the framework are rooted in the context of the institution itself. The themes of the enterprise infrastructure, the context of the university and the inherent policy for entrepreneurship education can be so variable. The authors suggest that it needs to be better linked to adult learning, and this will be explored in the next subsections.

EE is the focus of this research to try to uncover a change of direction point where, during the learning journey of a student, there is a shaping of their mindset. This combines the behaviourism approach, where the teacher is the mediator in the class, facilitating the way forward for positive behaviour outcomes and the cognitive behaviour approach, specifically the theory of planned behaviour, where emotions and cognitions come together to produce behaviour in response to the pedagogy in the class and the class structure.

A recent study called for an approach which would elicit action in the form of entrepreneurial behaviour (Linton and Klinton, 2019). This study uses a design thinking approach, where Linton and Clinton research their current students at the university. They propose this method as a way of harnessing entrepreneurial skills. Some of the assessments they used as part of the course were person-centred in the use of learning logs as part of assessing the entrepreneurial skills, instead of group presentations. Focusing on the individuals instead of teacher-led teaching in this area seems to be a way of personalising entrepreneurial skills. This concept is included in the research approach for this thesis, which is why the class was chosen.

Another aspect of this work was that, as in other studies before them, they used a collaborative approach to idea development and actions to solve problems. Surely, entrepreneurs are individualistic in how they pursue these, so maybe these should be the choice and drive of the individual and not as part of a team.

2.4.1 Overarching Pedagogical Approaches

Business schools have come under scrutiny for being too focused on individuals being able to work as part of a team and not spending enough time fostering individual creativity, in

response to an uncertain economic climate (Hameed and Irfan, 2019). However, group work has continued to be included in EE because it has been recognised that having a good relationship with people is a skill that is required. Indeed, the United Nations included working in partnership as number 17 of the Sustainable Development goals (SDGs) that were agreed upon by leaders of several countries (United Nations, n.d.). Education itself was identified as being one of the six interventions that could bring about these transformative goals (Sachs *et al.*, 2019). This aligns with research which found that there was a conflict between the actual skills graduates had gained in terms of entrepreneurship compared to what was required in terms of skills, knowledge and attitude (Van Gelderen, 2022). The following subsections discuss pedagogical approaches which could hone entrepreneurial competencies more effectively. Extant research has suggested that learning and teaching should be broken down into little manageable chunks of learning tailored to the individual, and this theme will be assumed throughout (Sweller, 1988). This is because it is too much to deliver everything at once for a person's cognitive processes (Thalmann, Souza and Oberauer, 2019).

Too often, entrepreneurship education focuses on starting up your own business (Fayolle, Gailly and Lassas-Clerc, 2006; Hameed and Irfan, 2019) instead of honing the entrepreneurial skills/competencies required to change future behaviour. It is proposed that an individual reflective approach should be used to interrupt the current cognitions and emotions of the individual to bring about the change. Indeed, critical reflection using nudging has been described as searching our emotions as we identify what we are about as a person (Thaler and Sunstein, 2008; Neergaard, Robinson and Jones, 2021; Ripollés and Blesa, 2024).

Entrepreneurship teaching and learning, and methods of assessment have been historically rooted in measurable methods developed from the functionalist paradigm for educational practitioners to mark, and this aligned with a link to new venture creation, as this was numbers-based (Fayolle, Gailly and Lassas-Clerc, 2006) because of EE programmes. This focus on new venture creation could be a limited metric when the definition of entrepreneurship describes competencies related to a process, as described in Section 2.4.2 and refers to the final value created as financial/economic, cultural or social (Bacigalupo *et al.*, 2016). This is in line with current research, which proposes that this lens is educating students to make decisions that pursue a better future for society (Dodd *et al.*, 2022; Hoppe and Namdar, 2023; Champenois *et al.*, 2024).

Pedagogy for this research, taking a holistic view, is ‘the process of education for entrepreneurial attitudes and skills, which involves developing certain personal qualities’ (Fayolle, Gailly and Lassas-Clerc, 2006, p 702). The stimulus intensity could be used in the pedagogy of a class to increase the likelihood of the desired behaviour, and this will involve the students thinking more about themselves and their present attitude, and the environment of the class will facilitate the behaviour change. This could involve a few types of class learning methods that will immerse the students in thinking about what behaviour they could change. This ties into the two approaches of behaviourism and cognitive being, combined by using a stimulus and giving feedback to promote the desired behaviour.

The class was designed around transformative learning, whereby it involves a transformation of a mindset toward one which is more susceptible to change (Mezirow, 2000; Larios Hernández, Walmsley and Lopez-Castro, 2022). Hernandez *et al.* also suggest that the teacher must see each student as unique and encourage them to make their own learning choices.

As identified in Section 2.4, entrepreneurship is a process, and the process needs to be assessed individually and not as a group because each person will undertake the process at different times when that opportunity arises for them to change their behaviour, which could depend on different internal or external pressures. The idea of peer assessment could be used, but only after the initial idea by the individual has been formed, and the entrepreneurial process of idea generation and selection should be assessed and not the final presentation.

Students should have connections with business leaders who have started their businesses (Larios Hernández, Walmsley and Lopez-Castro, 2022). This idea has gained momentum in other disciplines with the introduction of graduate accounting apprentice schemes in partnership with universities and accounting firms. An apprenticeship-type scheme could be introduced by the universities, and the students should be allowed to choose which business area they are interested in being a part of. This personal choice recognises the personal nature of entrepreneurial skills, and the assessment would be based on their entrepreneurial process or journey. This element of personal choice recognises the uniqueness of a person, and this open choice and self-reflection have been linked to improving the development of students when they examine their skills and competencies (Larios Hernández, Walmsley and Lopez-Castro, 2022).

2.4.2 Overarching Class Structures

The structure of the class could be a means of promoting teaching and learning. This is akin to the environment discussed in Section 2.3.1, which is proposed by Huoponen, who argued that the educational enablers, along with the educator, are key to changing behaviour. If students are immersed in the right environment for them to think and feel, then this could encourage a change/modification of their behaviour (Huoponen, 2024). The class structures will be examined in turn in the following subsections: general class design, timing and assessment structure and patterns

General Class Design and Timing

The class design is part of the environment, as mentioned in Section 2.4.2, and its importance can be determined by the institutional policies prevailing at the time and the course leader's preferences. This is the same as assessment and can be pertinent to the environment, being conducive to conditioning behaviour through assessment structures.

Assessment Structure and Patterns

At present, entrepreneurial assessment is often undertaken with a group presentation using a marking grid, and the teacher marks it based on the marking grid or a role-play or a marked report (Larios Hernández, Walmsley and Lopez-Castro, 2022). This is because it continues what has been done for years that team working is successful is still extremely popular in business. Entrepreneurs are different in that their characteristics are different. Entrepreneurs display a set of characteristics that make them unique. The practice of working in a team to develop an idea for a business and present the idea in university education and schools, which seems to be a common method of assessment, does not harness these personal qualities in this assessment mechanism.

Some scholars suggest that entrepreneurs look at the world in a different way (Brännback and Carsrud, 2017) and more individual assessment mechanisms should be developed allowing the entrepreneur to dig into their own personal discovery. Research has started to point to assessing students on their individual experiences of some work experience with a real-life business and this has proven to be an experiential-based form of assessment (Pittaway and Cope, 2007). Specifically, service learning, being used to develop entrepreneurship competencies, has been used effectively (Martínez-Campillo, Sierra-Fernández and Fernández-Santos, 2019), see Section 2.4.3 on experiential learning.

2.4.3 The Social Challenge Class

A class was picked to be the focus of this research. A module/class descriptor of the Social Challenge Class is included in Appendix 3. It was picked because the researcher was one of three tutors in the class, and as such, from a pragmatic point of view, it had elements in the class that were the focus of this research. Another class from another institution was not used as a comparison from a pragmatic point of view, but this is included in Section 6.4 as a recommendation for future research. The reasons for exploring the class were that it was about the students learning about an Entrepreneurial Mindset, and I was interested to find out the individual students' journeys and whether there were pivotal points that were similar or whether they were all different. The students also had to organise for themselves a volunteering placement based on what they were interested in and write about it as part of their assessment. Also, they had to complete weekly reflections as part of their assessment. The assessments were carried out by the individuals so that the individual student journeys throughout and after the class could be explored.

The following literature on teaching and learning is examined in turn as to current effective teaching methods in an EE programme. The current teaching and learning interventions are guided reading, the use of personal reflection and feedback from the teacher, group work and experiential learning. Each of these will be examined in turn in this section as to the suitability of their use in educating students. These are guided reading, reflection, group work and experiential learning, and in this unit of analysis, it was volunteering.

Guided Reading

From primary school age, teachers pick books for students to read that are at the level they need to improve their knowledge. This mechanism of using guided books to facilitate learning is equally important as we go through life. Book readings and articles are normally selected and recommended to students to consolidate topics being taught.

The guided reading on the course that was focused on in this project provides insights into what it means to have an EM, and that to have one is not all about being money-oriented (Cuellar, 2019; Blundel, 2021; Larios Hernández, Walmsley and Lopez-Castro, 2022). The guided reading allowed for more thought-provoking and nudging of the students to investigate or delve further into more recent framings of an EM.

Reflection

There has been a body of research which advocates for the use of reflection to improve the learning process for individuals (Brockbank, 2006; Bassot, 2020; Hermann and Bossle, 2020; Larsen and Neergaard, 2024). Indeed, some have gone so far as to use reflections in their entirety (Larsen and Neergaard, 2024) as a basis for research to uncover the learning journey. The numerous benefits of this type of activity encourage thinking and exploring emotions about how and why you do something or act in a particular way, and why it is important to you.

This process of writing reflectively has been used in industry and education alike to bring about personal development based on what the individual identifies as important to them based on their thoughts and feelings. The objective is for students to harness their thinking and apply it to themselves as to the why and how of their learning, and examine its importance to them. This normally takes place over time, and there might be key pivot points in this life journey which may range from causing a small change in thinking or feeling or a noticeable pivot in their beliefs, assumptions and subsequent actions. The reflection uses guided assignments as a tool to write reflections on what has happened, usually that day or week.

The reflection is all about writing, and this is thought to be important as handwriting forces you to carefully express your thoughts coherently. This technique serves not only as a technique, but students also have evidence of their thought processes and feelings. It was suggested that this can be used to come to some sort of action or learning outcome, or simply written evidence of your thoughts and feelings and what you could have done differently. Indeed, research has indicated that individuals have made changes to their ‘thoughts’ and ‘behaviours’ in light of this search into their inner self (Fritson, 2008, p. 76). This learning process involves the person looking at themselves and involves some self-examination or analysis with an outcome that can be set or a goal to achieve, but does involve some future-oriented thinking and feeling (Brockbank, 2006). Recent research has confirmed the use of reflection as an insight into an EM using EE (Larsen and Neergaard, 2024) and the value it can give to qualitative research for the exploration of an individual’s attitude changes (McMullen, Brownell and Adams, 2021; Klapper and Fayolle, 2023).

Recent research has shown that a standardised feedback process is received positively by students (Middleton *et al.*, 2023). Middleton *et al* found that the process, which started with written descriptions of the grade and what is needed to reach each grade, was made available

to students and teachers before, during and after the assignment. After submission, students were then provided with comments on strengths in the assignment and finally, recommendations for improvement concluded the feedback. The students liked the idea of being able to take steps to improve their work based on the feedback, and this seemed to alleviate any negative thoughts about the feedback or, as the authors called it, ‘development of academic buoyancy’ (Middleton *et al.*, 2023, p. 130).

Group Work

The benefits of group work have been extolled by various authors. Some have gone as far as to say that group members are motivated by being part of the team and that deep learning of the subject can be achieved by collaborative working with the group dynamics (Gregory and Thorley, 2013). Gregory and Thorley made a distinction between what they called surface learning and deep learning, where surface learning is simply accumulating information, but deep learning involves some sort of understanding and chewing on the data, resulting in a change in that person’s view of the world. This is in line with the deep learning referred to by other scholars (Neck and Corbett, 2018). Neck and Corbett specify that it involves a change in the beliefs and assumptions, and subsequently the thought processes of the individual. This change is linked to the teaching and learning prevalent in the class and specifically highlights group work as a mechanism for fostering this change. Neck and Corbett purported that group work presents an opportunity to discuss life experiences and bring a fresh view into the process. Informal peer feedback can be used within the groups to consolidate an idea or just share and comment on life experiences, and this discourse can improve employability skills in communication, negotiation and leadership.

This openness and way of working is akin to real-life experiences where teams are essential in many organisations. However, Gregory and Thorley recognised that some groups do not gel and can leave a negative memory of the collaboration. This can be combated by letting members choose what groups to be a part of, and they will usually choose people they know, so using self-selection, or they can be randomly assigned. Another option is that the lecturer may assign them based on courses that they have undertaken before, so that it may have some multidisciplinary element. Again, there is no foolproof method to ensure the group dynamics work for everyone in the group (Mamas, 2017). There will always be challenges to effective group working, but the learning benefits could perhaps outweigh these challenges (Christensen, Arendt and Hjorth, 2023; Tomasella, Wylie and Gill, 2023; Otache, Akubo and David, 2024).

Assessing performance is one of the duties of an entrepreneurship educator and will likely be specified in their job description as a task. How assessment is done, however, has always been a complex task and a matter of scholarly debate as to what that should comprise (Linton and Klinton, 2019). Traditional methods involve an exam diet with the final exam as the basis for assessing all the performance indicators. This is coming under increased criticism because of its accessibility to students and because of the impact the strain can have on students' mental health. A desire of stakeholders in education to reduce the impact of the strain of all marks hinging on one exam has led to a plethora of different methods of assessment being considered. This has also meant that there is an increasing choice of assessment methods for the EE, which opens up a dialogue for what is best in different contexts, and research has suggested that this is an underfunded area which requires some scholarly attention (Duval-Couetil, 2013).

Experiential Learning

Experiential learning is the name of learning from the experience of doing something. From their experience, learners gain knowledge about what they have experienced and not just what they have been told to do, and the context in which it occurred. The premise behind experiential learning is that they learn from it and can apply it to another situation, which may or may not be similar, but they can take some application away from the experience. This type of learning is commonly used in undergraduate EE courses as a means to harness the entrepreneurial skills of students and can drive students toward having entrepreneurial intentions (Hermann and Bossle, 2020; Lucy *et al.*, 2020; Masoumi, 2023). More specifically, service learning has been used to describe learning by doing, which would include volunteering and has been used effectively in EE to develop entrepreneurship competencies for sustainability (Martínez-Campillo, Sierra-Fernández and Fernández-Santos, 2019).

Summary

The teaching and learning approaches are not assumed to be mutually exclusive but are to be combined to maximise group work, experiential learning, and discussions in the class and outside the class. This involves some personal reflection by the students to process, digest and think about what has happened to them, what that means to them and what they could maybe do to change it (Larios Hernández, Walmsley and Lopez-Castro, 2022). This change involves some action whether it is just thinking about action or carrying out some personal plans. This comes down to the individual and how much and what, if anything, they want to develop from the whole experience.

2.4.4 Pedagogical Nudging

A recent study proposed the use of pedagogical nudging as an alternative pedagogy to bridge the gap between EE and students becoming entrepreneurs (Neergaard, Robinson and Jones, 2021). A nudge is an intervention that ‘predictably alters people’s behaviour without forbidding any options or significantly changing their economic incentives’ (Thaler and Sunstein, 2008, p. 8). It can be done to encourage students to internalise an entrepreneurial approach to business by changes in their perceptions/mindset, and as represented in Figure 2, page 22, the students’ behaviour (Neergaard, Robinson and Jones, 2021).

Pedagogical nudging involves a learning process whereby approaches to learning and teaching can take many forms, such as changing the terminology used or emotional events, which can bring about a change in the student’s mindset (Neergaard, Robinson and Jones, 2021). The principle behind it is to encourage a deeper understanding of yourself and your values. Understanding yourself facilitates the modification of behaviours or focuses on making changes to behaviour that can add value by using a reflective process. This approach does recognise that no one size fits all for this learning process in students, but recognises the uniqueness of the individual, and their varying emotions and thoughts, which lead to changes in behaviour and this ties into Kuratko *et al.* (Kuratko, Fisher and Audretsch, 2021).

For this thesis, after an EE programme, when behavioural changes are displayed that are attributed to topics discussed in class, that pedagogical nudging may have taken place. This effect is a recommendation for future research in Section 6.4. This recommendation is made because changes are required in the skills of students to achieve the goals of the SDGs (Sachs *et al.*, 2019). SDGs have been widely applied in university education programmes that have subscribed to PRME (Principles of Responsible Management Education).

Education programmes are geared to creating value in terms of equipping students with competencies that make graduates of any programme flexible in their abilities to be able to respond to change that cannot always be planned, for example, the recent uncertainties caused by unpredictable wars and the pandemic.

As mentioned in the theory of planned behaviour in Section 2.4.2, a changed intention should lead to changed behaviour if the opportunity arises (Krueger and Carsrud, 1993). The right environment for this reflective process to occur should be in the safe space of the class, with the teacher facilitating the reflections by offering guidance and feedback on how to reflect

effectively (the aim is that students continue to practise reflection on their own outside the classroom context). This is the behaviourism approach as discussed in Section 2.4.1, with the teacher being the assessor and giving feedback. It is also more, as it includes cognition in that the students are reasoning out their present positions and thinking about how they want to behave in the future, which involves a lot of going back and forth between how they think and feel now and how they are thinking about the future. The teacher will be the ‘nudger’, in this context of EE, and the student the ‘nudgee’, as inferred by Thaler and Sunstein (Thaler and Sunstein, 2008).

Intention and behaviour have been differentiated by various scholars, and intention is a decision to act in a certain way, but behaviour is where that intention is carried out (Piderit, 2000). The differentiation between these and the ambivalence of the intention is outside the boundaries of this thesis. This is because the focus of this study is on how entrepreneurship education can affect/impact these, and not on how much.

As an educator, sometimes you are trying to shape or change or nudge intention or behaviour through learning and teaching. From this research, if some new knowledge can be identified to help the educator change students to be more proactive in making entrepreneurial thinking/decisions about, for example, climate change issues, then this knowledge could deliberately be adopted within the lecture or tutorial in the planning and execution stages of learning and teaching.

Before entering university, students will have preconceived ideas about what an entrepreneur does. In Scotland, in the Business Education department in Scottish secondary schools, the curriculum focuses on the entrepreneur as being one of the four factors of production for a Business, with land, labour and capital being the other three. The students know that the entrepreneur has a certain skill set, but there were few opportunities to develop or investigate what those skills are during their school time, within the competing demands on their time for various subjects. With nudging, it has been recognised that there could be bias when used as the intervention by the educator (Bicchieri and Dimant, 2022; Mills, 2022). To work around any bias, the information was collected by the individuals based on their choice of topic area.

2.4.5 Summary of Teaching and Education as an Intervention to Shape Entrepreneurial Mindset

Overall, it is known that teaching and learning do shape an entrepreneurial mindset in the following ways:

- If the education is personalised toward the individual, then this recognises the uniqueness of the entrepreneurial mindset (Neergaard, Robinson and Jones, 2021)
- It does not have to be focused on new venture creation but can be for an increased value for the future of humanity (Hoppe and Namdar, 2023).
- Entrepreneurial behaviour, by its entrepreneurial definition given, can have a huge impact not only on the three disciplines specified in Section 1.7 as economic, social and environmental but on the ‘economy, communities and the environment’ (Shepherd and Patzelt, 2018, p.1). This significant impact in all those areas and how it can be done to improve the future of humanity will be discussed in Section 2.5.

There is a growing awareness that pedagogies of EE are necessary and can be adapted to shape EM. This research focused on changing behaviour toward sustainability competencies, which will be examined in the next section (Ramsgaard and Blenker, 2022). This call by Ramsgaard *et al.* for an adaptation of EE pedagogies to the chosen disciplines is in response to the critique of graduates of entrepreneurship education. This criticism is that they are not able to connect to their disciplines when they start their professional/academic lives. This makes it harder for them to transfer from university and quickly add value to their chosen disciplines.

This research intends to contribute to the conceptualised framework in Figure 1, page 13, by examining whether the ways suggested of improving teaching and learning, and the subsequent methods of assessment using individuals’ critical reflection of their learning journey, will indicate whether the education methods above will steer the entrepreneurial mindset toward ethics and sustainability. An EM being steered toward sustainability is examined in Section 2.5 next.

2.5 How Can an Entrepreneurial Mindset Be Shaped Toward Entrepreneurship Competence Development for Sustainability?

This section will focus on the third research question, see Figure 1, page 13, with the third research question highlighted. This is where action or behaviour can be formed with a sustainability outcome, and this will include delving into what the definition of sustainability means for this thesis, as it can be widely used in several different situations to result in a variety of different outcomes. This has also been identified as being important by the United Nations when they identified the SDGs, specifically SDG12, which states ‘ensure sustainable

consumption and production patterns’(United Nations, 2022, p. 19) and mentions the triple planetary crisis in the SDG itself, referred to in Chapter 1 (Elkington, 1999).

There was an agreement between global leaders as part of the Paris Agreement (United Nations, 2015) for a push for climate change to be on the future political agenda. This means that entrepreneurship education must respond and teach students to embrace the planet’s remaining resources and use them in the most eco-friendly way going forward, and this has been referred to as ‘entrepreneurial-oriented sustainability education’(Hermann and Bossle, 2020, p. 15). Also, entrepreneurship education courses have increased in Higher Education, and therefore, it is even more pertinent that there is an interdisciplinary approach used between the two disciplines in the future (Hermann and Bossle, 2020). This research has identified that this integration between entrepreneurship education and sustainability has not been achieved and that two critical issues are hampering this progress, and these are the teaching and learning and the subsequent methods of assessment.

The EntreComp Framework is in line with current European and UK higher education in that it is largely competence-driven (Joensuu-Salo, Viljamaa and Varamäki, 2022). The descriptor in the EntreComp Framework for this competence is to ‘Assess the consequences of ideas that bring value and the effect of entrepreneurial action on the target community, the market, society, and the environment. Reflect on how sustainable long-term social, cultural, and economic goals are, and the course of action chosen. Act responsibly’ (Bacigalupo *et al.*, 2016, p. 26). Currently, there is no agreement as to what entrepreneurial competencies are between academics and practising entrepreneurs, and this is possibly a reflection of the individuality of the entrepreneurs and the variety of the contexts they operate in (Van Gelderen, 2022). A suggestion was made to align the competencies to the entrepreneurial mindset as guided by Kuratko *et al.* in recognition that they could be directly related to the cognitive, emotional and behavioural areas of the mindset and could be the outcomes of learning from an entrepreneurship education programme (Mawson, Casulli and Simmons, 2022). This is a recommendation by authors who stress the importance of cognitive competence (Shepherd and Patzelt, 2018) and those authors who stress the importance of emotional competence (Cardon *et al.*, 2012).

The above description incorporates parts of the definition of entrepreneurship as stated by the EntreComp framework, which states that entrepreneurship is ‘when you act upon opportunities and ideas and transform them into value for others. The value that is created

can be financial, cultural, or social’ (Bacigalupo *et al.*, 2016, p. 20). This definition or the descriptor of competence does not differentiate between ethical and sustainable thinking, so the following distinction or not between the two will be examined. The reason for examining it is that the EntreComp Framework specifically identifies four unique threads that comprise ethical and sustainable thinking competence, and they will be explored to substantiate them in the order they appear in the framework (Bacigalupo *et al.*, 2016, pp. 26-27), and they are to

1. Behave ethically
2. Think sustainably
3. Assess impact
4. Be accountable

The next section will explore what current definitions are being used in scholarly research and what it means to behave ethically. There is an 8-level progression referred to as ‘proficiency’ in the framework from ‘Foundation’, then ‘Intermediate’, then ‘Advanced’, and finally ‘Expert’. Each level has 2 levels within it (Bacigalupo *et al.*, 2016, p. 23).

To explore the scholarly thinking regarding the four threads above, a search was made on research after the EntreComp framework was published, so this is research from post-2016 to 2022. Research before its publication was not considered to be current thinking or anything influenced by the framework’s publication, as the framework was designed to encapsulate the prevailing thinking at the time.

The EntreComp competence above on sustainable and ethical thinking has been expanded and more detail added to it by the GreenComp framework (Bianchi, Pisiotis and Cabrera Giraldez, 2022).

2.5.1 The Ethics in Entrepreneurship Competence Development for Sustainability

In 1987, the World Commission on Environment and Development (World Commission on Environment and Development, 1987) set out the three pillars that underpin the definition set out for sustainable development and consequently, the United Nations Sustainable Development Goals (SDGs), which are the overarching pillars of

1. The Environment or Biosphere is the foundation for sustainable development
2. Society then builds on that and
3. Then the Economy is built on top

The World Commission Report above defined sustainable development as ensuring that it ‘meets the needs of the present without compromising the ability of future generations to meet their own needs’, page 6. At no point in the above report and in the SDGs is there any mention of ethics as being separate, and indeed, leading authors have not mentioned ethics as being a separate issue (Elkington, 1999; Eizaguirre, García-Feijoo and Laka, 2019). The mention of ethics as part of this EntreComp framework on sustainable competence does seem to be an outlier in current discourse. On investigation into the descriptors of competence, it does not appear to offer any extra description beyond the pillars above, that differentiate the definition, or the pillars above themselves (Bacigalupo *et al.*, 2016). For this thesis, it will be assumed that ethics is included in sustainability, as the differences are not required to be investigated for this research around the two terms when it comes to sustainability. The inductive research surrounding ethics and sustainability makes no distinction between their research, and so ethics will be assumed to be included in sustainability (Eizaguirre, García-Feijoo and Laka, 2019; Hoppe and Namdar, 2023). However, some scholars have gone as far as to say that our planet’s current trajectory is toward unsustainability, and this is being pursued to embrace economic objectives at the expense of environmental objectives (Kopnina, 2016). The research by Kopnina referred to non-human life as commodities, further developing this anthropocentric view. Kopnina’s view echoes more recent scholars in Section 2.5.6 in the debate to consider non-humans (Thomsen *et al.*, 2024).

2.5.2 Entrepreneurial Mindset Toward Entrepreneurship Competence Development for Sustainability

A manageable set of targets or skills, or competencies must first be identified for an EE programme, to introduce sustainability, and for it to be targeted effectively by what is discussed, assessed or dissected in some way. This focus opens the eyes of the student and encourages, or as mentioned, nudges students in a direction that they might have failed to notice, understand or witness without this education programme. Lans *et al.* specified five convergent skills which contained both an entrepreneurial and sustainability skill, and they referred to them as competencies (Lans, Blok and Wesselink, 2014, p. 42). These are.

1. The skill of problem-solving
2. The skill of creativity
3. The self-involvement skill
4. Business competence skill
5. The skill of engaging others

The above authors also went on to describe two differences between entrepreneurial skills and sustainability skills and these were firstly the entrepreneur's motivation and secondly, their integrity has been questionable in the past and has been referred to as the 'dark side' of their personalities (Klotz and Neubaum, 2016, p. 7), with aggression being cited as a dark side quality (Miller, 2015). These negative aspects have so far been related to affecting their organisation and society in a damaging way. The above skills or competencies are the resulting behaviour, which is the outcome from the triad of the entrepreneurial mindset (Kuratko, Fisher and Audretsch, 2021).

It seems logical to assume that if the five skills are taught in higher education with the context being sustainability, the negative connotations can be averted, as the end goal is not about making profits but adding value, and hopefully, that can be the turning point from any negative behaviour, and that is a recommendation for future research.

This follows a proposal to look at what works and what does not in Entrepreneurship Education in the future by combining research from other disciplines (Larios Hernández, Walmsley and Lopez-Castro, 2022). Drawing on other disciplines and the variety of contexts can only aid understanding of what the best way is to teach and how to facilitate students learning.

2.5.3 Thinking, Feeling and Behaviour Toward Entrepreneurship Competence Development for Sustainability

Research on sustainability on the effects of the Dow Jones Sustainability research indicators used terms like Corporate Social Responsibility when describing sustainability (Hawn, Chatterji and Mitchell, 2018). The EntreComp framework only mentions environmental factors in the progression levels for sustainable thinking; therefore, the literature search was just on environmental sustainability. This is in unison with recent research on sustainable business models, which specifies that the impact is just environmental (Schwarz *et al.*, 2021). However, the 17 United Nations Sustainable Development Goals adopted at the United Nations Sustainable Development Summit in 2015 refer to improving 'health and education, reducing inequality and spurring economic growth', and these include the environmental indicators specified above, but also include social and economic goals. This is maybe because trying to assess impact may be more complex without knowing much about the data, and this will be examined next in Section 2.5.4 on the discussion of research on impact.

This research also intends to contribute to the conceptualised framework in Figure 5, page 53, by examining whether the individual-led pedagogical approaches will nudge students toward a mindset that is ethical and sustainable in its thinking.

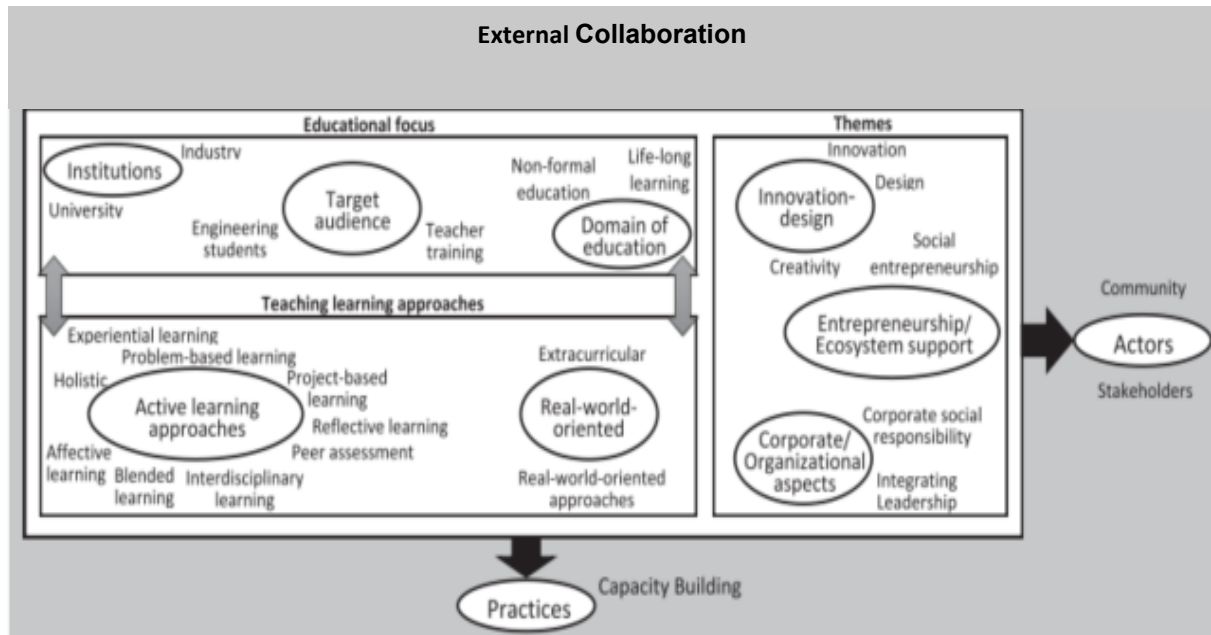


Figure 5: Conceptualisation of Entrepreneurial-Oriented Sustainability Education (Hermann and Bossle, 2020, p. 14).

2.5.4 Why is Impact Important

The desired impact of EE on a student has been defined in the EntreComp statement as finding ‘examples of changes caused by human action in social, cultural, environmental, or economic contexts’ (Bacigalupo *et al.*, 2016, p. 26). So, the impact is not testing results on any preconceived ideas but uncovering the individual stories of the students. Entrepreneurial behaviour has been defined as ‘human behaviour involved in finding and exploiting opportunity through creating and developing new venture organisations’ (Brännback and Carsrud, 2017, p. 380). From the definition, it is evident that it is the outcome or action which is derived from the emotional and cognitive aspects.

The action is the added value that can be gained from the entrepreneurial process, be it products, services or business and can normally be derived from some monetary calculation. Some scholars have debated whether that is currently being achieved or not (Kopnina, 2016). If there is no action, then this would not be an entrepreneurial process; however, an action could be to revise the product, service, and business opportunity before a relaunch.

‘Behaviours are best understood as discrete units of action that can be observed by others and

which are “sized” to be meaningful’ (Brännback and Carsrud, 2017, p. 380). This valuation seems to be subjective, and this research will hopefully give some criteria, at least some inertia for evaluation, so that comparisons could be made using GreenComp as a starting point for examining competencies (Bianchi, Pisiotis and Cabrera Giraldez, 2022).

The definition above for assessing impact is only the first level suggested in the competence from the framework and draws in more than has been previously mentioned in the other two threads. It adds social, cultural, and economic contexts to the impact. As up to now, environmental impact is the only one that has been mentioned by the previous two threads. This appears to be an extra added to behave ethically and think sustainably. This agrees with a recognised scholarly definition of sustainable entrepreneurship, which specifies that there are ‘economic’ and ‘non-economic’ gains (Shepherd and Patzelt, 2011, p. 137), although there is no further detail specifically as to what might be included under each heading.

There have been 17 Sustainable Development Goals adopted at the United Nations summit in 2015 as part of the 2030 Agenda for Sustainable Development, and these include social and economic goals. A recent report from the United Nations says that progress toward these goals is in ‘jeopardy’ because of the pandemic and the Ukraine war (United Nations, 2022). This is in line with earlier research on progress toward the Sustainable Development Goals for 2030, which found that developing countries should focus on the sustainable development goals focused on economic and social factors only, and developed countries benefit most by focusing on social and environmental factors because developing countries do not have the resources to focus on environmental factors (Bali Swain and Yang-Wallentin, 2020). This research attempted to quantify the Sustainable Development Goals, although they mentioned that they were difficult to quantify. This appears to be the same with the EntreComp framework in that the threads seem difficult to quantify, and this would make assessing the impact and being accountable difficult. It would also be difficult to determine how much progress/impact has been made because of a lack of data.

A recent report by the United Nations on the progress of the Sustainable Development Goals highlighted that in 2020, as much as ‘96 per cent of countries had to stop face-to-face data collection because of the pandemic (United Nations, 2022, p. 5)! The methods of data collection and the lack of knowledge about how accurately it has been collected have often made comparisons between countries difficult. As mentioned above, the divide between the

income and subsequent resources from developing countries and developed countries became clear to the world with the lack of statistics available about the number of pandemic cases.

The importance of assessing impact cannot be underestimated, as university educators must try to promote sustainable thinking in their students (Dodd *et al.*, 2022). To ignore this as a goal by university educators could be a missed opportunity. This has been recognised by various researchers who propose that it is the role of EE to enable, encourage, and nudge students to carry out actions that will in the future benefit society (Dodd *et al.*, 2022; Hoppe and Namdar, 2023; Champenois *et al.*, 2024; Zhang *et al.*, 2024). The researchers mentioned, and more, have identified that universities should be driving through entrepreneurship education action for a cause, using pedagogy adjustment for teaching about sustainability. The conversations in sustainability journals have also identified that students should be learning the practical importance of sustainability in addition to entrepreneurship, as it is valuable in terms of social and economic development (Jane Lu and Pivec, 2021).

2.5.5 Be Accountable and Use the Sustainable Development Goals to Offer a Path

In terms of being accountable, this was the only thread under the competence that had no descriptor until level 4, and within level 4, it mentioned accounting for value creation on ‘stakeholders and the environment’ (Bacigalupo *et al.*, 2016, p.27). This is in line with the United Nations Sustainable Development Goals, where Goal 17 is all about partnerships (United Nations, n.d., p. 28), and it specifically refers to ‘multi-stakeholder partnerships’. Being accountable to stakeholders for these partnerships to work needs to be government-led, but then political issues can get in the way, especially in developing countries where resources are at a premium.

A study of a developing country found that for policies to work - and this will include the EntreComp competencies - financial resources need to be allocated and stakeholders need to be engaged for each specific SDG, and this is the same for the Sustainable and Ethical Competence (Popoola, 2018; Eizaguirre, García-Feijoo and Laka, 2019). The problem in developing countries is a lack of well-designed collaborative work with the stakeholders, according to some research (Popoola, 2018). This indicated that this was going to be an obstacle in achieving ethical/sustainable thinking competence regarding accountability in sustainability. However, there has been much debate about how the developed countries have been purposefully underdeveloped to feed global North capitalism. See Section 2.5.6 for developments in entrepreneurship pedagogies regarding decolonisation of sustainability.

For the Sustainable Development Goals (SDGs) to work (United Nations, n.d.), just one suggestion is that people are educated, which in turn enhances economic growth (Sachs *et al.*, 2019; Zhang *et al.*, 2024). Quality education is SDG4, so the impact of EE in terms of competence development at universities, instead of just linking to courses, could be the universities' accountability being highlighted. Students could be directed to target their SDGs and to personalise what they choose to do (Lans, Blok and Wesselink, 2014).

2.5.6 Developments in Entrepreneurship Pedagogies for Sustainability

Theory has been generating in EE for sustainability, which this research contributes to by showing how pedagogy used in EE has brought about indicative changes in behaviour. There has been a growth in theory acknowledging the importance of EE, where it is an opportunity to help generate thinking about ways that can stop or slow down the destruction of the natural world. Theory has been generating in three main areas, and these are nature-based approaches, accounting for the more-than-human approaches and decolonisation as sustainability, and these are much debated of late.

The first one, as mentioned earlier, is the TrEE project, which stands for Transforming Enterprise Education, and this generated a collaboration through European funding (European Union, n.d.). The initial collaboration spawned an interesting publication framing where this vision for nature could be used in EE and how it was to be used (Dodd *et al.*, 2022). This research is specifically looking at entrepreneurship education, whereas the TrEE project is aimed at enterprise education. When referring to the TrEE project, enterprise education is used, and EE is used for Entrepreneurship Education throughout. That is the only distinction that is made, and they are not used interchangeably in this thesis, although some scholars suggest that you cannot have one without the other (Neck and Corbett, 2018).

Resources were provided by the EU for the TrEE project to facilitate transforming enterprise education and are nature-based, for example, walks in the park, designed to harness imagination (European Union, n.d.). This research is different in that it is using the development of the person and their interests as the transformer. However, the process that this research proffers can be used alongside nature-based approaches as part of self-examination.

Extant literature has also evolved around the debate about giving nonhumans consideration when undertaking entrepreneurial undertakings (Thomsen *et al.*, 2024). Although this seems to be idealistic with the idea of bartering between allocating resources based on a

multispecies need, it seems to give some insight into being fairer to other animals and living organisms instead of just treating them as factors of production. This debate could certainly be introduced into an EE programme as part of an EE process to stimulate a change in behaviour that this research seeks to uncover.

Another debate that has been gathering momentum that this research can develop through the EE process is the idea of decolonisation as sustainability. It has been suggested that decolonisation can achieve sustainability by going back to cultural heritages and challenging legacies of Western development that have left the natural world depleted for human gain. In fact, some of the more recent research has gone further in that it is seeking to challenge current SDG discourse as a human rights movement. Scholars argue that SDGs need to be unpacked as to whether they are just a colonial Western-based approach that does not treat everyone equally (Woods, Dell and Carroll, 2022; Hill, Ghorpade and Galappaththi, 2023; Keet and Rafaely, 2025). However, the 3-step approach to decolonisation by unlearning, learning and becoming, proposed by Hill *et al.*, seems to be how people learn, and unlearning is simply learning with more information, which is what this research hopes to achieve. The decolonisation of research aims to stop the repetition of inequalities, but having more information more readily available to researchers to reflect on should bring about changes, which is what this research is hoping to uncover.

2.5.7 Summary of Entrepreneurial Mindset Shaped Toward Entrepreneurship Competence Development for Sustainability.

The research questions and approaches used have been summarised into a conceptual model in Figure 1, on page 13. This model is used to drive the research.

Overall, this section has presented several possibilities for successful entrepreneurship competence development. One of those presented is that resources to develop competencies should be allocated appropriately for it to work, and some method of keeping track of accounting for them should be used for value creation for ‘stakeholders and the environment’ (Bacigalupo *et al.*, 2016, p. 27).

Research has shown that there are skills of sustainability and entrepreneurship that converge (Lans, Blok and Wesselink, 2014). This may be the case, and after analysis and findings, a discussion could include some links with the conceptualised model proposed by Hermann and Bossle, see Figure 4, page 36 (Hermann and Bossle, 2020). Scholarly research had

supported the convergence between entrepreneurship and sustainability before the model was introduced (Lans, Blok and Wesselink, 2014; Mindt and Rieckmann, 2017).

Research has also shown that students could be responsible for their learning in this area of sustainable competence development by making them accountable by linking what they have learned to the SDGs (Lans, Blok and Wesselink, 2014).

Indeed, the extant theory currently being debated in transformational enterprise education in Section 2.5.6 in the three areas of being nature-based, decolonisation as sustainability and accounting for more than human have all demonstrated a need for pedagogy for EE that this research seeks to uncover to bring about the changes required to hasten the speed of a change in EE. The following conclusions will reiterate the importance of this contribution to theory.

2.6 Conclusions and Implications

There has been a lot more publicity by various sectors of society and government organisations concerning thinking about sustainability. This is in response to scientific explanations of climate change and the link between the growth in population on the planet and human use of scarce resources (Rockström, 2009). Universities are recognising their place in educating students with life skills and are getting onto this platform for change by raising awareness in the form of more research linking environmental changes to human endeavours and mapping these to the SDGs in Business schools with their membership of some change bodies, for example, the Principles of Responsible Management Education. Here, universities must provide details to PRME of metrics on their progress, which are then published. However, little is known about how to educate students toward this outcome of social value creation (Dodd *et al.*, 2022) in the most effective way.

In answer to calls by the authors of the EntreComp framework (Bacigalupo *et al.*, 2016), where one of the competencies developed is called the ethical and sustainable competence, there was a call for this to be applied in practice using a progression model of four levels. This thesis intends to make some ground toward filling and revealing some of the missing elements in this gap. There are three problems that this thesis seeks to initiate more discussion about, and these will be discussed in turn.

Research question 1(RQ1) is: How Do Cognition, Emotion and Behaviour Shape an Entrepreneurial Mindset?

The conceptual framework titled Theory to Behaviour Formation for Sustainability, in Figure 1, page 13, substantiates how behaviour can be changed by a combination of two approaches. The first is the approach of the educator who uses educational enablers to encourage the required behaviour and looks at how behaviour changes in response to the change by the educator, as the traditional standing up at the front, leading and teaching is replaced with a more guiding role, which encourages students to come up with their own direction and solutions (Huoponen, 2024). Certain conditions can be created in the external environment of the classroom, by which the educator can bring about a behaviour change, and therefore, behaviour can be shaped by these educational enablers.

The second approach is the original theory of planned behaviour, and this is just one theory stemming from the cognitive-behavioural approach in psychology. It is assumed that the intention will lead to behaviour as long as there has not been a stimulus or intervention which disrupts this outcome (Ajzen, 1991). The intervention used in this thesis is education/teaching as covered by research question 2 below. This second approach has been applied by the emotion and cognition triad as proposed by Kuratko et al (Kuratko, Fisher and Audretsch, 2021), whereby cognition and emotion combine to elicit behaviour, and behaviour provides feedback to cognition and emotion. The two approaches, when combined, agree that cognition, emotion and behaviour can be changed. The first approach is the theory of planned behaviour and the importance of having the correct environment that could change behaviour, and the second approach is when individuals are prompted to think and feel about a context then their behaviour can possibly be changed/shaped. If both approaches are combined, then this should elicit the desired outcome in the form of behaviour.

Research question 2 (RQ2) is: How does teaching and education shape an entrepreneurial mindset?

As mentioned in research question 1 for this thesis, the mindset is composed of an interaction of emotion and cognition to bring about certain behaviour.

A recent study proposed the use of the idea of nudging to encourage students to internalise an entrepreneurial approach to business by changing their perceptions/mindset, and as represented in Figure 2, page 22, the students' behaviour (Neergaard, Robinson and Jones, 2021). Nudging involves a learning process whereby teaching methods, which can take many forms such as changing the terminology used or emotional events, can bring about a change in the student's mindset. This approach to education recognises that no one size fits all for this learning process in students, but recognises the uniqueness of the individual, and their

varying emotions and thoughts (Kuratko, Fisher and Audretsch, 2021). In recent research, there is little to dispute evidence that any university lecturer can facilitate, as educators, a change in their students' mindset (Husain, 2022). Assuming this transformation in students occurs through the nudging process, the next stage in the conceptual model is how it can be shaped by observing outcomes and iterations by students of any change, and this comes to the third problem, which is research question 3.

Research question 3 (RQ3) is: How Can an Entrepreneurial Mindset Be Shaped Toward Entrepreneurship Competence Development for Sustainability?

The mindset we now assume to be changed by a combination of emotion and cognition (Kuratko, Fisher and Audretsch, 2021). Here, the outcome is a mindset that is framed around sustainability competencies. There is a myriad of definitions of sustainability. For this research, it will be considered as one proposed by Elkington as far back as 1999, but it is still as relevant today as it was then (Elkington, 1999). The other definitions all incorporate the idea that sustainability comprises protecting the future of economic, environmental, and social options for humanity.

EE develops students with action competencies that are geared toward social, economic and environmental impact in terms of behaviour and attitudes (Hoppe and Namdar, 2023).

Research has shown signs that teaching sustainability in courses can act as an intervention, and this research aims to uncover ways this can be done (Lourenço, Jones and Jayawarna, 2012). The sustainability competencies can only occur if the intervention in terms of education is using pedagogies that promote hope and justice for our society, and this is advocated by current research surrounding this area by Dodd *et al.* (Dodd *et al.*, 2022).

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

This chapter aims to describe and justify the philosophical assumptions and decisions relevant to the research methodology undertaken in the present study to answer the research questions driving this research, which are articulated in Section 1.4. The research question is how cognition and emotion shape an Entrepreneurial Mindset (EM), how teaching and education shape an entrepreneurial mindset, and how an entrepreneurial mindset can be shaped toward entrepreneurship competence development for sustainability. Section 3.2 situates the study within the philosophical traditions relevant to this research, including ontology, epistemological and methodological positioning, which then drive the research methods. This thesis builds a rationale for the research approaches taken, including interpretivist epistemological alignment with implementing the tenets of case study research in entrepreneurship inquiry.

Section 3.3 outlines the alternative methodologies that were considered but then ruled out as they did not fit with the researcher's view of what the research questions were asking.

Section 3.4 outlines the research design and methodological approach for developing a data collection framework with interpretive and longitudinal research. Section 3.4.2 outlines reasons for combining interview and diary, along with supporting rationale. Section 3.5 provides the research sample and rationale for selecting students studying entrepreneurship to participate in the research. Section 3.6 provides the specific data collection strategies for participant inclusion, interviews and ensuring the quality of the research. Section 3.7 provides data analysis methods and tools used for the case study research strategy, and Section 3.8 includes the limitations of the methods used, including evaluating strengths and identifying limitations of this methodology. Finally, Section 3.8 summarises the main points of this chapter.

3.2 Rationale for Research Approach

This section starts by outlining the philosophical underpinnings and assumptions based on the paradigms relevant to the research methods undertaken in the present study. This section aims to introduce the reason for an interpretivist philosophical standpoint. The approach was used for this study because it aims to understand the cognitive and emotional constituents of the students' entrepreneurial mindset at certain points in time. The timescale was the time taken as they progressed through a course of study. This research explores how, during that

Entrepreneurship Education (EE) course, their thoughts, emotions and behaviour changed. The exploratory nature of the students' journey and the richness of the data required using semi-structured interviews and data triangulation to capture the variety of possible changes in behaviour that might take place. These are described in the following sections. This research philosophy has been depicted in scholarly research and named the research onion because it likens each layer to a layer in an actual onion. The reason for the onion is that you peel back until reaching the data collection and analysis in the centre (Saunders, Philip and Adrian, 2019).

3.2.1 Ontology

Ontology refers to assumptions about the state of reality (Saunders, Philip and Adrian, 2019). An assumption is the 'taken-for-granted beliefs about the world and our place within it that guide our actions' (Brookfield, 2017, p. 5). The Business and Management discipline emerged with a range of philosophical choices because of the variety of research questions and the decisions that were and can be made based on the approach of the researcher. Therefore, the assumptions that were used affected our choice of ontological standpoint. This ontological standpoint determined the lens through which the research questions were researched. There are two opposing ontological standpoints called objectivism and subjectivism, and the assumptions made can be anywhere on a continuum between these two extreme views. The research can take either of the ontological stances and make any assumptions, and they are based on the researcher's view of the world and what they sought to uncover by the research questions.

Objectivism assumes the research is rooted in the natural sciences, where the social world is assumed to be included as an item and that social structure acts independently from individuals. What underpins this research is that it tries to uncover how an entrepreneurial mindset changes and how thinking, emotion and behaviour change. Changes occur through the social actors because this research uncovers a behaviour change. The presence of social actors does not fit with the objectivist assumption that there is one reality.

Subjectivism, on the other extreme of ontology, assumes that social processes can be at work and looks at the human factors at play, and the assumption is that there is no single reality or truth and that individuals can create their own reality. This assumption in subjectivism is that the creation of reality is based on how the person perceives this reality. This fits with answering the research questions based on the research of people who are treated as

individuals and finding out their personal stories. The changes in an EM went in different directions depending on the person, and the changes were unique to the individual, which fits with subjectivism (Saunders, Philip and Adrian, 2019). The approach of this research is that entrepreneurs are individuals, and their views of the world differ depending on their background and experiences. Individual uniqueness cannot be investigated fully if participants are assumed to all be the same just because they are university students. Therefore, if it were objectivism, they would fall into a labelled box, containing characteristics that can be objectively identified and measured across people, which is not what this research sought to achieve. The lens looked at these students as individuals with a variety of emotions and thoughts that are unique to them, which is a subjective way of looking at it.

As mentioned in Section 1.1.1, there is no consensus in scholarly research on a definition of an entrepreneurial mindset. Different bodies of research have looked into an entrepreneurial mindset, and these have been rooted in an objective ontological stance developed from their psychology background (Mathisen and Arnulf, 2013); it is the same with the neuroscience body of researchers (Damasio and Carvalho, 2013). The research on definitions of an entrepreneurial mindset that speaks loudest to this research is research done using processes which were socially constructed from the research (Naumann, 2017; Shepherd and Patzelt, 2018; Daspit, Fox and Findley, 2021; Kuratko, Fisher and Audretsch, 2021).

3.2.2 Epistemology

Where ontology is the researcher's view of the world, epistemology is the theory of knowledge they want to attain. This consideration was important because the research needed to use knowledge that was considered of scholarly quality and excellent quality data. This quality data was used to defend the answers to the research questions and contribute to knowledge in the academic community.

Within the two ontological extreme assumptions of objectivism and subjectivism, authors with a sociological background have argued that there are four paradigms described by Burrell and Morgan when they developed their 2x2 matrix below in Figure 6, page 63 (Burrell and Morgan, 2016), which was further developed by Saunders *et al.* (Saunders, Philip and Adrian, 2019), which changed subjective and objective to subjectivist and objectivist. They argue that each of these determines the lens through which the researcher is going to view their study. Kuhn writes that he developed the concept of a paradigm to make a

distinction between social science and natural science (Kuhn, 2000). There have been debates about Burrell and Morgan's taxonomy; firstly, are the paradigms too simplistic, and is there more to them than this simplification into four paradigms, and are they mutually exclusive (Gioia and Pitre, 1990), and can there be more than one paradigm researched at any one time (Pittaway, 2005)? However, the strategy of the research is that Burrell and Morgan's taxonomy will be viewed as a toolkit for the framing of the research because subjectivism views the development of human society, and this is the contribution this research is making (Saunders, Philip and Adrian, 2019). However, there were some observable phenomena from the objectivist assumption that could have been a missing link and were not used to gather the evidence in this research. Using opinions to obtain knowledge from the participants includes this missing observation and contains more richly detailed knowledge than observations (Yin, 2018). Observations don't capture thoughts and feelings participants grapple with (Belk, Fischer and Kozinets, 2013).

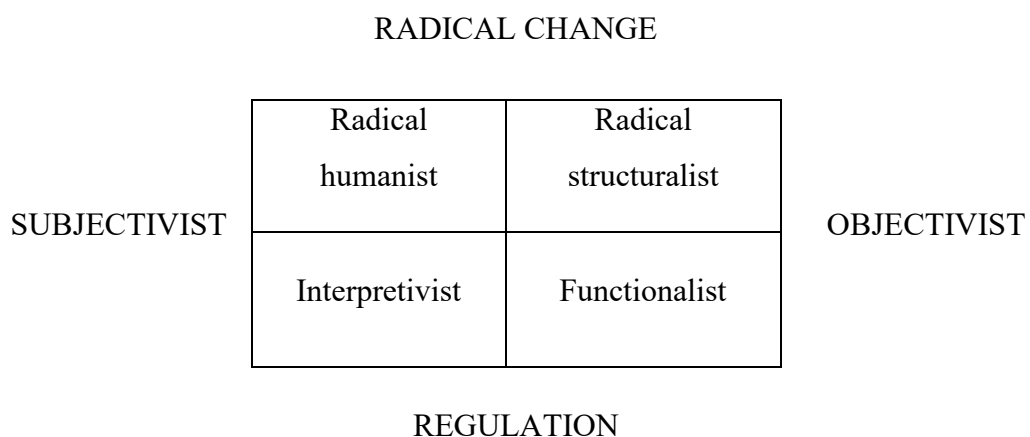


Figure 6: Four (research) paradigms for organisational analysis. Source: Development from (Saunders, Philip and Adrian, 2019, p. 141).

Figure 6 has been developed from Saunders *et al.* by changing what was called the Interpretive paradigm into the Interpretivist paradigm, as Saunders *et al.* had already developed Burrell and Morgan's Figure from Subjective to Subjectivist and Objective into Objectivist (Burrell and Morgan, 2016, p. 22), and my developmental change to interpretivist is consistent with the other headings, of humanist, structuralist, and functionalist.

The first paradigm, according to Burrell and Morgan, is radical humanist and is within the radical change and subjectivist dimension. This paradigm is concerned with making radical change to the norm, and since it is within the subjectivist ontology, it is concerned with processes and social structures. The other paradigm in the radical change dimension is the

radical structuralist, which would be involved with changing structural patterns. This research is not going to involve a radical change of any sort, so neither of these paradigms applies to the research questions.

The functionalist approach on the bottom right of the matrix tends to assume that the social world is composed of relatively concrete empirical artefacts and relationships which can be identified, studied and measured through approaches derived from the natural sciences (Burrell and Morgan, 2016). The researcher is completely objective in their approach, as can be seen in the matrix above and uses scientific, quantitative methods of data analysis (Saunders, Philip and Adrian, 2019).

The functionalist approach could have been a fit for this research topic if it were going to analyse a change in the entrepreneurial mindset of students from before they undertook a module aimed at social change. The entrepreneurial mindset of the students would be tested by making comparisons after the module is complete for any changes. It requires the researcher to be objective and examine the cause and effect of the change, and to maintain objectivity, the researcher has to be ‘detached, independent’ and ‘independent of what is researched’ (Saunders, Philip and Adrian, 2019, p. 144). From the ontological view of this research, it does not examine the intricacies of the shaping of an EM. Some scholars go as far as to say it is ‘limiting new modes of knowledge creation in entrepreneurship education’ (Bhatia and Levina, 2020, p. 50).

Radical change, whether humanist or structuralist, involves sweeping changes that involve ‘overturning’ the status quo (Saunders, Philip and Adrian, 2019, p. 139). Radical is different from regulation in that radical change is about changes in society that affect the whole of society, and that is why it is radical because it affects the vision of society and can be utopian in its outlook (Burrell and Morgan, 2016). Before I became a researcher, I found - and still do find - the Utopian perspective very far from what I consider reality, as one of my early readings proved in the book *Brave New World* (Huxley, 2014), and so I did not consider this. The idea of regulation is considered as the reason why I undertook this research was to make improvements to the status quo, which is a mainstay of regulation (Burrell and Morgan, 2016). This would involve incremental innovation from a regulation point of view as opposed to rapid change from a radical perspective. Incremental innovation is about developing the competencies of employees to generate ideas and to collaborate, which has been tested as significant to encourage incremental innovation (Engen and Holen, 2014).

Entrepreneurship education has been shown to play ‘an essential role in determining knowledge and entrepreneurial mindset that leads to the entrepreneurial preparation of students’ (Saptono *et al.*, 2020, p. 1). The knowledge required for this research could not be uncovered using this functionalist paradigm, as meanings conveyed by students will need to be examined to derive themes that may be occurring. Indeed, if the functionalist paradigm is used, any form of purposeful behaviour by the entrepreneur is removed (Pittaway, 2005). The three paradigms discussed are not a fit for this research, so the fourth paradigm was the best option, which is interpretivist, which will be discussed next.

The fourth paradigm, interpretivist, looks at uncovering underlying meaning from events and activities and is based on the premise that some form of interpretation is necessary (Eriksson and Kovalainen, 2016). The emphasis of this paradigm is on humans and distinguishes humans from physical phenomena. The subjectivism in this interpretivist epistemological paradigm is that it recognises the opinions of individuals and assumes that they have specific meanings. This paradigm fitted the research questions because they are all about the individual and their thoughts and feelings.

Among other scholars, Burrell and Morgan (Burrell and Morgan, 2016) recommend that, before deciding on appropriate research methods, researchers in the social sciences should identify their various philosophical assumptions or paradigms. The primary concern shared by scholars is the paradigms used in research when shaping strategies to ascertain answers to research questions. This thesis follows an interpretivist epistemological approach, which discovers unique and relevant information from participants in the research, based on their personal experiences, life stories, or opinions and ‘interpretivists study these meanings’ (Saunders, Philip and Adrian, 2019, p. 148).

3.2.3 Axiology

Axiology within objectivist research (and much subjectivist research also) seeks to account for the values of the researcher in some way (often by designing research in a way that avoids their influence) to remove values as much as possible from the research project (Saunders, Philip and Adrian, 2019). Within the interpretivist paradigm, there is a reflection on the values of the participants and on the choice of research by the researcher as to what values they regard as being important (Saunders, Philip and Adrian, 2019). This research recognises that people hold and develop values. The research was coded to try to understand the value that was being added, discussed and reflected on.

3.2.4 Research Design

A mixed-methods approach was first considered at the beginning of the research as it integrates the use of quantitative and qualitative data collection and analysis. This did not best fit with the research questions, and the baseline surveys used at the beginning and end of the class were only useful for improving the quality of interview questions. This is because it is the students' lived experiences that were collected. There was an assumption that the data were comprised of lived experiences, and the data collected takes the interpretivist epistemological view. The opinions expressed by the participants constitute the knowledge in this research, and from the ontological view, multiple realities exist based on the individuals (Saunders, Philip and Adrian, 2019).

Within the interpretivist paradigm, qualitative research is undertaken rather than quantitative because meaning is derived from the words used by the participants. There are a variety of methodologies that can be used in qualitative research. A case study research strategy was the most appropriate because there is an exploration leading to an explanation (Yin, 2018). This exploration and explanation happen at various stages of the students' journey to uncover changes in their journey and the reasons for the change or changes (Franzosi, 1998). The strategy was decided to be the most suitable because the researcher is constantly involved in iterating between theory and the data collected. Advantage was taken of opportunities to explain how change happens that way instead of the opportunities being barriers to understanding (Yin, 2014). Case study research used as the strategy has been specifically identified by some scholars as a way of understanding EE as an intervention in an EM (Winkler, 2013; Landstrom *et al.*, 2016). The specific research methods outlined in Section 3.2.5 were used in the class and involved interviewing with the triangulation of the participant responses with reflections they had made as the class progressed, and their assessments. The class was the unit of analysis, and each participant was a case study, and the participants were examined about how their mindsets were shaped (Yin, 2018).

The reason for a qualitative methodological choice is that results can be attributed to culture, place, or people and then transferred to other similar contexts (Saunders, Philip and Adrian, 2019). This is different from a quantitative methodological choice, which lends itself more to generalising the data into a wider context (Eriksson and Kovalainen, 2016). This is because in qualitative research, the assumption is that the variables used can procure the same results in any context. Although control variables used in quantitative data can be specific to certain contexts, they can not be explained under different contexts. This means that using qualitative

data uncovers the relatedness of the context to the opinions of the students and is the best fit to answer the research questions.

The quantitative approach would have been suitable if meaning were to be derived from numbers and an examination were to be made between the variables. This is the objective ontological and epistemological view and does not uncover the individuals' opinions. The purpose of the qualitative methodological choice was to obtain 'richly detailed data' which is 'contextualised' without any form of control over the settings of the interview, for example, in a laboratory (Belk, Fischer and Kozinets, 2013, p. 3). The researcher used an online interview as people have become more comfortable with this method since the COVID pandemic (Bojana, Morgan and Hoffman, 2020).

The methodological approach is inductive, and this means it started with the participants' narratives using interviews to understand the results from the teaching in the class. Induction is particularly suitable for explaining the context that is causing the change, because 'if you follow the inductive approach, you follow the logic of proceeding from empirical research to theoretical results' (Eriksson and Kovalainen, 2016, p. 23). This fits the research questions as they uncovered how the change was being elicited and the nature of the answers. Subjective interpretations were made in line with the interpretivist epistemological approach.

Participant reflections were used to explain changes because they have been used in a body of scholarly research (Larios Hernández, Walmsley and Lopez-Castro, 2022; Larsen and Neergaard, 2024) to uncover any changes in entrepreneurial mindset. These authors recognise that there could be bias in the use of student reflections for qualitative research because the language used by students during a class is fresh in the participants' minds. This research is different because interviews took place a year after the course. It is unlikely that the findings in Chapter 4 were biased toward something they had just learned; this is due to the gap of a year between the class finishing and the interviews taking place. The use of student reflections was to understand the complexities of the journey by the participants (Bassot, 2020).

3.2.5 Research Methods

The research is conducted based on the inductive approach previously described in the methodological design, in line with the interpretivist epistemology paradigm. The following paragraphs discuss the empirical setting.

Empirical Setting

The research design is centred around qualitative research using a case study and cross-case research strategy, as mentioned in the methodological design. This was undertaken in the form of interviews with students in their third year from Strathclyde University. These students took a class in the second year titled The Social Challenge class. The reason for the selection of Strathclyde University students only was that comparing the students between universities would be difficult, and so the pragmatic approach was applied. This was difficult because finding a similar class in another university with similar pedagogies using a case study research strategy would be hard. It is difficult, given the differences in the teaching and learning objectives of universities (Cheng and Marsh, 2010), and even the differences in the characteristics of students at the university can make comparisons a challenge according to scholars (Cheng and Marsh, 2010; Zheng *et al.*, 2025). The unit of analysis is the class of second-year Strathclyde students only who were interviewed in their third year, and each student is a case study. A recommendation for future research in Section 6.4 is that there will be similar comparative research conducted in different universities about EE changing EM toward sustainability competence development. For this research, the researcher had access to this class as a tutor, and pragmatism influenced the decision to have a single unit. Examining another class in this depth at another institution did not seem achievable, but this is a recommendation for future research in Section 6.4.

The researcher was one of three tutors in the class and one of three tutors who marked the class assessments, facilitated finding voluntary positions (these voluntary positions were part of the assessment mechanisms; where students had to volunteer for a charity of their choosing, for a total of 15 hours and reflect on this experience), answered their questions and provided further clarification if required about the class and assessments. It also gave the researcher a chance to observe the students throughout the class.

A baseline survey (see Appendix 2: Mindset at the Start) was conducted at the beginning and a different one at the end of the social challenge class to help gauge the mindset of the students at those significant points and aided the framing of the interview questions asked in their third year. This survey aims to uncover any changes in students' mindsets that occurred. It was purely the narrative that was analysed, and no statistical data were used.

The reason for choosing The Social Challenge class as the unit of analysis is that it is one of the classes run by the Hunter Centre for Entrepreneurship and gives students an immersion in entrepreneurship. The class also utilises a variety of pedagogies designed to be combined to

transform an entrepreneurial mindset through the intervention of these various pedagogies, and they were used to shape an entrepreneurial mindset toward sustainable entrepreneurship competence development.

The pedagogies used were firstly encouraging students to undertake self-reflection using journalling, a tool developed for students (Bassot, 2020). This reflection encompasses questions about what they learned, how they applied their learning to benefit themselves, how they could have applied their learning to benefit their community and what they found challenging in their learning journeys (Bassot, 2020). This reflection was used as fifty per cent of their assessment grades for the class. This gave the students an impetus to complete the five weekly blogs and a reflective assignment on their volunteering. This tool, produced by Bassot, follows on from her work in the subjectivist epistemological framework about trying to make sense of the world and interpret meanings (Bassot, 2019). The method of following the baseline questionnaire with interviews and triangulating this survey with observations done by the class participants brought rich knowledge in the form of data. These observations by class participants were captured by the interviews, and these are included in the findings, see Section 4.3. This data involves EM changes and helps identify some pivots in the student mindset. As a teacher, knowledge of students' individual experiences and processes of learning is important pedagogic knowledge (Brookfield, 2017). This knowledge is in line with the subjectivist ontology and epistemology of this research.

Finally, interviews of students were undertaken a year later, after the class, to uncover whether there had been any impact on the students from the class from the exposure to the various pedagogies above. All the reflections and interviews were taken from each student to provide a learning journey for each student or case study. The reflections and interviews were used to uncover if, along this journey, anything had produced or provoked some change in feelings and or thoughts. These changes in feelings and or thoughts were used to analyse whether there were any triggers to bring about changes in behaviour and uncover the story of each student.

3.3 Alternative Methodologies and Reasons for Rejection

This section aims to outline the other methodologies that initially were considered appropriate to align with the researcher's view of the world, in that I wanted to uncover from a real-life situation what the participants' thoughts and subsequent actions might be, using a purely inductive approach. This approach involved as much as possible using what the

participants said to develop themes for analysis without preconceived ideas for themes. The other methodologies that were considered were action research, ethnography, and grounded theory, and these are summarised in the following section.

3.3.1 Action Research

While action research is valuable for co-creating solutions with participants, it was not selected because this research sought to capture participants' reflections independently, rather than involve the researcher in influencing participant actions. The focus on individual participant journeys also conflicted with action research's collaborative, longitudinal requirements. The longitudinal requirements would have exceeded the scope and timeline of this study (Saunders, Philip and Adrian, 2019).

3.3.2 Ethnography

Although ethnography's immersive nature could yield rich contextual insights, it was less suited for understanding participants' internal thoughts, emotions and behaviour about sustainability. Ethnographic methods, centred on observation, would not allow participants to express their thoughts and feelings in their own words, an essential element for the narrative-driven analysis used (Belk, Fischer and Kozinets, 2013).

3.3.3 Grounded Theory

Grounded theory is 'the discovery of theory from data' (Glaser and Strauss, 2017). Grounded theory is about hypothesis testing to verify a theory. The view of the world of my research is not to test theory and produce theory, but to understand the rich data as mentioned in Section 3.5.3. In the end, surveys and hypothesis testing were used to determine which questions to use in the interview and were going to be used for triangulation of evidence. However, surveys were not used in the end for the triangulation of data because there was no way of checking who had completed a survey against who had participated in the interview. After all, the survey was anonymous. However, since this research prioritised understanding each participant's unique narrative, a hypothesis-driven approach did not align with these objectives. Hypothesis testing would imply predefined expectations, whereas this research requires an open-ended narrative to reveal insights organically.

Although the researcher used cognitions, emotions and behaviour as a framing (Kuratko, Fisher and Audretsch, 2021) from literature, to uncover the narrative, the knowledge was derived from the data, not the theory. The participants led the interview conversations, and this reduced the researcher's bias. Also, the researcher realised that she had some bias in how

she interpreted the data, but she went back to the data repeatedly to check her understanding and interpretations (Eriksson and Kovalainen, 2016). Semi-structured interviews were used to limit the researcher's bias.

There are two approaches to grounded theory that were considered, and these are the Glaserian approach and the Straussian approach, named after the authors who discovered grounded theory (Glaser and Strauss, 2017). The premise for both is that theory is being developed, which is tested after each sample to check that it meets the criteria for the hypothesis in the theory as a form of hypothesis testing. The difference between the two is that with Straussian there is a specific research problem, which is the case in my research, but there is not with Glaserian (M. Alammari *et al.*, 2019). Glaserian keeps the problem more open. After the uncovering of themes from my research, it is proposed that in the future, theory will be developed in line with a Straussian Grounded Theory approach, see Section 6.4, using a specific research problem and hypothesis to test. This is the recommendation for future research after all the themes and intricacies of the rich data have been uncovered, and these then can be used to develop theory, and this was using reflexivity on the effect on the research by the researcher.

3.4 Research Sample

A theoretical research sampling strategy was used to select undergraduate students based on those who had taken the Social Challenge class in the business school and interview them. The sample is based on those who volunteered to participate in the research. Just using a sample that is available like this has been described as convenience sampling (Patton, 2015; Uzuntiryaki-Kondakci *et al.*, 2022). Yin described this data collection as 'not representing what you are trying to study' (Yin, 2014, p. 91). To avoid bias and incompleteness, the characteristics of the data were recorded to ensure there was a variety of characteristics in terms of gender, age and culture included to try to remove any incompleteness or bias in the sample. Also, the interview data were compared to comments by other students in the class made during their five reflections that were assessed in the course.

The sample size was reached when the interviews did not produce any more interesting meanings. At that point, they were stopped as saturation was assumed to have been reached (Eriksson and Kovalainen, 2016; Saunders, Philip and Adrian, 2019). The saturation point is dependent on the researcher knowing the data and being confident that everything has been uncovered from the interviews. However, some scholars argue that there is no saturation

point and that taking longer can provide even more knowledge (Eriksson and Kovalainen, 2016). Setting a target sample size was not considered to be applicable because the size can vary depending on the participants, so it needed to be flexible. The sample size was then determined by the number of participants who volunteered after three consecutive calls on the university My Place page of the class, for participants to volunteer. In Section 6.4 having longer to conduct interviews is described as a limitation of this research in that more might have been uncovered and having longer could have meant more participants could have been obtained.

3.5 Data Collection

This section describes data collection methods and strategies for ensuring the quality of the research. This includes tools, instruments, and procedures used within this research for participant recruitment, conducting the interviews, and using student weekly reflection methods.

3.5.1 Participant Recruitment

The initial recruitment was an invitation to all students in the Social Challenge class via the My Place, university resource portal, to fill in a baseline survey at the start of the class and then a follow-up survey just after the class finished. As such, there was no pre-selection by the researcher, and students opted in by filling in the survey anonymously. The same was applied to a survey at the end of the class. These surveys were to try to create a focus for interview questions to be prepared from the answers when the main interviews in September took place. This baseline survey was developed using SurveyMonkey, which was adopted because it is used in schools for school surveys and would likely be familiar to students. Having a survey at the beginning helps identify baseline behaviour, and then the desired outcomes can be compared to this, such as the individual experience with the intervention (Mawson, Casulli and Simmons, 2022). The participants for interviews were recruited in the same way, although emails were then used to set up a convenient interview time. Any limitations of this method of participant recruitment are discussed in Section 3.7 and in Section 3.5.4 on interview methods.

3.5.2 Overarching Pedagogical Strategy

A variety of learning approaches were used in the class as part of an overarching pedagogical strategy designed around Entrepreneurship Education, shaping an Entrepreneurial Mindset

toward the Sustainable Development Goals (United Nations, 2022). These are described in the following section.

The first learning approach is the readings that students had to undertake. There were readings about entrepreneurship (Blundel, 2021), entrepreneurship mindset training (Larios Hernández, Walmsley and Lopez-Castro, 2022), journalling (Fritson, 2008; Bassot, 2020), growth mindset (Cuellar, 2019) and The EM (Kuratko, Fisher and Audretsch, 2021).

The second learning approach that was used in the class was that students had to undertake self-reflection based on the readings they had done about using journaling and self-reflection to develop their self-efficacy, and students were assessed on the use of self-reflection, which was done using five blogs. The students had to reflect on questions based on class material, lectures, tutorials, and a community volunteering project component.

An unplanned link of reflection that students had to undertake to the reading on reflection they conducted above was building on the nudging process proposed by Thaler and Sunstein (2008). This subsequently links to the proposal of pedagogical nudging by Neergaard *et al.* (Neergaard, Robinson and Jones, 2021). This link had not been thought out in advance of the class, but could be an avenue for future research on nudging that is outlined in Section 6.4. This encouraged thinking about the necessary transition to being entrepreneurs and adding value to society. Actively engaging students in this way delves into the uniqueness of individual student mindsets and aids their learning.

The third learning approach used for the class was that students had to volunteer on a community project of their choice for a set number of 15 hours. To choose their charity, they examined which ones were aligned with the SDGs (United Nations, 2022).

The fourth pedagogy was a self-reflection by the students on how the community project experience changed their thinking and their perceptions of the entrepreneurial mindset, and what actions occurred because of any development in their entrepreneurial thinking. This reflection was used as fifty per cent of their assessment grades for the class. This link between students and engagement with the world outside is an approach advocated by a large number of researchers, and this was highlighted in a systematic literature review (Pittaway and Cope, 2007).

The fifth pedagogy used was students doing online personal entrepreneurial mindset tests to determine what their values and mindset were, and for students to self-reflect on what their passion was. The pedagogies used in the Social Challenge class were all designed to shape an entrepreneurial mindset toward sustainable entrepreneurship competence development.

3.5.3 Baseline Survey at the Beginning and End of Class to Uncover Mindset

A survey was conducted at the beginning and end of the Social Challenge class (See Appendix 2: Mindset at the Start). As mentioned in Section 3.2.4, the purpose of this was to compare changes in the narrative and triangulate the data (Mawson, Casulli and Simmons, 2022). This was between students' mindsets at the beginning and end of a class. The variation between a student's mindset at the start and the end of the class could be attributed to the pedagogies being used in the Social Challenge class. However, it is not necessarily so in any given instance, as there may have been life circumstances outside of the class that contributed. The interviews a year later uncover the reasons for significant turning points in the journeys of the participants. As mentioned in Section 3.2.5, on research design, this ended up just being an opportunity to trial some of the potential interview questions and discover if they worked or if they needed some adjusting. The students volunteered to complete the survey, and the invitation to fill it in was posted to The Social Challenge class online page on the University's website page called My Place.

3.5.4 Interview Methods

The main data collection method was semi-structured interviews using Zoom. Zoom was chosen as a preference over meeting students in person. The main reason for using Zoom is that the interviewer asks for permission to record the interview. This recording is helpful to play the interviews back when analysing data to ensure that the researcher has not omitted anything in the translation. It also helps clear up if there were any misunderstandings, by maybe using it to go back to the interviewees for further clarification. Also, Zoom provides an initial transcript of the interview to help with data analysis. The use of interviews in qualitative research dominates journal articles (Lans, Blok and Wesselink, 2014; Jane Lu and Pivec, 2021). The reason interviews dominate journal articles is that the epistemological knowledge built up from an interpretivist paradigm is that people's lived experiences make up the different realities in the world. People have different experiences and, as a result, are constantly changing (Saunders, Philip and Adrian, 2019). Who better to tell their own story than the participants in the interview? 'The interactive, flexible but focused nature of

interviews still makes them one of the most trustworthy and effective sources of data' (Arsel, 2017, p. 939). The interviewer had pre-prepared questions which had been mapped to the gaps in the literature review. See Appendix 1: Full Interviews, for mapping of interview questions to the existing literature. Characteristic data on age, gender and nationality were also collected at the interview to uncover whether there were any similarities for any reason.

The data were analysed using themes emerging from the data by constantly going back to the five reflections the students wrote about their experience to understand the student journeys and what volunteering they had undertaken to help with developing an understanding. The interview one year after the students attended the class was included in the reflection as the final point of their journey. Extracting the meanings and values from the data this way is the reflexive approach referred to in Section 3.2.3. Reflection has been defined as the researcher's thinking about their experiences and questioning the way they have done things. Reflexivity, on the other hand, is 'being constantly aware of your effects on your research' (Saunders, Philip and Adrian, 2019, p. 13). This took a lot of time for the researcher to understand what thoughts, feelings, and behaviours were changing and the teaching and education enablers that were triggering any changes. This researcher was aware of problematic issues, for example, volunteer bias and the potential issues relating to a tutor interviewing their students. These areas are included as potential limitations in Section 6.4 surrounding my research. These problems during interviews did not really become an issue because the answers during the interviews did not show any differences between the students based on the tutors, as there were three different tutors. Also, the volunteer bias, which might have been the case, was triangulated by the reflections which all the students undertook, and there was nothing that suggested any reasoning for volunteer bias or incompleteness. This was corroborated by the characteristic data that was collected regarding age, gender and nationality. Ensuring rigour in eliminating bias in the data collection was not the only reason for collecting characteristic data; it was also to uncover if there were any similarities in the narrative because of the age, gender or nationality of participants. The result is that the data is grouped into themes, and the resulting themes are used for the transferability of the research so that it is not idiosyncratic. The social interactions and language that were taking place were important for the results to be used in the future in entrepreneurship education and for a wider audience. The researcher spent a lot of time trying to understand the student journeys and making sure she understood the importance of what was being said by the individual. The knowledge was derived from the data and not from theory.

Thematic analysis has been argued to be a research method in its own right' (Braun and Clarke, 2006, p. 78). What is clear from the thematic analysis is that it provided a rich insight into what might be quite complex data. Braun and Clarke advise that themes should be the 'outcome of data coding iterative theme development' (Braun and Clarke, 2021, p. 334). The researcher brought her subjectivity into this coding process by immersing herself in the data and the theme connections to identify how emotions, cognitions and behaviours work together and how emotions, cognitions and behaviours changed. The researcher did use emotions, cognitions and behaviours (Kuratko, Fisher and Audretsch, 2021) as a framing to understand the narrative for the journeys.

During an interview, answers can go off in unexpected directions, so that no a priori answers from previous research may be used in the coding. This approach to data analysis is inductive and not abductive. It is important to reflect after each interview before going on to the next. The reflection was about the success of the questions asked and whether the follow-up questions were asked or not. A rethink of the value of certain questions was done as to whether they should remain as part of the interview, as can be seen from the interviews in the Appendix titled Full Interviews, and how the questions changed after the interviews started.

The abductive approach was considered, but the opportunity to interview students from a range of backgrounds and even from different countries could produce a wide variety of answers, and exploration of complex data would be of greater value to discover the personal journey of the interviewees. The behaviour of entrepreneurs often defies logical behaviour in that only a few people take the risk of starting a business, for example, Alan Featherstone with Trees for Life (Scotland). Fewer still have the experience of the business failing the first time and then starting it again because they believe in the business, for example, Folly Wildlife Rescue faced collapse but bounced back. This takes more questioning to uncover this data and involves the researcher immersing themselves in the data to make sense of it. This analysis takes time, and statistical modelling does not provide this depth of analysis. This research specifically examines the personal value that the interviewee feels that the entrepreneurial teaching and learning brought to their journey, and how that changed their behaviour.

This is an inductive approach to the interviews: using the exploratory triad to plan some exploratory questions, the interview themes emerged with each interview. This inductive approach is not designed to test a theory or for a theory to evolve from a positivist

philosophical paradigm, but from an interpretivist paradigm, where anything can evolve from the data analysis.

A deductive approach was not considered because it assumes regression, or linear relationships, and any variations come from independent variables as opposed to the dependent variables, which are controlled. The deductive approach was not considered due to the complexity of the data that is likely to have been collected from the interviews. Inductive methods are 'particularly able to describe and explain' any 'messiness' in the data (Eisenhardt, Graebner and Sonenshein, 2016, p. 1116). It is assumed that because of the personal entrepreneurship journeys by the students, there is a degree of messiness and complexities to understanding, and sense-making is a skill that evolves as the researcher immerses in the data. The requirement for the number of interviews for qualitative data is usually less. This is because with qualitative data, it is not trying to reach a sampling percentage and/or to reach a percentage claim of confidence, but rather to discover rich data.

The interview protocols were then prepared. The three main components of the interview protocol were an introduction, a description of the research project and an explanation of how the interview was conducted (Arsel, 2017). To finalise these three components, it was worthwhile conducting a focus group, which identified if changes were needed before interviews started. This was done by enlisting a couple of PGR students at the Hunter Centre who were questioned to discover if there was any duplication of the questions in terms of wording.

3.5.5 Ethical Considerations

The research was conducted by adhering to the University's code of practice on investigations involving human participants. This is because the research involves humans who were undergraduate students at the university being interviewed, and so the rules in the code of practice must be complied with.

The researcher, as the chief investigator, needed to apply for ethical approval using a university application form for ethical approval to the Department's ethics committee. In this case, the Hunter Centre ethics application did not need to be made to the University's Research & Knowledge Exchange Committee, R.K.E.C., because no sensitive information was collected. An application to the department ethics committee was made because the group of participants were under Section B iv, live in or are connected to an institutional environment, and this was Strathclyde University.

Participants gave informed consent during the research investigation to participate, and they were assured that they did not have to answer all the questions. The standard university consent form and participant information sheet templates were employed. This ensures that the research is compliant with the University's ethical code of practice and current legislation.

The data obtained is stored on an online database that is password-protected, and any personal information is kept confidential. All information provided is held anonymously only for the investigation, and no unauthorised access is possible. This follows the Data Protection legislation and ethics codes.

3.6 Data Analysis Methods

This section outlines the data analysis methods and tools used in this research for analysis. This thesis followed a systematic approach to analysing qualitative data to explore fundamental links between students. This is to identify how changes in emotions and cognitions work together and to identify how the behaviour changes in response to this and how the intervention triggers this change. In summary, analysis involves searching for patterns in the data, much akin to a patchwork quilt. A patchwork quilt is where some patterns are seen, but some may arise from the researcher's immersion in the data.

The methodological approach is inductive. Most of the earlier research done in the entrepreneurship education field has been mainly deductive, using a positivist philosophy in the functionalist paradigm (Burrell and Morgan, 2016). There have been requests for more variety in the approaches used (Tunstall *et al.*, 2009), and as a result, there has been an increase in the inductive approach to answering research questions. These research questions look at the context and try to uncover what is going on in more depth, rather than what is superficially seen.

Choosing an approach is more than just data to be collected; it includes achieving the answers required for the research questions. As the research questions are more about 'how something is happening' rather than 'what is happening', then inductive research was the more appropriate approach (Saunders, Philip and Adrian, 2019, p. 157). This strategy links pedagogy and outcomes, and how behaviour changes can be uncovered. This research was designed to find out whether emotions or cognitions, or both, can change entrepreneurial

behaviour. There is little research to develop any hypothesis testing, so the data was generated by the reflections and interviews, and themes were analysed from the data.

Coding of the data occurred when themes were obvious. As the data was generating the themes inductively, coding was used to mind map and generate 'new conceptual ideas' (Eriksson and Kovalainen, 2016, p. 120). By mapping the information, the complexity of the data was simplified to identify themes. The layout provides information about the emerging characteristics of the map (Eden, Ackermann and Cropper, 1992, p. 312). The mapping was helpful in theme identification. The research examines individual responses to interview questions, so each map or each participant's journey is different and is personal to each participant. The maps are a pictorial representation of beliefs derived from lived experiences.

The main data collection method was semi-structured interviews. The interviews started with 'Can you tell me about what experiences have changed your behaviour?' The rest of the questions then followed from the dialogue after the initial question. Initially, there was a list of questions, but these were designed to get a response, where discussion could be continued and elaborated on rather than just moving onto the following question (Eriksson and Kovalainen, 2016).

The data was analysed using themes or patterns that emerged from the data by constantly going back to the interview and extracting the meanings in this reflexive approach. The result was that the data were grouped into themes, and the resulting themes were used for the transferability of the research so that it was not idiosyncratic. This is important for the results to be used in the future in EE and a wider audience.

The coding process was a necessary step in making the data into a meaningful narrative using segmentation of all the data, akin to slicing up the heterogeneous data into homogenous segments. The researcher immersing themselves in the data was critical to the researcher's understanding of any nuances that occurred in the wording used by the participants. Further clarification was required where there were answers that had a different meaning depending on the interpretation by the researcher. Critical reflection was used by the researcher, and this was imperative to ensure that bias was reduced as much as possible. However, after consideration, the researcher decided it was acceptable to be influenced by the research questions being investigated and what the relevant literature had to say (Belk, Fischer and Kozinets, 2013).

The semi-structured interviews meant that answers could go off in unexpected directions, so that no a priori answers from previous research were used in the coding. Interview 8 went off in all directions due to the passion of that student about his religious beliefs, and an interview which would normally take about an hour took two hours, with the student wanting to come back and talk more about it. It was important to reflect after each interview before going on to the next. The reflection was about the success of the questions asked and whether a follow-up question was asked or not. A rethink of the value of certain questions was done as to whether they remained as part of the interview. The three interviews in Appendix: Full Interviews show Interviews one, ten and thirty and show how some questions were added in response to the answers given. One question was updated in that it was discovered to be a leading question.

This was an inductive approach to the interviews and involved using the exploratory triad to plan some exploratory questions. The interview themes emerged with each interview. This inductive approach is not designed to test a theory or for a theory to evolve from a positivist philosophical paradigm, but from an interpretivist paradigm. Anything evolves from the data analysis in this paradigm. Making sense of the data was an important step and critical to the narrative of the research (Weick, 2009) and involved the researcher going back over the narrative of the interviews. Part of this research proposed to interview students to check what goals they had set for themselves, and if they had devised different actions or if the tools they had used in the class had been useful for developing entrepreneurial skills and what SDGs they felt they had targeted or if different ones had surfaced.

3.6.1 Coding

The codes were used to illustrate meaningful homogeneous chunks of data. They were used to signpost patterns through individual words, sentences and paragraphs, and multiple codes may be assigned to the same text. What the researcher was looking for as a focus for the iterative process was where strong emotion and thinking processes were identified to link to the research questions (Belk, Fischer and Kozinets, 2013), and this became clearer through each iteration. The key to this inductive method of coding is that the data have no categories that were pre-assigned before the start of the analysis. Although the researcher did use existing theory regarding cognition and emotion described in the literature review in Section 3.2 to help prepare the interview questions and map to analysis. The use of the literature review to map the interview questions can be seen in Appendix 1 'Full Interviews Mapping

to Literature Review’, which aids the analysis as to what evolves from the questions, see Section 3.6. The researcher, when analysing, had their own view of what cognitions and emotions were being displayed from the theory in Section 3.2. The themes themselves were generated from the narratives of the participants and were not tested in the analysis, so this was mostly inductive with a focus on the narratives themselves.

3.6.2 Interview questions and literature review

Before the interviews took place, the interview questions were each linked to the literature review to give a reason for each question being asked. This was to ensure that the gap identified in Section 1.5 was fully explored by asking pertinent questions that do not veer off in disconnected directions. See Appendix 1: Full Interviews. The first interview, the middle and the last interview are in the Appendix: Full Interviews to demonstrate the changes made to the questions as the interviews took place and rewording and extra questions were added over the course of the interviews. All the changes took place at the beginning of the interviews, but the researcher reflected on the answers to the questions asked. By mapping interview questions to current literature, new and interesting research can be uncovered because the questions were more focused and probing; ‘probing questions are used to explore responses that are of significance’ (Saunders, Philip and Adrian, 2019, p. 459). This advances current theories on EE and EM toward sustainable entrepreneurship competence development. There have been criticisms of entrepreneurship research having a narrow focus and not being interesting, so this research contributes to interesting discussions (Landstrom *et al.*, 2016). A total of thirty interviews were conducted, as that was the total number of participants who agreed to participate. Three emails were sent to the Z1223 Social Challenge class asking for participants. See Table 3 of the interview schedules on page 82.

Table 3: Interview Schedule

Interview Schedule																																								
Action	19/9/23	19/9/23	21/9/23	25/9/23	26/9/23	27/9/23	28/9/23	29/9/23	3/10/23	4/10/23	5/10/23	6/10/23	7/10/23	10/10/23	11/10/23	12/10/23	13/10/23	15/10/23	16/10/23	25/10/23	26/10/23	27/10/23	1/11/23	2/11/23	3/11/23	6/11/23	7/11/23	8/11/23	10/11/23	11/11/23	14/11/23	16/11/23	18/11/23	22/11/23	23/11/23	6/12/23	12/12/23	Total		
Email Invite Sent for Zoom interview to students in Social Challenge Class	19							1	79	32	13												1																	145
Follow up emails sent to those who didn't respond				15															3	98																				116
Third email reminder sent																						11				15	78	8												112
Interviews conducted/arranged with students			1			1	1	1		1	2	3	1	4	3	1	1	1	2			1		1	1				1	1	1			1						30
Email Invite Sent for Zoom interview to class coordinator and tutors in the Social Challenge Class																																3								3
Interviews conducted/arranged with Class Coordinator and Tutors																																	3		1		1	1	3	
Email Invite Sent for Zoom interview to Undergraduate Program Director																																	1							1
Interview with 2 Entrepreneurial Mindset Lecturers																																					2			2
Interview conducted/arranged with Undergraduate Program Director																																				1				1
Total People Interviewed																																								36

The students then volunteered to take part by emailing back. 30 students out of a total of 144 students agreed to take part. Also, to get the essence of what the class was about, the other two tutors in the class and the class coordinator were interviewed. Also, the undergraduate programme director was interviewed, plus two entrepreneurial mindset lecturers were interviewed together. The answers gave background and insight as to why the class included what it did.

3.6.3 Narrative Analysis

The importance of what the students were saying over the time of the research became evident in discovering their journey and whether anything had changed for them or not. It was because of this that narrative analysis was chosen as the data analysis method used to answer the research questions. Narrative analysis recognises that not all contexts will elicit changes, and it is the uncovering of what does not cause change and what does that will constitute the richness and interesting nuances of the data analysis. These change mechanisms have been termed ‘dynamic’ if they cause the change and ‘static’ if they do not (Franzosi, 1998, p. 2). While the events in the student’s weekly blog and the subsequent summation in the interview had a timeline by the very nature of it being chronological, the

nuance of narrative analysis is not the important factor; it is how an EM and behaviour change took place that was the important part of this research. Recent research has recommended that narrative analysis be used in EE (Kickul *et al.*, 2025) to uncover how EE can integrate sustainability. The learning journeys of the students can be analysed to find out how changes unfolded (Klapper and Fayolle, 2023).

3.6.4 Data Analysis Process

The following step-by-step process follows the Gioia methodology as mentioned in Section 4.1 (Gioia, 2020). The following section describes how the decisions were made about 1st order concepts and how the subsequent 2nd order themes were decided. The following section also describes how the decisions were made to finalise headings which formed the aggregate dimensions.

The analysis follows a step-by-step process as mentioned in Section 4.1, which starts with 1st order concepts that have originated from the narrative of the interviews and reflections by the students from the Social Challenge class. The second stage discovers any underlying themes originating from the 1st order concepts and finally uncovers how some of these themes are grouped into dimensions that emerge from the data.

Getting from the raw data from the reflections and interviews to the aggregate dimensions involves mapping the narrative from the interviews and reflections to the 1st order concepts. From these 1st order concepts, 2nd order themes emerge. These were then mapped to the aggregate dimensions by using the tool of a 3-column table. This emergent table is called a data structure by Gioia *et al.*, as it gives evidence of where the dimensions evolved from. The dimensions can be traced back to the narrative from the reflections and the interviews. This map shows that they are not conjured out of nowhere and lead to ‘credible interpretations of the data’ (Gioia, Corley and Hamilton, 2013, p. 15).

As per Gioia, this stage involves iterations backwards and forwards between the data and the first concepts to uncover more 1st order concepts. There were many iterations and, according to Gioia, it seemed like a daunting task. To alleviate the overwhelming feeling of what seemed like an impossible task, a decision was taken to use colour coding to try to distinguish between phrases as to the meanings behind the narrative used by the students. Coding was then attached to the colours to aid in distinguishing between the narratives and subsequently the following grouping in the second order.

Through immersion in the data, 1st order concept codes were assigned to sentences and words, and where indicators of strong emotion were used. These strong emotions were employed in texts and phrases; ‘to my surprise’ was an example of such an indicator (Belk, Fischer and Kozinets, 2013). The emotion wheel was used to understand when emotions were used (Plutchik, 1982). This led to more of an understanding of what the students were thinking and feeling, and ultimately what they meant. Still, the amount of information from 30 students with five reflections plus an interview was daunting until reading that the interesting information can be pulled out and the rest discarded. This approach assisted in making the volume of data more manageable (Cottrell, 2014).

The following sections of the chapter go through the data analysis process for all thirty students, starting at Reflection 1 through to Reflection 5 and then the Interview a year later, and they show how the data structure in Figure 5 was constructed. The point where each reflection came to no new 1st order concepts, and hence the list of ideas had become exhausted, was deemed the saturation point. A decision was then made to move to the next reflection as suggested by various seasoned researchers (Saunders, Philip and Adrian, 2019).

By comparing the data structure depicted by Gioia (Gioia, Corley and Hamilton, 2013) and going through the three steps, the concepts, themes and dimensions started to evolve. This involved taking what was labelled the ‘usable information’ out of the reflection, which was recommended (Cottrell, 2014, p. 172), and this worked as the original data was too noisy and busy to be able to decipher/envisage any common themes from the narrative.

To determine the 1st order concepts and similarities or differences in the reflections, the students started to evolve as to what they meant after some iterations. In the Gioia methodology, the 1st order concepts are based on the narrative of the students, and so the words the students used exactly are included so that the reason behind 2nd order themes categorisation can be easily identified. Appendix 4, includes a selection of some of the narratives the students wrote. Some similarities that occurred were that some of the students started to think about entrepreneurship in a different way, and that was to do something good for society in terms of the value that they add. They identified what triggered these new thought processes, and it was sometimes a reading that they had to do or a guest presenter in the lecture. At the beginning of the iteration, students mentioned perseverance, and it took a few revisits to identify that they did not mean this to be an outworking of the mindset, but that they meant it was part of the entrepreneurial mindset that they had identified as being

important. When they had changed their mindset or behaviour or intention to act was the initiator for the 2nd order themes, along with what changes were evidenced by this pivot or sidestep in behaviour.

Some of the phrases used by students were difficult to categorise because some of them brokered two or three 2nd order themes. For example, one student wrote, and this is included in Table 4, page 92, 'I found this overlap interesting as it highlighted the importance of reflection, which I had not previously given any thought to'. It was the mention that they thought about this that it was categorised under making sense of thoughts and emotions, as they had been provoked by the class reading. It was because it was in tandem with personal reading that was the real trigger here for changes in thoughts. The class reading reaffirmed their thoughts as to the benefits of self-reflection. It was not the reflection itself that was the trigger; it was the personal reading in tandem with the class reading. Also, this answer by the student seemed to be an acceptance of how important reflection is, so this is defined as an emotion under Plutchik's emotion wheel (Plutchik, 1982). It is understanding the meaning of the comments that are made that is the tricky part of qualitative research. The methodological analysis and the existing literature were consulted at this point, addressing what was being uncovered here. This helped understand if any new concepts evolved.

Since the researcher was interpreting the data by themselves, this could have produced researcher bias, but all the data being colour coded as to its origins and traceable is evidence of the rigour which produced the quality required in the qualitative data. The data structure sought to ensure that the process was thorough and included rigour (Gioia, 2020).

NVivo was used to aid the organisation of the different codes and to try to code them as to which research question they belonged to, to determine what the story was that was being told from each of the cases. It became clearer after much deliberation that research question one is about what the students in the class were reflecting on and the thoughts and feelings they had about what they were deliberating on. What was evident was the interplay between thoughts and feelings. The feelings they described were coded by using Plutchik's emotion wheel (Plutchik, 1982) to identify what emotions they felt, as distinct from what they thought. The participants made this distinction between thoughts and emotions obvious by saying that they thought about various topics and used the words to describe emotions which were aligned to Plutchik's emotion wheel.

3.7 Limitations of Methodology and Avenues for Future Research

Although a case study research approach is the choice in this thesis to preserve the richness and aims of understanding data, piecing together the themes from answers from each of the student case studies presents some shortcomings. The shortcomings are described in this section.

It was recognised in the literature review in Section 2.3.2. that it takes time between thinking and emotion to become aware of how behaviour changes. In recognition of this, in Section 3.2.4 in the research approach, it might have been better to wait longer to interview students after the class. The pedagogies used to trigger a change in behaviour resulting from the interventions may take time to foster in an EM, and then it may take time for students to become self-aware of the changes. This was not possible due to the time constraints of the PhD. Another similar limitation was that interviews could have been done in June, six months after the end of the social challenge class. A decision was made not to interview students then because students had exams, and they would have an interview when they were undergoing a potentially stressful time. This was the reason for the September interview period. This gave a timeline for when the intervention in terms of education caused a different turn in the mindset of the student. As mentioned in Section 3.5, August is categorised as a holiday for the students. It was decided it was not appropriate to contact them during the holidays, given that they needed time to relax after term time.

Secondly, case study research requires the researcher to be aware of their personal biases and be constantly critical when analysing the data and its meanings; a reflexive critique will be required (Yin, 2018; Saunders, Philip and Adrian, 2019). This reflexive requirement sets case study research apart from other research methods, and the result is an effective transformational educational design that lends itself to new entrepreneurship theories (Landstrom *et al.*, 2016).

The reason for the selection of Strathclyde University students only is that comparing the students between universities would be difficult because finding a similar class in another university with similar pedagogies using a case study research strategy would be very difficult, so the unit of analysis is the second-year class of Strathclyde students only, who more specifically attended the Social Challenge class.

The time taken for any change to appear is not part of this research and may be important for designing a class with this timeframe used in a future class. How long it takes for a change to occur could be a possible avenue for future research, which is outlined in Section 6.4.

Another limitation was that the participants in the research volunteered and were complimentary about the various aspects of the teaching and learning that took place. In the findings, there was not really anything negative about their learning journeys, although some had a bit of reflection on their previous experiences to process. This may be because only those who enjoyed it volunteered for the interview. See Section 6.4 for limitations of the methodology. However, the effect of this limitation was reduced by the triangular approach to this research, which included five weekly reflections, and these were assessments that had to be done for all the students of the Social Challenge Class. The positive responses to what was being taught were experienced by all the students in the examination of all the reflections. This was the benefit of triangulating data to ensure rigour in qualitative research, as was mentioned in Section 3.2.

The students who volunteered for the interview were not just those who had been tutored by the researcher, and there was a mix of students who had been tutored by the other two tutors, too. The comments made during the interviews were similar in that they felt the discussions were student-led. The researcher could triangulate this information based on the five weekly student reflections of the ones who did not volunteer for the interview.

3.8 Summary and Implications

To summarise, this chapter has taken the reader from the philosophical assumptions of the research to the intricate details of data collection and analysis. It had been argued that the variety of contexts that students found themselves in called for an interpretivist approach. There had been a lack of understanding about how entrepreneurship education leads to a change in entrepreneurial mindset and consequently behaviour, and how it can be nudged. This lack of knowledge called for semi-structured interviews, which identified how the students' mindsets changed, how that was done, and how behaviour changed. Other issues regarding the integrity of the collection of the data were tackled through keeping evidence of data collection and analysis. The methodological choice recognised that limitations were unavoidable, but that the rigour of the analysis was maintained. This was done by the preparation of a data structure, which evolved as a direct result of immersion in the data and the uniqueness of the case study approach used.

CHAPTER 4: DATA ANALYSIS

4.1 Introduction

This chapter analyses data obtained through the procedure described in the previous chapter in light of the Gioia methodology (Gioia, Corley and Hamilton, 2013). Gioia's analysis follows a step-by-step process. Step 1 starts with what he calls 1st order concepts. The second step, which he calls 2nd order Themes, is to discover if there are any underlying themes originating from the 1st order concepts. Finally, the third and final step is to identify what was referred to as aggregate dimensions. These are from the Social Challenge class, which is the unit of measurement, with each of the students in the class as a case study. Gioia himself, in later research, reflected on the suitability of such a methodology for its application to case studies (Gioia, 2020) to ensure analytical rigour.

The premise behind this methodology is that each class participant in their learning journey can articulate their thinking and emotions. They then articulate how these have been triggered by the class and whether they have any intention to action, or how they have changed their personal outcomes or goals as a result of the class. Each of the research questions is analysed in turn, starting with how cognition and emotion shape mindset, followed by how teaching and education shape mindset and finishing with how an Entrepreneurial Mindset (EM) can be shaped toward Entrepreneurship Competence Development for sustainability.

4.2 Analysis Leading to Entrepreneurship Competence Development for Sustainability

Cognitions and Emotions were identified from the data. It was evident that students experienced a lot of introspection, and the issue was trying to uncover the nuances of that process. That is the reason for the cross-case analysis next: each participant is an individual case study, with potential trigger points in their journeys.

4.2.1 Cross Case Analysis

To uncover whether there was a timeline for each student as to when teaching and education shaped their entrepreneurial mindset at all, and if there were any critical incidents in terms of their narrative in their learning journey, a thorough analysis of the blogs and their interviews was required. A summary of each of the participants was prepared to find out if there were key times when there had been any nudging or shaping of their entrepreneurial mindsets. The full table of participant journeys and the pivotal points they considered in their journeys is included there.

Appendix 4, titled Summaries of participant journeys summarises the pivotal moments and key insights of the 30 participants regarding their entrepreneurial mindset (EM) and sustainability awareness through a class experience. Each participant shared their reflections on learning, personal growth, and evolving values, often in the context of social and environmental responsibility. Each number represents a different participant. Characteristic data was collected during the interviews to uncover if there were similarities between participants because of age, gender or nationality. There was no evidence of similarities between participants because of common characteristics.

These summaries reflect the participants' key learning moments, the impact of the class on their perspectives, and the actions they have taken as a result. The participants from diverse backgrounds reflect on how the class changed their views on entrepreneurship, fostering a mindset that values social, environmental, and cultural impact alongside traditional business goals. Many became more engaged in volunteering, more aware of sustainability, and motivated to make a difference in their communities. The above analysis of each case shows the journeys that the 30 participants went through, and there seems to be a pattern as to when they underwent these journeys; therefore, following this, a cross-case analysis was undertaken.

Appendix 5, titled cross-case analysis, was prepared to capture where the similarities lie in individual learning journeys. Where the participant has not mentioned anything about the key triggers in their journey, then they are left blank. This is to uncover whether there were similarities between participants in the knowledge acquired, tests undertaken or discussions and whether this had challenged their beliefs and assumptions or impacted them in a way that caused a change. Appendix 5, titled cross-case analysis, was prepared to pick up any age, gender or nationality differences between participants, which may cause different changes. Appendix 5, titled cross-case analysis, makes the comparison between participants easier to do. The reason for interview questions to include characteristic data was so that a comparison of characteristic data could be made, for example, age, gender and nationality. The reason for this was to uncover whether any of these characteristics affected answers. There did not appear to be any similar characteristics in responses based on age, gender or nationality.

4.2.2 1st Order Concepts

The 1st order concepts were grouped into distinct groups for each research question. The sentiments of the students were aggregated into distinct groups based on the narrative, and a few comments from participants were selected as representative of this narrative.

The first research question is: How Do Cognition and Emotion Shape an Entrepreneurial Mindset (RQ1)? Six different groups resulted from this, and they are in Table 4 on page 92 and they are:

1. Enjoyment and surprise
2. The way discussions were facilitated
3. Awareness of personal qualities
4. Challenging their personal narrative
5. Awareness of an EM
6. Surprise at volunteering

Group 1: Enjoyment and surprise

The first group, group 1, is about what the individuals seemed to enjoy and what surprised them. The discussions of the groups were referred to by the participants as having feelings of enjoyment and surprise. Joy and surprise are indicators of an emotional feeling, as purported by Plutchik's widely cited Emotion Wheel (Plutchik, 1982), and the surprise is demonstrative of contravening their cognitive expectations. The first grouping is about the openness of the discussions themselves.

Group 2: The way discussions were facilitated

Group 2 is the way the discussions were facilitated in the classroom, and how Participant 26 put it when they felt they were 'scared' because they had not found a volunteering position, they said that 'fortunately the tutor reassured me, saying there was still time to find it out in class'. This quote shows the supportive nature of the class and how the participants felt at ease as a result.

Group 3: Awareness of personal qualities

Group 3 is the students examining their personal qualities and feeling surprised at their findings. Participant 21 said, 'Looking at what's going well makes me feel more capable of making change'. They had previously focused on negative narratives about themselves instead of recognising the positive narrative.

Group 4: Challenging their personal narrative

The link in group 4 is the students deciding to challenge their present narrative, and Participant 20 said that they 'used to think that way as it was implemented in my head that failing was not an option'. They were challenging their habit of blaming themselves for not doing something right.

Group 5: Awareness of an EM

In Group 5, the students seemed to be individually thinking of an EM and how it can be used for social good instead of just for making money. Participant 1 said, 'It opened my mind to the varying concept of an EM and how it can be used for social good.' This was a real surprise to 16 students in total, who realised this and recognised it was contrary to how they had always thought. They had always thought it was about making money before partaking in the class. Participant 16 said, 'It was not anything like I had imagined it to be'. The concept of an EM came as a real surprise to this group. See Table 4, page 95, below, of 1st order concepts.

Group 6: Surprise at volunteering

Group 6 was linked to the volunteering they had to do and the surprise and insight they got when choosing where they wanted to volunteer. Participant 13 said from their experience volunteering at a soup kitchen that, 'they could see how people had suffered' and that their 'eyes have been opened to it now after doing the class'. Surprise and insight were evident in the statements from students about what they had been part of. Student statements have been used to prepare Table 4, page 92.

Table 4: 1st Order Concepts for How Do Cognition, Emotion and Behaviour Shape an Entrepreneurial Mindset (RQ1)?

1st Order Concepts
Group 1: Enjoyment and surprise • It helped people have a healthy discussion about everything and anything (Participant 1). • I'm not a lover of working in groups, but that definitely kind of changed my outlook on that. It gave you a positive insight (Participant 11). • Interesting to see what different people what they see is the more important social issue (Participant 20).
Group 2: The way the discussions were facilitated • I have been uplifted by the way every individual opinion or point has not been criticised (Participant 24). • This class encouraged open discussion. I felt people were more receptive to it because of the tasks we were doing, because it wasn't a right or wrong answer (Participant 9) • Fortunately, the tutor reassured me, saying that we still have time to find it out in class (Participant 26)
Group 3: Awareness of personal qualities • I have not engaged with any art or any of my hobbies due to being lazy and procrastinating, and I have noticed I no longer get the opportunities (Participant 19). • Looking at what's going well makes me feel more capable of making a change (Participant 21). • I found the research presented on coping with stress through exercise fascinating (Participant 3).
Group 4: Challenging their personal narrative • Going forward, I think I would use this method again, as I found it helped me get all my thoughts out, which then allowed me to condense and order them (Participant 10). • I used to think that way, as it was implemented in my head that failing is not an option (Participant 20). • Struggling with discipline at times. However, this is also a positive, as I am now aware of it and can work on improving these underlying issues (Participant 16).
Group 5: Awareness of EM

- This opened my mind to the varying concepts of an EM and how it can be used for social good (Participant 1).
- Helped me debunk the myth that an entrepreneur's end goal is solely for money; it taught me that an entrepreneur does much more for their local community to create value (Participant 11).
- Difficult for me to fully understand the whole concept of an EM since my upbringing from my family, as well as teaching at school, was in total contrast to what I have learned over the past few weeks (Participant 16).

Group 6: Surprise at volunteering

- My eyes have been opened to it now after doing the class. I volunteered at a soup kitchen, and I can see how people have suffered (Participant 13).
- Helping the homeless, and it was nice to do that (Participant 11).
- It is with this conscience that I have volunteered to find a volunteering opportunity in a similar organisation which raises concerns over period poverty in developing countries like India (Participant 18).

The second research question is: How Does Teaching and Education Shape an Entrepreneurial Mindset (RQ2)? Eight different groups were identified by aggregating the answers given by students, and a few comments were selected as representative of the narrative, and these are described in detail in Table 5, page 95.

1. New to students
2. What reflection could do
3. New knowledge
4. How to use an EM
5. Awareness of creativity
6. Awareness of values
7. Positives of working together
8. Personal awareness from working together

Group 1: New to students

For Group 1, the link was the fact that this was new to the students. Participant 9 said, 'It has opened my eyes to see I can add significant value for others in the community with just my time and support'. This was a new realisation of what they could do to add value even as an individual.

Group 2: What reflection can do

Group 2 was defined by all the students trying to reflect and find out what reflection could do for them, which constituted a turning point in their learning journey. Participant 1 stated that self-reflection was a ‘great way to reflect on every decision that someone may make and how this could be perceived, allowing for a different perspective’.

Group 3: New knowledge

Group 3 featured because of the students’ comments regarding the theory they had learnt about causation and effectuation, and how it was new to them. They were then grouped because the students were talking about applying it to themselves rather than just looking at it as purely theoretical.

Group 4: How to use an EM

Group 4 included the students who completed an EM test and then spoke about their results and how they could use their EM. Some mentioned trying to overcome areas where they had a low score on the test: for example, participant 3 stated, ‘In response to this [the test], I am going to set goals for myself on changing my risk-averse mindset’.

Group 5: Awareness of creativity

Group 5 all completed a creativity test, and by doing this, linked it with creative tasks that were done in the class. Some of them then discovered they were creative thinkers, despite not originally realising they were creative at all. An example was given of imagining a new way to repurpose an item. Participant 13 said ‘Stuck with me is the differentiation between everyday creative ideas and ideas that are giant leaps in history’. This comment supports the interpretivist framing of this research regarding it not being radical but incremental innovation, see Section 3.2.2, page 64.

Group 6: Awareness of values

Group 6 highlighted the first test from the class, which asked questions about their values. Some students found that thinking about themselves was highly unusual. Participant 24 said, ‘The test opened me up as a person and put me up with levels of thinking I usually do not indulge in’.

Group 7: Positives of working together

Groups 7 and 8 in the table are about working together and its benefits. Splitting the answers into two separate groups threw up a difference between them when going through the narratives of the blogs and interviews a year later. Group 7 centred on the positives that the

students took from working together. Participant 28 said, ‘I have learned from other people talking about sustainability, and I see how it is impactful’.

Group 8: Personal awareness of working together

Group 8 involved a personal awareness of what they learned from working with others.

Participant 12 said, ‘Working in a group, I think it makes you feel like you’re not alone’.

Table 5 depicts the above in the following table.

Table 5: 1st Order Concepts for How Does Teaching and Education Shape an Entrepreneurial Mindset (RQ2)?

1st Order Concepts
Group 1: New to students • The value of an idea lies in taking action and developing it into something which other people can utilise. The value you create could be social or cultural (Participant 10). • It has opened my eyes; I can add significant value to others in the community with just my time and support (Participant 9). • With the confidence I gained, I can help my community and make an actual impact (Participant 8).
Group 2: What reflection could do • Great way to reflect on every decision that someone may make and how this could be perceived, allowing for a different perspective (Participant 1). • Allocate the space and time needed to have that self-reflection (Participant 17). • Focuses on experiences so we have an action plan for moving forward (Participant 2).
Group 3: New knowledge • If I am using effectual thinking, I will be more passionate about starting a project (Participant 11). • The process is broken down and allows us to see when the process is appropriate for different scenarios (Participant 23). • Effectuation and causation, discussed in the tutorial, prompted me to further read about the topic (Participant 24).
Group 4: How to use an EM • I am actively doing something I enjoy whilst helping a cause I am passionate about (Participant 11).

- I most importantly learned that applying values impacts our overall goals and outlook (Participant 2).
- In response to this, I am going to set goals for myself to change my risk-averse mindset (Participant 3).

Group 5: Awareness of creativity

- I found that I am relatively creative during the group activity, where I found I could come up with various ways to repurpose given items (Participant 10).
- Stuck with me is the differentiation between everyday creative ideas and ideas that are giant leaps in history (Participant 13).
- Difficult doing the questions as I have to think about myself when answering them (Participant 4).

Group 6: Awareness of values

- I was surprised to find out that most of my motives are derived from the common good (Participant 14).
- I can proudly say that I know the value of myself better (Participant 15).
- Opened me up as a person and put up with levels of thinking I usually don't indulge in (Participant 24).

Group 7: Positives of working together

- I have learned from other people talking about sustainability, and I see how it is impactful (Participant 28).
- When the wider group's ideas are presented, it becomes apparent that possibilities that make perfect sense when you hear them from the wider network don't come to you (Participant 1).
- A multitude of partnerships with those who share the same passion will increase your chance of success (Participant 13).

Group 8: Personal awareness from working together

- It makes you feel like you are not alone (Participant 8).
- It probably taught me a lot about how to get along with people and how to work effectively (Participant 30).
- How discussion and open conversation with others help an idea evolve (Participant 1).

The third research question is: How Can an Entrepreneurial Mindset be Shaped Toward Entrepreneurship Competence Development for Sustainability (RQ3)? Eight groups were identified, and these are included in detail in Table 6, page 98 and the groups are:

1. Changes in buying patterns
2. New focus on sustainability
3. Changed actions toward sustainability
4. Possibilities of an EM
5. Changes to visions for sustainability
6. Shift in Mindset
7. New appreciation of other people's opinions
8. Learning experiences gained from working together

Group 1: Changes in buying patterns

Group 1 was straightforward because it involved the participants having changed what, and where, they shopped, with a move away from fast fashion to purchasing clothing second-hand or from sustainable brands. Participant 12 stated, 'I now no longer use Primark or fast fashion, I used Vinted,' and Participant 18 stated that she goes 'for brands which focus on sustainability'. Other participants worked to ensure that they were buying a product that would last longer, rather than needing constant replacements.

Group 2: New focus on sustainability

Group 2 participants all assessed what they were doing with a focus on sustainability. Participant 7 said the class 'opened doors for me for some topics that I don't even know about on sustainability'. The statements in Group 2 involved some assessment of actions they were doing or going to do, and that is why they were grouped.

Group 3: Changed actions toward sustainability

Group 3 all sought to change their actions for sustainability. Participant 18 had come up with a solution to prevent climate change, and she said, 'I got a solution to one of the biggest UN Sustainable Development Goals, Goal 13, Climate change, and therefore I included this in my business idea and wrote to Strathclyde Inspire'. All the statements from the participants in this group involved some changed action.

Group 4: Possibilities of an EM

Group 4 statements all mentioned the EM and possibilities that they had not considered before. Participant 1 said learning about the EM and what it meant ‘Opened my mind to the varying concept of an entrepreneurial mindset and how it can be used for social good and not just business ventures’.

Group 5: Changes to visions for sustainability

Group 5 statements all highlighted sustainability issues, including trying to solve some of the issues. Participant 22 was talking about sustainable economic growth and said, ‘Just if we were ever to work in a field like that, I would always want to have sustainable products’. The statements by the participants involved a change in thinking about how to tackle sustainability issues.

Group 6: Shift in Mindset

Group 6 statements all involved a change in what they thought regarding sustainability. Participant 21 said outright, ‘I’ve had a big shift in my mindset toward sustainability’. They recognised their own mindset shift.

Group 7: New appreciation of other people’s opinions

Group 7 statements are all centred around how they now value what people say and the opinions they hold. Participant 1 said, ‘It was nice the way nobody had the wrong opinion, cause every opinion could lead to change’.

Group 8: Learning experiences gained from working together

Group 8 statements focused on working together and the learning experiences gained from it. Participant 13 said after working for a renewable energy company in the summer after the class, ‘that talking and communicating and going between all that in terms of obviously their whole thing as being sustainable,’ was a hundred per cent important. The value of discussion was a new concept for her, a sentiment echoed by other participants in the group.

Table 6: 1st Order Concepts for: How Can an Entrepreneurial Mindset Be Shaped Toward Entrepreneurship Competence Development for Sustainability (RQ3)?

1st Order Concepts
Group 1: Changes in buying patterns • I no longer use Primark or fast fashion; I use Vinted or second-hand sites (Participant 12).

• I was a very impulsive shopper, but now I would go for brands which focus on sustainability (Participant 18). • Make sure that the qualities are higher so that it lasts longer, so there is less consumption (Participant 29).
Group 2: New focus on sustainability • They opened doors for me to some topics that I did not even know existed on sustainability (Participant 7). • I am now more aware of the opportunities available to me and where I would like to apply to volunteer (Participant 1). • So, I would say poverty has become more important because I kept volunteering, and I kept looking at how big an issue it is (Participant 8).
Group 3: Changed actions toward sustainability • When I am thinking of a business idea, I am incorporating more sustainable practices into it (Participant 10). • I got a solution to climate change, and I included it as my business idea and wrote to Strathclyde Inspire (Participant 18). • I picked the charity pathway, and now I am doing a placement with Sustainable Strathclyde (Participant 21).
Group 4: Possibilities of an EM • This opened my mind to the varying concepts of an EM and how it can be used for social good and not just business ventures (Participant 1). • Having an EM is something everyone can achieve (Participant 17). • Not just economic value, an entrepreneur can give to society, they can also give social and cultural value (Participant 2).
Group 5: Changes to visions for sustainability • If I were ever to work in a field like that, I would always want to have sustainable products (Participant 22). • I think a lot about pedestrianising cities and stuff and better city design (Participant 21). • You cannot achieve the UNSDG goal without partnership, without collaborations with other people, businesses or even the government (Participant 28).
Group 6: Shift in Mindset

• One thing I found I felt it was good for the soul to volunteer (Participant 16). • I think consumers should be more responsible and accountable for their actions if they are consuming unnecessarily (Participant 19). • I have had a big shift in my mindset toward sustainability (Participant 21).
Group 7: New appreciation of other people's opinions • It was nice that nobody had the wrong opinion because every opinion could lead to change (Participant 1). • Everyone could give their opinions and ideas, which meant that I was taking all that, and I was learning what other people thought (Participant 6). • I was more compassionate toward other people's opinions (Participant 5).
Group 8: Learning experiences gained from working together • Bridging the gap between inequality, I would say we discussed a lot of (Participant 11). • Talking and communicating and going between all that in terms of obviously their whole thing as being sustainable (Participant 13). • When we discussed, I discovered increasingly so it is really important, and I will rate it a 1, being the best because of the diversity that happened (Participant 7).

4.2.3 2nd Order Themes Interpretations

It was simple to find common themes within the groups in Section 4.2.2 (above) that align with the 1st order concepts. For Research Question 1 (How do Cognition, Emotion and Behaviour Shape an Entrepreneurial Mindset?), as a result of aggregating the 1st order concepts for the groups, six 2nd order themes evolved. These are:

1. Student-led discussions about social Issues
2. Supportive facilitator toward open discussion
3. Surprised by my personal qualities
4. Challenging my thoughts and feelings
5. Surprised at what an EM is
6. Surprise and insight into volunteering

The above 2nd order themes are depicted in Table 7, page 103.

Groups 1 and 2 were linked with the discussion and the educational conditions of the class. The support and discussions went hand in hand, but were two different themes that were linked with their feelings and thoughts.

Groups 3 and 4 involved an inner search and were linked with personal challenges; however, they involved two different thought and feeling processes. Group 3 was very much surprised by their insights and feelings, while Group 4 was challenging themselves to overcome what they identified they needed to deal with. They realised they should think about turning their insight into something positive, rather than a negative internal conversation. This changed how they felt about self-blame and negative attitudes toward their own mistakes.

Groups 5 and 6 are linked together by their volunteering experience and the possibility of an EM being a force for good instead of a simple, money-making venture. An EM being a potential force for social good surprised many of the students. Meanwhile, mentions of volunteering linked this surprise with the insight they experienced while volunteering.

The results of the data analysis and the 1st order concepts being categorised into the headings of the 2nd order themes are depicted in Table 6 and show what the student wrote or answered in the blog or interview and how it was analysed.

For the second research question, how teaching and education shape mindset, the 1st order concepts were aggregated. This aggregation of the 1st order concepts produced eight 2nd order themes, which are depicted in Table 7, page 103, and they are.

1. Realisation of EM creating value.
2. Reflection-induced future thinking
3. Small steps thinking induced self-analysis
4. Evaluation of self
5. Creative skills developed
6. Personal value evaluation
7. Realised the benefit of group work for social good
8. Group work challenged personal views

The themes were discovered by assessing links in the statements made by the participants. With group 1, each of the statements had a common theme about creating value. Each statement in the first group referred to a change in what they were buying regularly, so changed buying habits arose from them as the first theme. All statements grouped into the

second theme featured introspection about their current actions and new thoughts about sustainability; thus, this theme became a changed assessment of actions toward sustainability in the future.

The statements for the third theme all featured participants doing some self-reflection, which they were learning how to do for the first time. As a result, this theme stemmed from their attempts to journal reflectively. The fourth, fifth and sixth themes came about from the tests they did in class to test their EM, creativity and values. All the participants' narratives centred around their results, with those who were unhappy with their results making plans to achieve their goals.

The seventh theme was about working together to bring benefits to society. These participants recognised how collaboration produced ideas and possibilities, increasing the chance of success. The last theme was about the actual discussions people were having and where the discussion could lead them, which is why the last theme was derived from the participants' personal insights.

For research question 3 (How Can an Entrepreneurial Mindset Be Shaped Toward Entrepreneurship Competence Development for Sustainability?), eight 2nd order themes arose from an aggregation of each of the eight groups, and these are:

1. Changed buying habits
2. Changed assessment of actions toward sustainability
3. Changed actions to tackle sustainability issues
4. Changed perception of an EM
5. Changed to thinking about complex sustainability issues
6. Changed attitude toward sustainability
7. Changed perception of the value of people's opinions
8. Changed perception of collaborative working

Each statement in Group 1 referred to a change in what they were buying regularly, so changed buying habits arose from them as the first theme. All statements grouped into the second theme featured introspection about their current actions and new thoughts about sustainability; thus, this theme became a changed assessment of actions toward sustainability. The third grouping in the table had taken steps to solve sustainability issues, so this theme changed to actions to solve sustainability issues. The fourth grouping was about an EM and how they had changed their narrative as to what it comprised, and so the theme became

changed perspectives of an EM. The fifth grouping was about how they were all thinking they could solve sustainability issues, with a resulting theme of changes to thinking about sustainability issues. The sixth grouping included students who had not thought about sustainability before, but were now thinking about it, so the theme for that group became a changed attitude toward sustainability. The penultimate theme was the change in valuing people's opinions. They had not valued people's opinions before the class, and now they had changed their attitude toward valuing other people's opinions. The last theme was all about working together and its benefits, and so the theme for that group became changing the perception of the usefulness of collaboration.

4.2.3 Aggregate Dimensions

The final stage of the Gioia methodology was to combine the 2nd order themes by aggregating them into what Gioia termed aggregate dimensions that overarched and combined the linked themes. For research question 1 (How do cognition and emotion shape EM toward a change), three aggregate dimensions that became evident are included in Table 7, on page 103, and these are:

1. Conversations were enabled about social issues.
2. Thoughts and feelings about myself
3. Introduction to EM and volunteering

The first one is the combination of the student-led discussions about social issues and the supportive facilitator in having open discussions. This resulted in the aggregate dimension of conversations being enabled about social issues.

The next two themes were combined because both involved a personal search, which the students liked and found helpful, so these were aggregated as thoughts and feelings about myself. Finally, the last aggregate dimension is where the surprise of the EM for social good and the surprise and insight of volunteering combined to make them think about their previous beliefs and assumptions, what these were and how differently they were looking at them now.

Table 7: 1st Order Concepts, 2nd Order Themes and Aggregate Dimensions for RQ 1: 'How Do Cognition, Emotion and Behaviour Shape an Entrepreneurial Mindset ' (RQ1)?

1st Order Concepts		2nd Order Themes		Aggregate Dimensions
--------------------	--	------------------	--	----------------------

Group 1: Enjoyment and surprise • It helped people have a healthy discussion about everything and anything (Participant 1). • I am not a lover of working in groups, but that kind of changed my outlook on that. It gave you a positive insight (Participant 11). • Very interesting to see the different people and what they see as the more important social issues (Participant 20).		Student-led discussions about social issues		Conversations were enabled about social issues.
Group 2: The way discussions were facilitated • I have been uplifted by the way every individual opinion or point has not been criticised (Participant 24). • This class encouraged open discussion. I felt people were more receptive to it because of the tasks we were doing, because it was not a right or wrong answer (Participant 9). • Fortunately, the tutor reassured me, saying that we still have time to find it out in class (Participant 26).		Supportive facilitator toward open discussion		

Group 3: Awareness of personal qualities • I have not engaged with any art or any of my hobbies due to being lazy and procrastinating, and I have noticed I no longer get the opportunities (Participant 19). • Looking at what is going well makes me feel more capable of making a change (Participant 21). • The research presented on coping with stress through exercise is fascinating (Participant 3).		Surprised by my personal qualities		Thoughts and feelings about myself
Group 4: Awareness of personal narrative • Going forward, I think I would use this method again, as I found it helped me get all my thoughts out, which then allowed me to condense and order them (Participant 10). • I used to think that way, as it was implemented in my head that failing is not an option (Participant 20). • Struggling with discipline at times. However, this is also a positive, as I am now aware of it and can work on improving these underlying issues (Participant 16).		Challenging my thoughts and feelings		

Group 5: Awareness of EM • This opened my mind to the varying concepts of an EM and how it can be used for social good (Participant 1). • Helped me debunk the myth that an entrepreneur's end goal is solely for money; it taught me that an entrepreneur does much more for their local community to create value (Participant 11). • Difficult for me to fully understand the whole concept of an EM since my upbringing from my family, as well as teaching at school, was in total contrast to what I have learned over the past few weeks (Participant 16).		Surprised at what an EM is		
Group 6: Surprise at volunteering • My eyes have been opened to it now after doing the class. I volunteered at a soup kitchen, and I can see how people have suffered (Participant 13). • Helping the homeless, and it was nice to do that (Participant 11). • It is with this conscience that I have volunteered to find a volunteering opportunity in a similar organisation which raises concerns over period poverty in developing countries like India (Participant 18).		Surprise and insight into volunteering		Introduction to EM and volunteering

The Aggregate Dimensions in the table above will be discussed in the findings in Section 4.3.

For Research Question 2 (How Does Teaching and Education Shape an Entrepreneurial Mindset?), eight 2nd order themes were aggregated into three aggregate dimensions, and these were:

1. Awareness of the development of personal societal impact
2. Awareness of developing thoughts and feelings about personal value
3. Challenged beliefs and assumptions about group work

The first aggregate dimension evolved from an EM: creating value, self-reflection and small steps thinking. Small steps thinking supports the regulation described in Section 3.2.2, page 64, about incremental innovation and how it involves small steps. Each of these themes was the knowledge that the participants had acquired, which pointed to this being the aggregate dimension for these three themes. The next three themes all involved tests, with results that challenged what participants believed themselves to be, and so they became the second aggregate dimension of challenged beliefs and assumptions of how teaching and education can change mindset. The final aggregate dimension arose from working together, where working together provoked thoughts and feelings which they found nudged them on their learning journey.

Table 8: 1st Order Concepts, 2nd Order Themes and Aggregate Dimensions for RQ 2: ‘How Does Teaching and Education Shape an Entrepreneurial Mindset?’

1st Order Concepts		2nd Order Themes		Aggregate Dimensions
Group 1: New to students • The value of an idea lies in taking action and developing it into something which other people can utilise. The value you create could be social or cultural (Participant 10). • It has opened my eyes; I can add significant value to others in the community with just my time and support (Participant 9).		Realisation of EM creating value		

• With the confidence I gained, I can help my community and make an actual impact (Participant 8).				Awareness of developing personal societal impact
Group 2: What reflection could do • Great way to reflect on every decision that someone may make and how this could be perceived, allowing for a different perspective (Participant 1). • Allocate the space and time needed to have that self-reflection (Participant 17). • Focuses on experiences so we have an action plan to move forward (Participant 2).		Reflection-induced future thinking		
Group 3: New knowledge • If I am using effectual thinking, I will be more passionate about starting a project (Participant 11). • The process is broken down and allows us to see when the process is appropriate for different scenarios (Participant 23). • Effectuation and causation, discussed in the tutorial, prompted me to further read about the topic (Participant 24).		Small steps thinking induced self-analysis		
Group 4: How to use an EM • I am actively doing something I enjoy whilst helping a cause I am passionate about (Participant 11). • I most importantly learned that applying values impacts our overall goals and outlook (Participant 2). • In response to this, I am going to set goals for myself to change my risk-averse mindset (Participant 3).		Evaluation of self		Awareness of

Group 5: Awareness of creativity • I am relatively creative during the group activity, where I found I could come up with various ways to repurpose given items (Participant 10). • Stuck with me is the differentiation between everyday creative ideas and ideas that are giant leaps in history (Participant 13). • Difficult doing the questions as I have to think about myself when answering them (Participant 4).		Creative skills developed	developing thoughts and feelings about personal value 
Group 6: Awareness of Values • I was surprised to find out that most of my motives are derived from the common good (Participant 14). • I can proudly say that I know the value of myself better (Participant 15). • Opened me up as a person and put up with levels of thinking I usually do not indulge in (Participant 24).		Personal Value evaluation	
Group 7: Positive of working together • I have learned from other people talking about sustainability, and I see how it is impactful (Participant 28). • When the wider group's ideas are presented, it becomes apparent that possibilities that make perfect sense when you hear them from the wider network do not come to you (Participant 1). • A multitude of partnerships with those who share the same passion will increase your chance of success (Participant 13).		Realised the benefit of group work for social good	Challenged beliefs and assumptions about group work 

Group 8: Personal awareness from working together • It makes you feel like you are not alone (Participant 8). • It probably taught me a lot about how to get along with people and how to work effectively (Participant 30). • How discussion and open conversation with others help an idea evolve (Participant 1).		Group work challenged personal views.	
--	---	--	---

The aggregate dimensions developed from Research Question 3 (How Does Teaching and Education Shape an Entrepreneurial Mindset?) were developed from the eight 2nd order themes described in Section 4.2.3 and depicted in Table 9, page 110. The three aggregate dimensions are:

1. New Entrepreneurial Mindset toward sustainability
2. Changed perspectives on personal value creation
3. Changed beliefs and assumptions

Table 9, page 110, shows the first aggregate dimension that has arisen by combining the three themes: changed buying habits, changed assessment of actions toward sustainability and changed actions to tackle sustainability issues. All these comprise new or altered actions as compared to those of the students before the class; these were combined into new entrepreneurship actions toward sustainability. These changed actions were part of changed EM as it involved changes in thinking, feeling and behaviour.

The second aggregate dimension on Table 9, page 110, involved combining another three themes: changed perceptions of an EM, changed thinking about tackling sustainability issues and finally changed attitude toward sustainability. All three themes involved some change to what they thought before; they were combined to reflect the essence of what was happening, and that is referred to as changed perspectives on personal value creation and a new understanding that they had value to contribute to society.

The third aggregate dimension was an aggregate of two themes: changed perception of the value of people's opinions and changed perception of collaborative working. Both themes involved a change in beliefs and assumptions about group work and how it could be

beneficial to tackling complex problems, which far exceeded the capabilities of working on your own.

Table 9: 1st Order Concepts, 2nd Order Themes and Aggregate Dimensions for RQ3 ‘How Can an Entrepreneurial Mindset Be Shaped Toward Entrepreneurship Competence Development for Sustainability?’

1st Order Concepts		2nd Order Themes		Aggregate Dimensions
Group 1: Changes in buying patterns • I no longer use Primark or fast fashion; I use Vinted or second-hand sites (Participant 12). • I was a very impulsive shopper, but now I would go for brands which focus on sustainability (Participant 18). • Make sure that the qualities are higher so that it lasts longer, so there is less consumption (Participant 29).	⇒	Changed buying habits	↘	New EM toward sustainability
Group 2 New Focus on Sustainability • They opened doors for me to some topics that I did not even know existed on sustainability (Participant 7). • I am now more aware of the opportunities available to me and where I would like to apply to volunteer (Participant 1). • So, I would say poverty has become more important because I kept volunteering, and I kept looking at how big an issue it is (Participant 8).	⇒	Changed assessment of actions toward sustainability	→	
Group 3: Changed actions toward sustainability • When I am thinking of a business idea, I am incorporating more sustainable practices into it (Participant 10).	⇒	Changed actions to tackle sustainability issues	↗	

• I got a solution to climate change, and I included it as my business idea and wrote to Strathclyde Inspire (Participant 18). • I picked the charity pathway, and now I am doing a placement with Sustainable Strathclyde (Participant 21).				
Group 4: Possibilities of an EM • This opened my mind to the varying concepts of an EM and how it can be used for social good and not just business ventures (Participant 1). • Having an EM is something everyone can achieve (Participant 17). • Not just economic value, an entrepreneur can give to society, they can also give social and cultural value (Participant 2).	⇒	Changed perceptions of the EM	↘	Changed perspectives on personal value creation
Group 5: Changes to Visions for Sustainability • If I were ever to work in a field like that, I would always want to have sustainable products (Participant 22). • I think a lot about pedestrianising cities and stuff and better city design (Participant 21). • You cannot achieve the UN SDG goal without partnership, without collaborations with other people, businesses or even the government (Participant 28).	⇒	Changed to thinking about complex sustainability issues	→	
Group 6: Shift in Mindset • One thing I felt was good for the soul was to volunteer (Participant 16) • I think consumers should be more responsible and accountable for their actions	⇒	Changed attitude toward sustainability	↗	

if they are consuming unnecessarily (Participant 19) • I have had a big shift in my mindset toward sustainability (Participant 21)				
Group 7 New appreciation of other people's opinions • It was nice that nobody had the wrong opinion because every opinion could lead to change (Participant 1) • Everyone could give their opinions and ideas, which meant that I was taking all that, and I was learning what other people thought (Participant 6) • I was more compassionate toward other people's opinions (Participant 5).		Changed perception of the value of people's opinions		Changed beliefs and assumptions
Group 8: Learning experiences gained from working together • Bridging the gap between inequality, I would say we discussed a lot of (Participant 11). • Talking and communicating and going between all that in terms of obviously their whole thing as being sustainable (Participant 13) • When we discussed, I discovered increasingly so it is really important, and I will rate it 1 because of the diversity that happened (Participant 7)		Changed perception of collaborative working		

4.3 Findings

These are split into the research questions as follows: Section 4.3.1 contains the themes derived for research question 1 from Section 1.4, which iterates the research questions. These also link to the Conceptual model, Figure 1, page 13, showing the relationship between the

research questions and how they are in a feedback loop as changes are being made to an EM. The findings are then organised into the 2nd order themes that were uncovered from the research questions. Section 4.3.1 presents the findings from Research Question 1: How do cognition, emotion and behaviour shape an Entrepreneurial Mindset? Section 4.3.2 presents the findings from research question 2 about How Does Teaching and Education Shape an Entrepreneurial Mindset? Finally, Section 4.3.3 explores the findings from research question 3, which is: How Can an Entrepreneurial Mindset Be Shaped Toward Entrepreneurship Competence Development for Sustainability? These will be visually represented in the findings model, Figure 7, page 123.

4.3.1 Introduction to Themes from Research Question 1

Findings have emerged for research question 1, which is ‘How Do Cognition, Emotion and Behaviour Shape an Entrepreneurial Mindset?’, and this question is included in the conceptual framework, which shows looping feedback in Figure 1 on page 12 about thinking, feeling and behaviour. Following on from the conceptual model in Section 1.4, the interview questions were compiled. The following subheadings resulted from the analysis in Section 4.2, and these are:

1. Student-led discussions about social issues
2. Supportive facilitator toward open discussions
3. Surprised by my personal qualities
4. Surprise at what an EM is
5. Surprise and insight into volunteering

The headings above are discussed in the following sections.

4.3.1.1 Student-led discussions about social issues.

The students discussed social issues that were of interest to them. They felt that each of their contributions, the narration of their thoughts and feelings, was appreciated by other students. Even those who just listened and did not take part were able to glean something from others’ opinions in the discussions that they had not thought about before, by just listening to the discussions.

4.3.1.2 Supportive facilitator toward open discussion

There was facilitation by the educator to move away from teacher-led discussions to student-led discussions, which was considered more effective in a learning environment. As we see

from the second finding, students began uncovering thoughts and feelings about themselves. In some cases, this challenged them to release their thoughts and feelings, to grow comfortable sharing them with others, and to seek insight into their own and others' thoughts and feelings. This enabling process seems to be a safe space of sharing, free from criticism and with encouragement from each other and the educator. The theoretical implications are that students can guide their learning according to what they consider interesting. All these thoughts and feelings were discussed in an uncritical environment.

4.3.1.3 Surprised by my personal qualities

Another finding was the surprise they felt at their newly uncovered personal qualities. One person even went so far as to come to a realisation they were being lazy and procrastinating, and, as a result, were missing out on opportunities they had previously enjoyed. Others realised that learning they could make changes in their lives allowed them to grow in confidence. Even students who did not participate by sharing anything gained some takeaways by listening to the discussion, as they found out how other students managed: for example, one student shared how they had coped with stress through exercise. Although this is widely known, it may not have been obvious to students that they themselves could partake, and they may have had some issues that they had not realised were preventing them from being more disciplined in reaching their goals. The theoretical implication suggests a process by which previously hidden personal qualities can be discovered or rediscovered.

The process of uncovering personal qualities brought about a desire to make personal changes by students reflecting on how they thought and why they felt the way they did. It helped to order their thoughts, struggles and personal qualities. The theoretical implications are to encourage the process of becoming self-aware by challenging themselves to bring about a self-discovery of their current experiences.

4.3.1.4 Surprise at what an EM is

The possibility of EM being a force for good instead of a money-making venture surprised many students. Before taking the class, they had always thought that it was about starting a new venture and making a profit, which was the same view as the researcher before reading research on EM.

The unlearning of what they previously thought was an EM caused emotions and cognitions in what was described as 'surprise'. Most students had previously thought EM was just about

starting a business and making a profit, but this class made them think about how it could be used for social good and helping their community. This gave them a new outlook on an EM and how they, as a person, can evolve an EM without having to start a business. The theoretical implication is to suggest that in an EE programme, this information should be available for students to unlearn this limited understanding of an EM. One student went as far as referring to this as ‘it helped me debunk the myth’. The theoretical implication is that prior knowledge seems to be based on a wider perception of an EM as primarily about making a profit, and that seems to be the discussion that abounds before university.

4.3.1.5 Surprise and insight into volunteering

Students were surprised by how much insight they got out of their volunteering experience, as they had to do 15 hours of volunteering. Many of them had not done any volunteering before and would never have undertaken volunteering, as they said, as doing volunteering would not have crossed their minds. This was part of the Social Challenge class described in the literature review in Section 2.4.3, page 41, whereby scholarly research has extolled the benefits of volunteering, which has also been referred to as experiential learning (Hermann and Bossle, 2020; Lucy *et al.*, 2020). Experiential learning has also been described as service learning, which in essence is volunteering in that the service is provided for free by the students (Martínez-Campillo, Sierra-Fernández and Fernández-Santos, 2019).

There was a realisation about the rewards garnered from volunteering, specifically, how helping made them feel good about their actions. Most had never volunteered before and had not even considered the possibility that they could volunteer, and they gained confidence and skills by leaving their comfort zone. Students had to organise volunteering for themselves, and they chose where they volunteered. This freedom of choice helped them choose a volunteering position they were genuinely interested in. The implications of this for theory are that if they were simply given a volunteering position, they would not buy into the experience the way that they did. The findings suggested this was generally a positive experience, even though some were taken out of their comfort zone at first. They then sought to come up with ways to improve the business in some way.

4.3.2 Introduction to Themes from Research Question 2

These themes are in Table 8, page 107, and answer research question 2, which is ‘How Does Teaching and Education Shape an Entrepreneurial Mindset’. Research question 2, shortened to Entrepreneurship Education, is incorporated as part of a loop which has been produced in

the conceptual model in Figure 1, on page 13. The following themes are analysed in the following sections, and these are:

1. Realisation of EM creating value.
2. Reflection-induced future thinking
3. Small steps thinking induced self-analysis
4. Evaluation of self
5. Creative skills developed
6. Personal value evaluation
7. Realised the benefit of group work for societal good
8. Group work challenged personal views.

4.3.2.1 Realisation of EM creating value

The first 2nd order theme, thinking about the future, centred around the topic of how an EM is not solely about money, but how it can create value. This was a bit of an epiphany in that students realised that they could add value, and, as Participant 8 said, ‘could make an actual impact’. Appendix 5, titled cross-case analysis, mapped the five blogs and interviews a year later; it seemed all the students went through a similar learning journey wherein they gained new knowledge about an EM: namely, that an EM was not all about profit but about adding value. Participant 18 said, ‘EM is not just about money,’ while Participant 1 took this further by saying it can be ‘used for social good and not just business ventures.’ The new knowledge students gained affected their thoughts and emotions. The implication for theory is the importance of dispelling myths previously taught about what an EM is.

4.3.2.2 Reflection-induced future thinking

The second 2nd order theme, which challenged their beliefs and assumptions, was the understanding of themselves and their creativity and discovering their value as a result. Students used opportunities as part of personal development toward goals because their beliefs and assumptions about themselves had been challenged.

They also learned how they could journal reflectively on what they had learned and could then develop plans going forward. They all learned for the first time about causation and effectuation, and how they could use this: as Participant 23 said, ‘it could be appropriate for different scenarios.’ This empowered students to self-reflect and then interact in a psychologically safe way. These pedagogical enablers encouraged their progression toward change in a variety of ways, as can be seen in Figure 7, page 123. The theoretical

implications are to incorporate reflection into an EE programme to develop thinking about the future.

4.3.2.3 Small steps thinking induced self-analysis

The next 2nd order theme was about breaking items down into smaller steps, which encouraged students not to be so daunted in looking at issues holistically. This also taught students that they can approach issues differently by breaking them down into smaller areas. Students were enlightened by discussions about how society could be helped by working together; similarly, group work generated personal insights into how other people thought and felt about sustainability, which would otherwise be obscured by their inability to generate ideas on solving real-world issues. This is supported by Participant 1's assessment of 'how discussions and open conversations with others help an idea evolve'.

4.3.2.4 Evaluation of self

A deeper evaluation of thoughts and feelings took place after their initial reflection, which included looking at their overall goals, attitude to risk and how they were harnessing passions. Participant 3 said they 'had a risk-averse mindset' and that they were going to 'set goals for myself' because they wanted to change it. The evaluation of self brought about a realisation that there were some thoughts and feelings they wanted to change.

4.3.2.5 Creative skills developed

Tasks were provided that allowed for creativity. Some found themselves to be creative in terms of ideas, with the new understanding that it is possible to have both big and small creative ideas. The theoretical implications suggest an EM shift to include creative elements to develop these skills without too much direction, which would allow creativity to be developed at every opportunity at all levels for further development of an EM. Developing these competencies is part of incremental innovation as opposed to radical change, see Section 3.2.2, page 64.

4.3.2.6 Personal value evaluation

Through the weeks of personal tests that nudged them to look at themselves and their values, EM and creativity, students then took some time to reflect on themselves and their prior beliefs and assumptions. The test outcomes demonstrate a development of an understanding of their mindset. Participant 15 said, 'I can proudly say I know the value of myself better'. This came more from an assessment of what they could do and that they could have an EM

that they had not realised before. The implication of this for theory is that this new knowledge encouraged a more positive outlook as to personal characteristics and motives.

4.3.2.7 Realised the benefit of group work for social good

Hearing other people's views on sustainability made more sense to them when the views were expressed to the group; these were ways of thinking that the individuals had not previously contemplated. Hearing the wider group's views brought about thoughts that they had not considered. Participant 28 said that they now 'see how impactful it is' when considering group work and how people can contribute to society by sharing views.

4.3.2.8 Group work challenged personal views.

The students were surprised by how working in a group helped ideas evolve through discussion. Participant 30 felt that 'it taught me a lot about how to get on with people and how to work effectively'. The implication for theory is how EM can be shaped through discussion by developing communication skills to bring about changes by challenging personal views during interactions in the group. This qualifies scholarly research in the literature review in Section 2.4.3 about the effectiveness of working in a group and the choice of discussion within the group (Neck and Corbett, 2018) and how that can bring about deep learning (Christensen, Arendt and Hjorth, 2023).

The findings in Section 4.3.2 are for research question two from the three aggregate dimensions. These results provided by the study regarding how does teaching and education shape an entrepreneurial mindset?

4.3.3 Introduction to Themes from Research Question 3

These themes are in Table 9, page 110, and answer research question 3, which is 'How Can an Entrepreneurial Mindset Be Shaped Toward Entrepreneurial Competence Development for Sustainability?'. The conceptual model in Figure 1, page 13, incorporates this under research question 3, which has been shortened to entrepreneurship competence development for sustainability. The following themes are analysed in the following sections, and these are.

1. Changed buying habits
2. Changed assessment of actions toward sustainability
3. Changed actions toward sustainability issues
4. Changed perception of an EM
5. Change in thinking about tackling sustainability issues

6. Changed attitude toward sustainability
7. Changed perception of the value of people's opinions
8. Changed perception of collaborative working

4.3.3.1 Changed buying habits

A few students had changed to using second-hand clothing sites and now also put in more thought about what they buy (e.g., stopping impulse buying and buying better quality clothes which last longer) since the EE intervention. Before the class, they had not thought about their buying habits. The theoretical implications suggest that a change in an EM can be brought about to change actions that will be better for society.

4.3.3.2 Changed assessment of actions toward sustainability

The students grew more aware of sustainability issues that they had not known about before, as well as the importance of acting and volunteering for sustainability, despite not having done so before the class. The theoretical implication is to shape an EM so that it can be applied to sustainability issues as opposed to just profit-driven actions.

4.3.3.3 Changed actions toward sustainability

Some students changed their behaviour toward sustainability. Some came up with ways of tackling climate change, some incorporated sustainability into their business ideas, and some decided to complete a placement with a sustainable organisation. These exemplified changes that occurred because of their exposure to sustainability issues. The theoretical implication is to provide this sustainability narrative early to nudge these changes in the students' university journeys.

4.3.3.4 Changed perceptions of an EM

Most of the students changed their perception of what an EM was from it being just profit-driven, with the objective of new venture creation as the outcome. Venture creation is the start of a new business. They all then started discussing the value they could contribute to society, and this did not involve profit or new venture creation. Participant 17 went as far as to say, 'an EM is something everyone can achieve,' while Participant 1 said that 'this opened my mind to the varying concepts of an EM and how it can be used for social good. The theoretical implication is that a change in an EM can be for the benefit of society.'

4.3.3.5 Changed to thinking about tackling sustainability issues

The students changed how they thought about having sustainable products, pedestrianising cities, and collaborating to bring about changes. This demonstrates a change in thinking toward how to tackle sustainability issues. The theoretical implications of forming ways to tackle problems are that more and better ways to improve sustainability should be formulated, with more people activating improvements.

4.3.3.6 Changed attitude toward sustainability

Students then made some deliberate changes in their learning now toward sustainability. For example, Participant 7 said, ‘The class opened doors for me for some topics that I don’t even know exist on sustainability’; for other students, it was their behaviour toward sustainability that changed. Participant 29 said that they take more time on their purchasing decisions now, while Participant 3 said they are ‘more aware of buying things locally’, which they describe as a new behaviour since the class. Participant 12 went as far as saying that sustainability was something that they ‘had never really bothered with before’. So, the beginning of the learning journey for her was to act on sustainability by buying second-hand products instead of new ones. They referred to their love of Doc Martin shoes and how they had not bought any new ones since the class. The ones they had bought since the class are all second-hand.

4.3.3.7 Changed perception of the value of people’s opinions

Group work as part of their learning was mentioned as a key part of their journey, with everyone listening to one another and contributing their thoughts and feelings. Students particularly appreciated that no one was wrong, but all opinions were listened to. This was a key theme, with students who had not liked group work previously making specific mention of the fact that their opinion had been changed on the value of group work. Participant 1 said they ‘liked that nobody had the wrong opinion because every opinion could lead to change’. Participant 5 said that in their family, they all think the same, and so they enjoyed how the discussions changed their way of thinking about how other people think about the SDGs. They said they are now ‘more compassionate to other people’s opinions.’ These comments exemplify the impact the group discussions had on changing the students’ mindsets.

The findings for research question 3 from the three aggregate dimensions highlighted how an EM can be shaped toward entrepreneurship competence development for sustainability. This resulted in new sustainable actions by the students, who also developed new perspectives

about their potential contributions, which honed their interpersonal skills. New sustainable actions instigated by the class included changes to their buying habits.

Quite a few of them had started using Vinted instead of high street shops. Similarly, some of them had kept volunteering when they had not done that before the class; some students had also produced ideas to solve sustainability problems. These all represent changes that occurred after the class. The next dimension of new perspectives by the participants was because of three main themes, which were the changed perception of what the EM was and the fact that it was not just about the economic value, but the social and cultural value that having an EM can produce.

4.3.3.8 Changed perception of collaborative working

The final dimension was the interpersonal application of the first theme. This was where the students went through changes during conversations and listened to what other students had to say about the topics that were being discussed. They then realised they could actively participate in the sustainability discussions instead of being passive bystanders. Appendix 5, titled, Summaries of participant journeys, shows a destination for each participant of a changed mindset. The changed mindset is looking to the future with sustainability in their thoughts now. This means using the entrepreneurial flair to add value in terms of solving problems surrounding sustainability.

4.4 The Findings Model

All the above is summarised into Figure 7, page 123, with the findings presented as triggers of three distinct phases in the learning journeys of the research participants. Phase 1 is termed Educational Conditions to Support Mindset Shift, Phase 2 is EM Shift and Personal Value, and Phase 3 is indicative changes in Behaviour for sustainability.

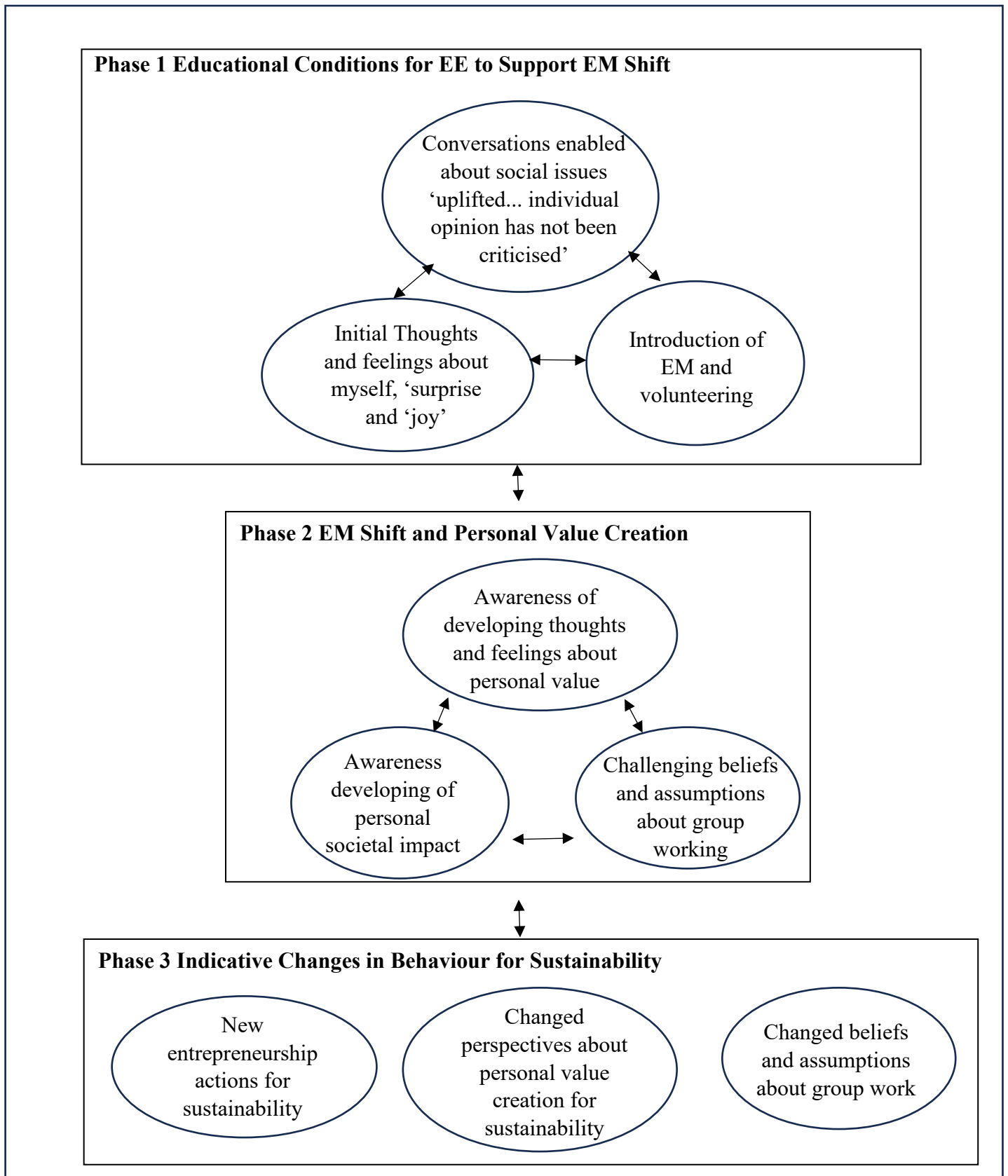


Figure 7: Model of EE Triggers for Changing EM Toward Sustainability.

Phase 1 in Figure 7, page 123, is related to the conceptual model Figure 1 on page 13 for Research Question 1, which asked How do cognition and emotion shape an entrepreneurial mindset? Phase 1 represents this question in the conceptual model in Figure 1. This phase links to where thinking, feeling and acting are working together and are represented by arrows to become an EM in Figure 1, and the looping back and forth arrows show a constant iteration between them. In Figure 7, page 123, for an EM to be shaped, the pedagogical enablers were found to be present. This was the psychological safe space and time provided to discuss, journal and reflect, which was mentioned by the students as important to them. Changes in students' narratives make it clear that their entrepreneurial mindsets were being shaped by having open discussions free from criticism. Indeed, Participant 1 said he would 'normally check people for having a certain opinion but was surprised that he didn't', because he came to realise this was a change in his mindset. The concept of an EM and how it can be a force for good spurred their thinking and emotions down this avenue, and then they realised their actions could make an impact.

In the next circle, most research participants mentioned that they became aware of their thoughts and emotions about themselves, which challenged them to become aware of their personal value creation and personal thoughts and feelings. This awareness then challenged their beliefs and assumptions. All this introspection was nudged by the enabling open conversations in the class and the appreciation of people's different opinions.

The next circle in phase 1 in Figure 7 links back to Figure 1 that this is thinking, feeling and behaviour work together. Students were being introduced to new concepts, which were about an EM and volunteering. Most of the students had not thought about these concepts before, and indeed, incorporating the whole class reflections for triangulation of the findings, none had thought about developing an EM before, and very few had ever volunteered before. This introduction of new knowledge brought about thinking, feeling and behaviour about this, which started the beginnings of shaping an EM.

Phase 2 in Figure 7 is where an EM shift starts to happen, with an awareness developing in the students that they can create personal value. In Figure 1, this is where EE is taking place, which is research question 2: how does teaching and education shape an entrepreneurial mindset. This was found to be through the first circle in phase 2, and they became aware of developing thoughts and feelings about the personal value they could create. They felt their

own beliefs and assumptions were challenged about the benefits of working in a group. They also developed an awareness of how they could personally impact society.

The final phase, phase 3 in Figure 7, brought about changes in behaviour for sustainability. This was research question 3 in the conceptual model in Figure 1 on page 13 and is how the entrepreneurial mindset can be shaped toward entrepreneurship competence development for sustainability. This represents the outcomes in Figure 1 from Entrepreneurship Competence Development for sustainability. These are the different changes in behaviour in the findings model on page 123, represented by three circles. The first circle was that new entrepreneurship actions were taken for sustainability. The second circle was that perspectives were changed about how personal value can be created for sustainability. Finally, the last circle in phase 3 was the changed beliefs and assumptions about how group work can be helpful. These outcomes look a lot like the GreenComp values on pages 18 and 19, but the phase 3 outcomes are more detailed.

The visual representation above is the final iteration from the interviews a year later, but this learning journey for the students will not stop there: there will be ongoing iterations and outcomes as more thoughts and feelings are added with conversation and value-added realisations, with the outcomes taking further steps in action. The circles represent the building blocks for the students, and each circle is vital for the holistic nudging of a person to result in a change in their mindset, specifically toward entrepreneurship competence development toward sustainability.

4.5 Summary and Implications

An emerging findings model has supplemented the conceptual framework used to configure the research questions represented by Figure 1 on page 13. The model from the emerging findings reflects the findings from the research questions, see Figure 7, on page 123.

Each of the above findings for research question 1 (How Do Cognition, Emotion and Behaviour Shape an Entrepreneurial Mindset?) mutually reinforced each other because, without the realisation of the EM and associated challenges to their beliefs and assumptions, they would not have undergone an examination into their thoughts, feelings and behaviours (and those of others). Arrows reflect this synergy between the findings for research question 1 and how each of the findings enhanced the other.

The findings for research question 2 (How do teaching and education shape an entrepreneurial mindset?) uncovered three aggregate dimensions. These aggregate

dimensions revealed how teaching and education can shape or nudge the entrepreneurial mindset through thinking about the future, and then the challenging of students' current beliefs and assumptions. People had time and space, and, in this time and space, they were challenged on elements, which built their awareness and provided a scheduled time for working in groups. Although they had become aware that value creation is not just about money, they were then empowered to self-reflect and interact in a space where they felt psychologically safe. Students have realisations about themselves, and then they have interactions with each other, which they realise challenge their assumptions and beliefs. Without the discussions, maybe they would be aware, but their beliefs would not be challenged. This then suggests that discussions and thoughts are mediators, and open conversations enable the beliefs and assumptions to be challenged.

The findings for research question 3 (How Can an Entrepreneurial Mindset Be Shaped Toward Entrepreneurship Competence Development for Sustainability?) uncovered three aggregate dimensions. The shaping provoked new entrepreneurship actions for sustainability, changed perspectives about personal value creation for sustainability and changed beliefs and assumptions about group work.

The implications of these findings are included in Section 6.3. Students went on individual journeys that involved pivotal moments. The key points from this research were that students were encouraged to think about the future. Thinking about the future prompted personal progression toward developing entrepreneurship competence for sustainability.

The next chapter involves some discussion and conclusions resulting from these findings, including how they can bring about changes to teaching and education that can encourage students to be more proactive and realise that they can add value to society by their entrepreneurial actions.

CHAPTER 5: DISCUSSION

5.1 Introduction

The journey of the participants in the study was uncovered during and after the time that EE occurred. As revealed by the findings, Entrepreneurship Education (EE) can indeed stir up change: this chapter is a discussion of the findings and how they link back with the literature using a wide suite of pedagogical approaches, which are used in EE and studies of Entrepreneurial Mindset (EM). Extant literature has theoretically purported that EM can be changed by EE and that emotions and cognitions are involved in this shift. The extant literature does give an indication that this change can be done, but nothing explores how the change can be enacted specifically. This discussion also proposes how EE can be used in similar learning environments to promote change in an EM and or behaviour of the students. The outcome of this EM shift may result in benefits for society from the added value contributed by the participants to society. This added value is represented by early intentions which drive an impact. This will start with the research findings in Section 4.3 and will be applied to each of the research questions reiterated in Section 5.2. The chapter reflects how current knowledge was used to devise a way forward for EE.

5.2 Research Findings: Questions and Answers

The research presented in this thesis has been driven by the intent to understand how entrepreneurship education can shape the mindset toward entrepreneurship competence development for sustainability. The research presented in this thesis has been driven by the following questions:

How do cognition, emotion and behaviour shape an entrepreneurial mindset, and secondly, how does teaching and education shape an entrepreneurial mindset, and thirdly, how can an entrepreneurial mindset be shaped toward entrepreneurship competence development for sustainability?

To answer those questions, data were collected and analysed inductively (as outlined in Chapter 3) using a Gioia methodology. The nudging was simply the encouragement to think longer term about society. To answer the research questions, themes are addressed in Section 5.3 based on the order they appeared in the findings, which are conversations enabled about social issues, followed by initial thoughts and feelings about myself.

Section 5.4 is about entrepreneurial mindset shift and personal value creation. Themes are addressed in the order they appeared in the findings, which are awareness of personal societal impact, awareness of developing thoughts and feelings about personal value and challenged beliefs and assumptions about group work.

Section 5.5 is about indicative changes in behaviour for sustainability. Themes are addressed as above in the order they appear in the findings, which are new entrepreneurship actions toward sustainability, changed perspectives about personal value creation for society and changed beliefs and assumptions about group work.

5.3 Educational Conditions to Support Entrepreneurial Mindset Shift

A mindset shift is the recognition of in scholarly research of the impact of climate change on the environment (Rockström, 2009; Waddock, 2020), with a plea by these researchers to do something to alleviate the uncertainty surrounding the impact of this change. There is a growing recognition that EE can prepare individuals to do more about this phenomenon and devise ways of tackling problems that they can enact (Mindt and Rieckmann, 2017; Hoppe and Namdar, 2023; Brentnall and Higgins, 2024; Brentnall *et al.*, 2025).

My research in Section 4.3.1.5 found evidence of how cognitions and emotions were working together after an analysis of the narrative: in the context, participants specifically referred to thoughts and feelings they were having about topics of their choice that they were researching and/or experiencing through volunteering. Extant literature has suggested that using interventions could be how a change can take place if an individual reflects on their personal emotions and cognitions (Kuratko, Fisher and Audretsch, 2021; Larsen and Neergaard, 2024) and that having more understanding of how mindset works can improve EE (Daspit, Fox and Findley, 2021). This research answers the first research question about how cognitions and emotions can be nudged to produce a mindset shift. In some instances, the findings, the reasoning and feelings led to a complete change in EM. The findings from Section 4.2.3 were brought about by providing educational conditions which supported a mindset shift. These are grouped into three distinct conditions, which are conversations enabled about social issues (see Section 5.3.1), initial thoughts and feelings about myself (see Section 5.3.2) and the introduction to EM and volunteering (See Section 5.3.3). These will be discussed in turn.

5.3.1 Conversations Enabled about Social Issues

The findings in Section 4.3.1 on pages 114 to 116 uncovered how group norms and behaviours arose because of facilitation. These were developed by first ensuring the

participants had psychological safety through the creation of learning spaces. Secondly, they were facilitated by having open discussions and knowledge exchange and thirdly, by looking at the role of the educator as the facilitator.

Psychological safety in learning spaces

The findings from my research in Section 4.3.1.2 on pages 114 to 115 extend scholarly research, which specifies the importance of having a safe learning space in EE (Christensen, Arendt and Hjorth, 2023; Ripollés and Blesa, 2024). These scholars developed the idea of what was referred to as learning situations mentioned in earlier research (Fayolle, Gailly and Lassas-Clerc, 2006) as opportunities to learn, and this is the context of having space to think and ponder on issues, which has also been referred to as psychological safety. Extant scholarly research has recognised the importance of learning spaces as mentioned already (Howorth, Smith and Parkinson, 2012; Christensen, Arendt and Hjorth, 2023), and there has been research on EE about changing mindset on complex issues, but it was done from a positivist point of view (Ripollés and Blesa, 2024; Zhang *et al.*, 2024). The uncovering of the importance of these learning spaces in an EE context had not been explored. These scholars were focused on the content of the courses, and not on how complex issues were taught and discussed in this EE context.

My research in Sections 4.3.1.1 and 4.3.1.2 on pages 114 to 115 revealed how complex issues can be pursued in a learning space, developing learning spaces into a critical part of the freedom to develop ideas in an EE context. The issues that were pondered were complex, like sustainability and thinking of ways of tackling the possible problems caused by harm to the environment. The idea is that people feel safe to raise any idea and provide a way that facilitates students to drive forward their learning by providing a psychologically safe space and time to do this. This time can then be used to discuss pertinent complex issues that require a lot of thought, and this could be applied to other educational settings where complex issues can be tackled.

My research in Sections 4.3.1.1 and 4.3.1.2 on pages 114 to 115 differs in that the findings assess the complexity of the issues that were discussed and the deeper impact on the individual's learning journey and their appreciation of the space provided to develop according to their interests. This was through the individual choice of topics to be discussed. Although the participants in this study did collaborate, assessments involved exploring individual mindsets first. The psychologically safe space allowed them to interact with what

thoughts and feelings they were having and to reveal these to others without fear of derision. The findings in Figure 7, on page 123, reveal that this was felt to be an important educational condition that was solidified as a group norm in their learning journeys. Extant research has only touched upon these learning spaces and their usefulness in EE, but this research takes this further to reveal a complexity that can be fostered and understood by having these spaces.

Open discussions and knowledge exchange

The findings in Sections 4.3.1.1 and 4.3.1.2 also indicated the importance of open discussions, which involved knowledge exchange between individuals who were reacting to each other as part of their learning. These individual learning journeys were identified as valuable. My research adds to my research which recognised what Christensen *et al.* did on the importance of open discussions and knowledge exchange, which they referred to as social encounters, but my research is new in that it involves the third type of learning spaces which those authors have referred to as ‘other’ in their diagram about types of learning spaces (Christensen, Arendt and Hjorth, 2023, p. 323). The authors said there were three types of learning spaces: within-team encounters, team stakeholder encounters, and ‘others’, with the learning outcomes all being team-related. This research proposes that there can be individual social encounters with the outcomes being personal value development for the good of society. Only team encounters and team learning outcomes were considered in the extant scholarly research.

My research findings in Sections 4.3.1.1 and 4.3.1.2 on pages 114 to 115 propose that the ‘other’ described by Christensen *et al.* is individual social encounters, which are the individual conversations in an educational setting which can be selected by the individuals based on interest and not due to any shared objective. Scholarly research has recognised the value of discussions in a learning environment and how they can improve the quality of the learning outcomes (Fayolle, Gailly and Lassas-Clerc, 2006; Neck and Corbett, 2018; Christensen, Arendt and Hjorth, 2023).

My research findings contributes in its examination of behaviour changes, which indicated the educator supported open discussions about knowledge that was shared during these exchanges. My research explored how EE should provide open discussions during a programme to foster knowledge exchange in the form of conversations about individual experiences which had impacted beliefs and opinions. This research is different in that when

new knowledge was provided, conversations were then encouraged between individuals. For example, with the introduction of EM, not just being about making a profit, discussions then transpired around this new topic to build interpersonal skills. It was through this that deeper learning seemed to have occurred; this conclusion was reached because the participants still remembered what they talked about specifically, even a year later (see findings, Section 4.3).

Remembering knowledge for a longer period has been attributed to a deeper learning having taken place as opposed to short-term learning, where the knowledge is quickly forgotten (Bloom, 1956; Gregory and Thorley, 2013; Neck and Corbett, 2018). Current research has not discussed this longer-term impact on learning through EE and uncovered the complexity of the thinking taking place, which brought about indicators of changes in behaviour.

It is therefore implied that encouraging a group change in an EM discussion should be incorporated into the context of the learning and teaching environment to enhance the effectiveness of said environment. The findings add to the discussion by current research on educational enablers (Tanu and Parker, 2018; Huoponen, 2024) in that behaviour can be enabled by the educator empowering students. The fact that individuals and groups can be at ease and feel safe to discuss complex issues progresses a body of research that calls for action to be taken to solve the current prevailing uncertainties by arming the students with a mindset capable of solving complex issues (Dodd *et al.*, 2022; Brentnall and Higgins, 2024; Champenois *et al.*, 2024).

The contribution of my research findings in Section 4.3.1 on pages 114 to 116 is that opening complex issues up for discussion resulted in providing a forum for students to shape their mindset and engage in action by seeing sustainability not just as a necessity but as an opportunity for entrepreneurial action. Extant scholarly research has suggested that EE be used to foster a mindset, but has not presented how that would be facilitated (Fayolle, Gailly and Lassas-Clerc, 2006). My research's findings, summarised in Figure 7 on page 123, take this an extra step to show that complex issues can be discussed and considered, and students can produce personalised ways of approaching them. The extant literature assessed possibilities of how mindset can be changed, and recent quantitative studies discovered that it did change (Zhang *et al.*, 2024), but a qualitative study has not so far been undertaken to uncover how mindset had shifted. Nor has the extant literature featured a qualitative study reviewing the intricacies involved in EM shifts that led to the journey of change toward

sustainability competences through entrepreneurial actions and the shaping of mindset on a long-term basis, rather than just for the short-term gain.

Role of the educator as a facilitator

Enablers have been referred to in the extant literature as environmental conditions which can start or stop the required behaviour (Tanu and Parker, 2018; Huoponen, 2024). The educator can act as a facilitator and ensure that students are empowered to take ownership of the teaching and learning environment and make choices and give their opinions without fear of reprisal from the other students. This research is extending the educational enablers to include a pedagogical process, which, for the framing of this research, has been referred to as pedagogical enablers.

The findings in Section 4.3.1 on pages 114 to 116 have revealed that the facilitator actively promoted discussion in the educational environment by encouraging social interactions. Social interactions have been recognised as a promoter of deeper learning in management education (Howorth, Smith and Parkinson, 2012). However, the outcomes of an EE programme when discovering the depth of learning have been focused on new venture creation (Ripollés and Blesa, 2024) and the discussions between stakeholders (Christensen, Arendt and Hjorth, 2023). However, this research is different in that it assesses the facilitator developing a person's mindset by encouraging delving into personal thoughts and feelings and sharing personal knowledge.

More recent extant literature in EE has found that an educational setting wherein the teacher and student are equal, with no leader, can encourage discussions which foster action toward sustainability when presented with real-world problems (Tanu and Parker, 2018; Huoponen, 2024). My research is different in that it provides evidence of sustainability competencies like collaboration and devising ways to evolve through an EM to make improvements.

The findings in Sections 4.3.1 on pages 114 to 116 uncovered the importance of the educator facilitating psychological safety for the students to have open discussions. The findings revealed that having the support of the educator to talk about what they wanted without fear of reprisal gave students the freedom to drive the conversations in the direction they were interested in. Extant literature has long been applied in management education (Howorth, Smith and Parkinson, 2012). This addition to the current literature provides a way of enabling students who are learning skills to take ideas forward in a creative way. The conditions

empowered them to be open about their views on social issues. The result was that they listened to each other and considered the opinions presented.

Free discussion can aid the creation of knowledge exchange purely from hearing such a conversation. The findings suggest the educator is important in facilitating free exchange of knowledge, which can nudge an individual toward an EM (Haynie *et al.*, 2010; Christensen, Arendt and Hjorth, 2023).

My research from the findings in Section 4.3.1.4 differs in that it analyses how an EM is shaped, how the importance of the individual is paramount to harnessing their interest, and it is not about group development with a shared objective toward a specific venture being created. These findings extend the literature above in that they indicate that allowing students to question their beliefs and assumptions and decide whether they still agree empowers them to drive forward their ideas. Scholarly research has recognised that reflective opportunities like this help the learning process and can foster deeper learning (Howorth, Smith and Parkinson, 2012; Ripollés and Blesa, 2024). However, the difference between this research and existing scholarly research is that previously, new products or venture creation as the organisation's goals and the measure of shaping were assessed, while this research assesses the individual's perspective. The organisation's objectives are not considered in this research, as it is about the individual, and that is the difference.

The questioning of beliefs and assumptions enabled students to share what was on their minds about the topics which interested them in the educational context, which extended the research on the importance of this time and space and this study's resultant findings about how it enabled behavioural changes. The research findings in Section 4.3.1.3 extended the importance of this self-examination, which can then be utilised to concentrate on what the individual thinks about more complex issues and to come to some self-understanding of what they think and feel about them.

Earlier research has indicated that a change in EM needs to be fostered, but did not provide a way to do so (Daspit, Fox and Findley, 2021; Kuratko, Fisher and Audretsch, 2021). More recent research has identified changes in EM through EE but only looked at new venture creation as the outcome (Brandshaug, 2024; Ripollés and Blesa, 2024). My research's findings in Section 4.3.1 provide a way that educators can nurture an EM by encouraging an examination of the personal status quo before fostering a broader perspective of the issues facing society. Research into EM specifically requested finding out how EE could shape

entrepreneurial mindset using a qualitative study to allow for a more in-depth study of EM on the individual (Kuratko, Fisher and Audretsch, 2021; Larsen and Neergaard, 2024). The following section discusses how the interplay between cognition and emotion unfolded.

Reflective processes as a means of fostering an EM

The findings in Section 4.3.2.6 suggest the effectiveness of nudging to challenge individuals' thoughts and feelings and encourage reflection, as well as providing some evidence that discussion in EE is a useful intervention. These findings therefore develop the triad of the entrepreneurial mindset in Figure 2, page 27, which depicts that emotions, thinking and behaviour can shape mindset (Kuratko, Fisher and Audretsch, 2021) toward a change (whether a change in thinking, action, emotion or all three).

The findings in Section 4.3.1 indicate that what previously existed as a theoretical phenomenon may in fact exist. The intervention of entrepreneurship education seemed to stem from the narrative of the journeys. An interplay between the thoughts and emotions played out together, in this context of students in their learning journeys. This could perhaps be applied and transferred to any educational setting. These findings take forward the more recent definitions of EM in Table 1, page 15, and give more detail about how thinking and emotions work together. Participants also specifically mention thoughts and feelings that were occurring, as suggested in the triad of the EM (Kuratko, Fisher and Audretsch, 2021; Mawson, Casulli and Simmons, 2022).

Thinking and feeling work together, but thinking in particular seemed activated by emotions; nevertheless, often participants suggested that applying thought processes brought about feelings. There was a traverse between thoughts, emotions and behaviour, and this can bring about an alignment between thoughts, feelings and behavioural changes. Educational intervention, and in this context, EE, propels these changes, which demonstrates the added value of this research. In terms of the triad of the entrepreneurial mindset, EE is at the forefront and is the initiator of a change in mindset (Kuratko, Fisher and Audretsch, 2021). The implication of this is that the time to allow this to occur must be carefully planned in an EE programme.

The findings in Section 4.3.1.4 also suggest that reflection as a tool could be a way to develop EM further. Wider education literature has suggested reflection can be used as a tool to enhance learning and bring about critical thinking based on real-life experiences (Fritson, 2008; Bassot, 2020). Reflection was therefore used to bring about critical thinking, but the

difference here is its use in a particular context to nudge a change in EM in a particular direction. This research revealed how reflection and self-examination encouraged knowledge of thoughts and emotions to bring about changes, whether it be behavioural or regarding EM or both. The findings add value to this existing discussion in that they demonstrate how thoughts and feelings about oneself are revealed in reflections about oneself.

Participant reflections have been used in a body of scholarly research (Larios Hernández, Walmsley and Lopez-Castro, 2022; Larsen and Neergaard, 2024) to uncover any changes in mindset. A body of scholarly research extends the extant research in that the inclusion and reference of these participant reflections added a depth of self-realisation to the learning journey, which can be applied to other educational settings. It has been known in scholarly research and practice that there is no one pedagogy that suits all students in Higher Education in shaping mindset, and that different pedagogies are important. The degree to which personalisation and choice can foster mindset has only been alluded to in various contexts. This choice is where my research extends the importance of personalisation and choice in any educational setting, and more specifically, to be considered in EE.

The reflection process using journalling as a means of fostering EM has long been recommended by researchers as an intervention to improve self-efficacy, which is the belief that you can complete tasks (Fritson, 2008; Bassot, 2020). However, previously, the framing of the research on reflection had not been done specifically about an EM. More recent research has instead taken a different direction, wherein learner reflections are used to indicate changes in EM (Larsen and Neergaard, 2024). My research is different in that interviews were added later to reflections to uncover whether there were any longer-lasting thinking, emotions or behavioural outcomes. It was the change in the value that learners added or the change in thinking explored, rather than the outcomes being just the words that were used and whether they were entrepreneurial or not. This is important because it adds to current literature in assessing how a change in thinking, emotions and behaviour, which drive changes for the good of society, is the hoped-for outcome from EE and the effect of changing an EM (Champenois *et al.*, 2024).

Contributions to understanding the triad of emotions, cognitions, behaviour and mindset
The research indicated that the journeys that students went through contained a variety of thoughts and emotions before arriving at their new perspectives and/or new behaviours. Sometimes thoughts and emotions were experienced at the same time, and some followed

changes or led to change. These findings indicate that thoughts, emotions and behaviour do work together to change EM, which is then revealed by the change in behaviour. Behavioural changes are initiated through the activation of thinking and emotions through EE. Although prior research has pointed to the fact that this might be a phenomenon before, my findings suggest how they work together to foster an EM, which answers research question 1: How do cognition, emotion and behaviour work together to shape an EM (Kuratko, Fisher and Audretsch, 2021).

5.3.2 Initial Thoughts and Feelings about Myself

This section discusses the interplay between cognition and emotion. The findings in Section 4.3.1.2 on page 114 about the facilitator giving time and space, the flexibility of what to think and feel about the social issues being discussed, and the active encouragement of self-reflection were considered invaluable. These processes were intimated to be invaluable because of the resulting journey of self-discovery, which took place over months after the class. Students were also enabled to consider and reflect on the knowledge they were nudged to read and listen to. This reflection brought about a visit to their inner thoughts and feelings, as will be discussed in Section 5.3.3 on page 139 under reflections. This interplay was actively encouraged by the facilitator asking questions which prompted an awareness and, in some instances, a realisation of their thoughts and feelings, leading to a personal journey of self-discovery, with some surprises along the way. This method of creating self-awareness is used in multiple disciplines for a variety of purposes (Fritson, 2008; Bassot, 2019), with these authors encouraging an investigation of the impact on an EM. In some cases, the impact was a complete change in beliefs from what they believed initially. The implications of these findings extend research about EE and how cognitions and emotions work together, as well as how the facilitator can play a role. This research has added insight into how complex topics can be thought about and felt about, with the specific focus tailored to the individual and their interests.

Self-awareness was fostered by the interplay of cognition and emotion, with cognition taking place, followed by emotion and subsequently behaviour and then behaviour feeding back to cognition and emotions. This interplay brought about intrinsic motivation to pursue personal interests, which supported thinking, emotion and behavioural change. The findings from Figure 7 on page 123 indicate what the theory purported: there is indeed an interplay between thoughts, emotions and behaviour, which contributed in this research to forming an EM with indications of this interplay. This interplay took place in the student's mindset, in their

learning journey, and subsequent indications of behavioural change because of a change in EM.

The narrative of the findings, in Section 4.3.1.3 on page 115, suggested there was a facilitation of an interplay between thoughts, feelings and behaviour once there was a realisation of an intrinsic motivation to change beliefs and assumptions. Intrinsic motivation is explained by having work that captures personal interest and having a desire to achieve internal satisfaction from it (Gagné and Deci, 2005; Yamini, Soloveva and Peng, 2022). My research links into this body of research about how personal interest can be captured in its description of the interplay of thoughts, being personal interest, and desire, being the emotion and the interaction between them to bring about intrinsic motivation.

Research theory has advocated for qualitative research to uncover how personal interest transpires into intrinsic motivation (Landstrom *et al.*, 2016). Current research has only uncovered that there has been a change in intentions, but this has just been about new products and new ventures from a positivist framing (Zhang *et al.*, 2024). This means that student intentions were statistically tested as to their outcomes. My research is different as it seeks to uncover the workings of individual thoughts, feelings and behaviour with the objective of a holistic change to a sustainability focus, and from this, an intrinsic motivation to acquire sustainability competencies. The sustainability competencies are the nuance of this research that makes it different from the theory that advocated for qualitative research, but has only considered new ventures as an indicator of a change in mindset (Daspit, Fox and Findley, 2021; Kuratko, Fisher and Audretsch, 2021; Pidduck, Clark and Lumpkin, 2023).

My research extends the story of a relationship between how thoughts, feelings and behaviour can take place in the narrative of the individual student journeys, but the difference in my research is the implication that these journeys then caused a change in an EM. The implication of a change in an EM, when applied to education, is that if an understanding of how change can occur, then when preparing an EE programme, the facilitator can build in time for the interplay between thoughts, feelings and behaviour to occur. While facilitating the class, the three educators, including myself, came to realise the importance of this time, and this was discussed during the debriefing sessions each week. This ensured we were providing the same facilitation for each class.

5.3.3 Introduction to EM and Volunteering

The following discussion on new awareness of what an EM is and what constitutes volunteering is split into three distinct areas, which are the enactment of the course design, nudging and behavioural change, and reflection to support self-awareness. Each of these will be discussed in turn.

Enactment of the course design

The findings in Section 4.3.1.4 and in Section 4.3.1.5, on pages 115 and 116, suggested a possible educational structure through which EE can support the development of EM. This structure also allows for the resultant behaviour to be longer lasting, which is an indicator of a deep learning experience (Bloom, 1956; Gregory and Thorley, 2013). This type of learning is recommended as good practice and is the result of using ‘competency teaching methods’ in EE (Larsen and Neergaard, 2024; Ripollés and Blesa, 2024). The competency teaching elements of EE that shape EM involve application to real-life situations, and in this context, it was volunteering. Previous research has largely assessed the outcomes targeted to new products or new venture creation (Brandshaug, 2024) as an indicator that entrepreneurship competence has been developed. My research has moved beyond simply taking venture creation or new product development as the only indicator of entrepreneurial behaviour. Instead, this research examines personal value creation, which is the value from adding to society and early indications of new behaviour or perspectives. New venture creation may or may not be a result of EE, but in any new ventures in the future, personal value is much more varied in what the outcomes may present themselves as (Mawson, Casulli and Simmons, 2022). The indicative changes that happened are included in the indicative changes in behaviour and will be discussed in Section 5.5.

Nudging and behavioural change

Nudging is described as ‘any factor that alters the behaviour of humans’ (Thaler and Sunstein, 2008), and has been used in a variety of disciplines to change behaviour. For example, nudging has been used to provide information for decision-making so that people have the information for the subsequent choices they have to make (Bicchieri and Dimant, 2022). There have also been studies which have indicated the effectiveness of nudging as a pedagogical technique which encourages critical reflection to change current behaviour (Thaler and Sunstein, 2008; Neergaard, Robinson and Jones, 2021). The proposed method of invoking behavioural change serves as research into nudging as an intervention in the learning process and how that could stimulate a deeper understanding of personal values. It

also recognises the uniqueness of the individual and encourages a deeper understanding and critical evaluation of how their individual self operates (Neergaard, Robinson and Jones, 2021). Rather than focusing on nudging as an academic term, this concept has been further explored to assess the word ‘nudging’, with its simpler meaning. The simple meaning implies a contrived way of encouraging behaviour; nevertheless, the findings were more about the challenging of current thoughts and feelings through EE (Brandshaug, 2024) by signposting new information.

The findings in Figure 7, on page 123, indicated that deeper learning, the learning that has the greatest impact (Bloom, 1956; Ramsgaard and Blenker, 2022), took place through challenges that individuals experienced through EE. The scholarly research referred to above assumed learning, which can be defined as the ‘acquisition of a new behaviour or the modification of behaviour because of teaching, training or tutoring’ (Pittaway and Cope, 2007). These findings contribute to this body of research but also highlight a deeper level of change, which might have become more than just a temporary change. This is indicated by the personal goals that were set, the learning journeys that were experienced, and the pivotal points discussed a year after the event.

These findings in Sections 4.3.1.4 and 4.3.1.5 on pages 117 contribute to existing literature, which calls for EE to encourage and nudge students to act and take up the mantle of making a difference in the world (Dodd *et al.*, 2022; Hoppe and Namdar, 2023). The research by this body of authors has explicitly recommended that the intervention be in the form of EE and that research be done on this. My research advances existing research in EE by providing phases of triggers to be used, see Figure 7, page 123. The triggers are used to enact competencies, which will vary in degree with each student based on their thoughts and feelings. The nudging encouraged new perspectives to be formed, which then included early indications of behavioural change that benefit society, see Section 5.5.2. These findings took what was known about nudging (Thaler and Sunstein, 2008; Neergaard, Robinson and Jones, 2021) to propel thoughts and feelings in the direction of solving issues of sustainability by using an EM.

Reflection to support self-awareness

The findings on reflection in Section 4.3.1 showed that carrying out a personal examination can challenge previously held beliefs and assumptions. This challenge can, in turn, challenge future actions because of a realisation of a personal impact on society. Existing research has

recognised the usefulness of reflections as a learning tool in EE when uncovering an EM (Fritson, 2008; Blundel, 2021; Larsen and Neergaard, 2024). However, my research is different in its application in that it is used to bring about a change in EM and uncover how it is changed. The findings corroborate literature on reflection as to the importance of giving participants an allocation of time for inner scrutiny (Brockbank, 2006; Fritson, 2008). However, this research illuminates the depth of this change toward more sustainable thinking. Students then took this as an extra step and reflected on their reflections a year later as part of the reflexive methodology of my research.

Current scholarly research has not provided the depth that these findings do, in which participants dig deep into what their goals and values were and the driving forces behind them. So, reflection fostered a personal intrinsic drive for changes in EM as part of a deep learning experience.

The following section delves into how the mindset was shifted, which then brought about the creation of personal value.

5.4 Entrepreneurial Mindset Shift and Personal Value Creation

This research in Section 4.3.2 on pages 118 to 121 found evidence of how teaching and education can shape mindset. In some instances, the reasoning and feelings led to a complete change in an EM and the creation of personal value. Personal value has been described as the added value that an individual can contribute, but can also be anything an individual contributes to solving a problem or a new way of thinking to make improvements in some way (Neck and Corbett, 2018; Mawson, Casulli and Simmons, 2022). New venture creation or new products or services of personal value creation do not indicate personal value creation, although new venture creation or new products or services might be an offshoot of a different objective. The discussion on mindset shift and personal value creation starts with the context for personal change, Section 5.4.1, awareness of personal societal impact, Section 5.4.2, awareness of developing thoughts and feelings about personal value, Section 5.4.3, and challenged beliefs and assumptions about group work. Each of these will be discussed in turn.

5.4.1 Awareness of Personal Societal Impact

How personal change can be contextualised is discussed, starting with the shift from profit-driven entrepreneurship to value creation, then the impact of challenging preconceptions about sustainability will be discussed, finishing with the implications for embedding sustainability in entrepreneurial thinking.

Shift from profit-driven entrepreneurship to value creation.

The findings in Section 4.3.2.1 on page 117, portray the students becoming aware of what EM means (that it encompasses more than making money, including value creation and a new realisation), can initiate thoughts, emotions and behaviour resulting in personal value creation. This shared realisation that there is a different perspective to entrepreneurship that does not necessitate a capitalist perspective, to make as much profit as possible by new venture creation, represents a clear shift in an EM. And indeed, even recent scholarly research has still mostly focused on new venture creation as a test for an entrepreneurial outcome (Brandshaug, 2024; Ripollés and Blesa, 2024). An EM geared toward sustainability will have implications for a free-market capitalist model. There are clear implications here, which are explained in the limitations of this research in Section 6.4.

However, there is a growing body of scholarly research which has recognised that being an entrepreneur is not all about starting a new venture but is about creating value within the organisation (Lackeus, 2020; Mawson, Casulli and Simmons, 2022). Value, as referred to by these authors, is something that has some benefit to others in some way, and Lackeus specifically mentioned the others to be external stakeholders (Lackeus, 2020).

Personal value creation is different in that it is a recognition that an EM can bring about changes that are of benefit at any level and recognises that value can be created by not just starting a business (Neck and Corbett, 2018; Larsen and Neergaard, 2024). It is not assuming that there are stages of value creation as suggested by the EntreComp Framework, which describes stages and where each stage needs to be completed before an individual can move to the next stage (Bacigalupo *et al.*, 2016). My research does not categorise levels for personal value creation.

Also, value added or the following outcome from the outworking of an EM has often been applied at an organisational level (Daspit, Fox and Findley, 2021; Champenois *et al.*, 2024) when they were talking about outcomes for stakeholders and organisational culture. My research instead assesses how value is created at a personal level through individual entrepreneurial competence application. The findings in this thesis are different in that they portray how education encouraged a realisation of the personal value that can be created.

The findings in this thesis extend the research on an EM, exploring how it is about value creation and not just about making profit at an organisational level (Daspit, Fox and Findley,

2021; Champenois *et al.*, 2024). My research extends the existing literature in that it provides an insight into how it allowed an awareness of this pivotal idea of EM not just being about profits, and nudges personal thoughts toward value creation with the approach of realising a new phenomenon. The evidence from this thesis is that an awareness of a previous preconception as an antecedent for a new process of thought considers preconception as an element to be explored to change an EM. Previous preconceptions held by people confirm the view by a body of research that has advocated that added value could occur from an EM and has requested research into preconceptions of an EM (Haynie *et al.*, 2010; Daspit, Fox and Findley, 2021; Mawson, Casulli and Simmons, 2022).

So, the students attuned their mindset once they became aware of the possibilities of an EM creating value. The findings demonstrate that students provided evidence of the thoughts and feelings that go into this new awareness of value creation in the nudging of EM. The findings also provide a means to navigate a way forward for students during EE, in response to the prevailing uncertain conditions (Brentnall and Higgins, 2024; Champenois *et al.*, 2024).

The findings indicated the benefits of raising awareness of the personal impact an individual could have and highlighted the context of being made aware that an EM creates value. My findings also emphasise increasing awareness of how anyone could make a personal impact instead of being a bystander effect, as mentioned in (Hussain *et al.*, 2019; Campos-Mercade, 2021). These authors provide a reason why an individual stands back and lets other members in the group help out. The analogy is that society is the group, and the individuals in it are part of that group. My research adds to the bystander effect research by recognising the bystander effect and providing a way for people who tend to be bystanders to be empowered to be the ones to help.

Impact of challenging preconceptions about entrepreneurship

The findings indicated that the impact of challenging preconceptions about entrepreneurship was that previously they had not thought about being an entrepreneur themselves, and it opened possibilities that they could have an EM. This generated a realisation and a move away from their perspective about entrepreneurship only being about making profits to a more personal perspective. Participants realised they can have an EM without starting a business, which opened their thinking and feelings toward their possible entrepreneurial actions by having an EM. The findings extended knowledge and ownership of knowledge that we all can be members of society by each member playing a part in its future for the

overall good of society. Research in this area has not uncovered this insight (Klapper and Fayolle, 2023). Klapper and Fayolle specifically call for more empirical examples of transformed EE and set out a need for societal change and the emergence of distinct types of change by examining students' learning journeys.

Implications for embedding sustainability in entrepreneurial thinking

My findings showed some indication that embedding sustainability in EE led to some changes in behaviour toward sustainability thinking and/or actions, which were continued sometime after the EE intervention. Bodies of research have recommended that a change of EM with sustainability awareness be included in the EE intervention (Dodd *et al.*, 2022; Zhang *et al.*, 2024). The findings were new in that they were an indicator of research question 3, 'how EE changed the mindset toward sustainability competence development' (Lans, Blok and Wesselink, 2014; Hermann and Bossle, 2020).

5.4.2 Awareness of Developing Thoughts and Feelings About Personal Value

The following discussion, based on the findings in Section 4.3.2 on pages 116 to 119 on the scope for creativity, is discussed in three areas: evaluation of self, before moving to discussing the creative skills developed and finally to personal value evaluation.

Evaluation of self

The findings in Section 4.3.2 revealed widespread personal reflection on personal goals, which drove learners to think about setting new goals, having realised that there were aspects about themselves they wanted to change. This research implies that self-reflection is indeed an effective teaching and learning intervention in EE to bring about deliberate mindset self-revisions, with some evidence from the findings supporting this specifically. This corresponds to research which has directed that EE be changed so that learners can be directed toward making personal changes that will help society (Champenois *et al.*, 2024; Brentnall *et al.*, 2025).

Extant scholarly research recognises that behavioural changes can be brought about by critical self-reflection (Bassot, 2020; Larsen and Neergaard, 2024); however, my research uncovered that drivers for change in oneself can be brought about by setting personal goals to achieve the changes. Goal setting sets out an understanding of how some people make self-changes by setting a goal. Goal setting is widely recognised as occurring with athletes who

set personal goals, like shorter running times. However, my research adds to knowledge about goal setting for everyone in terms of encouraging the value that is being added.

The findings in 4.3.2 contribute to the literature that expounds the uniqueness of each student as an individual, who can be transformed by EE (McMullen, Brownell and Adams, 2021; Hoppe and Namdar, 2023). These findings are different in that while they were shown to arm the individual with an EM to perhaps create or take part in future planning, their nuance demonstrates the individual's transformative entrepreneurial thinking and/or actions and plans.

Creative skills developed

The findings in Section 4.3.2 on pages 116 to 119 provided some evidence of pivotal times of recognition in each student's learning journey regarding the need to complete a variety of tasks while identifying that each task could be done their way and in their time. The idea of taking time fits in with developing these competencies, which is part of incremental innovation as opposed to radical change, see Section 3.2.2, page 64.

Feedback was provided based on what they each did individually. The implications of this are that students should drive their teaching and learning by making their own choices to study what interests them, thereby taking ownership of their active learning (Hermann and Bossle, 2020) and driving it in the direction they want it to go (Neck and Corbett, 2018). The findings extended this extant research, which specifically advocates for this, and this was done in an EE context. This ownership of learning provided students with the focus on competencies that they wanted to achieve.

Personal Value evaluation

The findings in Section 4.3.2 on pages 116 to 119 uncovered that students' learning journeys involved a realisation that, as individuals, they could create personal and/or societal changes with their efforts, and this independence fostered this realisation of the changes they could make. Being aware of personal value would help students prepare for the uncertainty surrounding the world and equip them with an EM that can respond by actively devising plans for action or acting to mitigate the effects of uncertainty. My research adds to research advocating for a change to EE so that graduates are prepared by EE to act (Dodd *et al.*, 2022; Ramsgaard and Blenker, 2022).

This research in Section 4.3.2 on pages 116 to 119 takes research in this area to a new level of understanding because scholars have not uncovered the changes that unfolded from EE, specifically for students to understand how to tackle real-world problems (Neck and Corbett, 2018; Klapper and Fayolle, 2023). The importance of these findings is the shaping of future EE design, as it provides knowledge about how EE has influenced individual changes and transformed learners. Extant literature has set the ideals of what EE can achieve (Hoppe and Namdar, 2023; Champenois *et al.*, 2024) in terms of solving real-world problems; however, this research has encouraged a new generation of EE graduates to think differently and go and tackle the uncertainty clouding the future.

5.4.3 Challenged Beliefs and Assumptions About Group Work

In the challenging of beliefs and assumptions, distinctions were made regarding how this was taking place. Firstly, there was the consideration of the value of collaborative working and peer interactions, then the impact of exposure to diverse worldviews, and finally, there were the implications for fostering sustainability and entrepreneurial competencies through group work.

Value of collaborative working and peer interactions

In the findings in Section 4.3.2 on pages 116 to 119, participants were starting to become aware of the value of one another's contributions to discussions and ideas. Students recognised the transformation in themselves that occurred with this new belief in place. These findings agree with a body of research which recommends that deep learning can occur because of collaborative working (Gregory and Thorley, 2013; Neck and Corbett, 2018). The stated benefits of collaboration and what students learned through discussions, even after a period had lapsed, can add to scholarly research that deep learning did take place because of this dialogue. These findings can be used to build these dialogues into EE, as the scholarly research is missing this evidence to support the theories that recommend that dialogue be used (Klapper and Fayolle, 2023). These interactions between the educator and the learners and between the learners developed a more critical understanding of the different opinions that were being discussed and harvested a deeper level of learning (Neck and Corbett, 2018).

The implications of this for teaching and learning are to ensure that a group working situation is provided for complex problems that will require a diversity of minds to come together to uncover a plan of action. The findings add to a body of research that has indicated that these social competencies are critical in solving complex global issues (Brentnall *et al.*, 2025). The

competencies that were developed, as shown in this dimension, show that there were relationships that developed with respect for one another's opinions, contributing to papers which advocate that higher education institutions should be doing this through the learning that takes place during EE (Hermann and Bossle, 2020; Tomasella, Wylie and Gill, 2023). These findings in Section 4.3.2 provide some evidence of the success of working together to bring about indicative changes in entrepreneurial mindset. My research advances recent research, which found that students valued working together (Larsen and Neergaard, 2024). However, the focus of my research is different in that it focuses on the importance of individuals embracing their different thoughts and feelings and changing their own EM. Earlier research had focused on arriving at a shared vision between participants (Gregory and Thorley, 2013; Zheng *et al.*, 2025).

Impact of exposure to diverse worldviews

The findings in Section 4.3.2 showed that this exposure to different perspectives highlighted areas that had not been considered before. The findings indicated that most people, regardless of age or cultural differences, who go through an EE programme with the introduction of new perspectives regarding worldviews received these new perspectives, with an additional indication that this caused a change in their EM.

This research in Section 4.3.2 extends the theory that people have an assumptive worldview, which is based on three assumptions: that the world is benevolent, the world is meaningful, and the self is worthy (Janoff-Bulman, 1989; Feldman and Kaal, 2007). If these assumptions do in fact apply, then some have been challenged by the introduction of the new worldviews. All three of these assumptions could have been challenged, which could be the reason for the change in an EM.

Implications for fostering sustainability and entrepreneurial competencies through teamwork Groupwork has long been considered useful in the learning environment as it allows for the utilisation of individuals' different skills, which improves the ability to meet the completion of tasks (Lans, Blok and Wesselink, 2014). However, this research is different in that it is about the individual hearing other worldviews and applying their thoughts and feelings to them.

The findings in Section 4.3.2.8 on page 119 about the success of group work allowed students to openly discuss their thoughts and feelings about topics. This brought up some challenges about what they had assumed or believed in. Sometimes they realised that other people felt

the same way, and, in some instances, they heard ideas that they would not have had themselves. This skill of collaborative working and working with others has been identified as both a sustainability competence and an entrepreneurial competence (see area 4: Acting for sustainability, Section 1.7, page 19). Although different labels are given in different bodies of academic research, they essentially mean working with other people and collaborating (Lans, Blok and Wesselink, 2014; Dodd *et al.*, 2022; Larsen and Neergaard, 2024). These researchers are specifically focused on the greater good for society, but the notion of collaboration as a force for nature has long been obvious from a societal improvement point of view, even simply in the creation of beautiful music: composers write music to be played by a band with every member being a crucial part in the overall performance.

These findings extend the literature in that the benefits that were derived from working together are represented in the narrative, even sometimes after the experience. This positive representation contrasts with many participants' previous beliefs and assumptions. This realisation that they had positive thoughts and feelings of working well with others and devising new ideas together would not have been felt otherwise. My research implies that the individual sharing with others in a group can enhance entrepreneurial skills and increase the productivity of the individual in a synergistic way, which is evidence to substantiate the recent research which purported the usefulness of groupwork in EE (Larsen and Neergaard, 2024). My research extends knowledge of working in a group further, in that the students changed their beliefs and assumptions in their learning journey. Using reflexivity, I was aware as a researcher that I facilitated groups working together, but as the other facilitators did, I left the groups to make their own decisions regarding discussions as part of reducing researcher bias. Reducing researcher bias was also used as part of weekly debriefings between the facilitators to reflect and standardise facilitator procedures. I was also part of my own reflexive methodology.

5.5 Indicative Changes in Behaviour for Sustainability

The research in Section 4.3.3 on pages 119 to 122 found How Can an EM Be Shaped Toward Entrepreneurship Competence Development for Sustainability, answering research question 3. In some instances, the reasoning and feelings led to a complete change in an EM for sustainability, in some cases fully committing to personal action. The aggregate dimensions analysed in Section 4.2.4 will be used to compile the discussion for this research question. The aggregate dimension from Section 4.2.3 has been combined into the first New Entrepreneurship Actions Toward Sustainability Section 5.5.1. This is where students had

completely changed perspectives about what personal value creation was about and how they could partake in doing it themselves, thereby taking ownership of their actions.

Existing research has identified outcomes or behaviours for EE that display entrepreneurial behaviours or outcomes or actions (Bacigalupo *et al.*, 2016; Pidduck, Clark and Lumpkin, 2023). Outcomes and actions have been used interchangeably, but for my research, it is assumed that they mean behaviour using the framing of the triad of the entrepreneurial mindset (Daspit, Fox and Findley, 2021; Kuratko, Fisher and Audretsch, 2021; Pidduck, Clark and Lumpkin, 2023). The cognitions, emotions and behaviour, which occurred after the intervention of EE, contribute to the different bodies of research which have specified that EE should be the avenue where tackling real-world problems can be activated. Current research in this area encouraged there to be future research to uncover the ‘forms of action’ that might occur as a result of the entrepreneurial behaviours in their theoretical model (Pidduck, Clark and Lumpkin, 2023, p. 66). However, Pidduck’s model does not contain anything under ‘forms of action’ under the heading of entrepreneurial behaviours. Also in Pidduck’s model, the heading outcomes, the outcomes take an organisational view by referring to new strategies, new products or new ventures as outcomes (Kuratko, Fisher and Audretsch, 2021; Pidduck, Clark and Lumpkin, 2023). My research contributes to Pidduck’s model under forms of actions, with the following forms of actions in the following sections.

5.5.1 New Entrepreneurial Mindset Toward Sustainability

The findings in Section 4.3.3 uncovered changes that had occurred, which can be attributed to the education programme that had been undertaken. These changes will be discussed under the following headings: changed buying habits, changed assessment of actions toward sustainability, and finally, a discussion on changed actions to tackle sustainability issues. These do give an indicator of entrepreneurial competencies for sustainability, having been nudged in that direction because of the EE programme.

Changed buying habits

The findings in Section 4.3.3 show changes the students have made in their behaviour, toward sustainability: some changed their buying habits toward buying second-hand rather than new items, while some now actively seek out how to confront sustainability problems. Extant literature has suggested that EE can nudge students toward making choices which are preferably beneficial to society (Dodd *et al.*, 2022; Brentnall and Higgins, 2024). This research is different in that it brings an understanding for discussion of how the education of

the students, specifically EE, nudged them toward a sustainability outcome. How does nudging them to personalise what they choose to do give them an intrinsic motivation to take sustainability into their EM? The move away from only linking SDGs to courses has developed competencies that can be used to solve real-world issues, which could be achieved by EE (Lans, Blok and Wesselink, 2014) (Hermann and Bossle, 2020; Dodd *et al.*, 2022). The findings in Section 4.3.3 imply that this change in an EM stems from releasing students to choose what they learned about. This led them to develop entrepreneurship competencies for a cause, and incorporating the choice of what they did can be part of that story. Extant research has indicated that there is a need for learners to revise their assumptions about the world and how changes might occur in it, thereby revising their beliefs and behaviour. These findings demonstrate how this revision transpired (Klapper and Fayolle, 2023). This is important because of the increase in research taking place in different disciplines, recognising that action has to be taken to solve the uncertainties induced by climate change (Dodd *et al.*, 2022; Tomasella, Wylie and Gill, 2023).

These findings in Section 4.3.3 on pages 119 to 122 advance literature identifying the different characteristics of students and their different goals and intentions, recognising the different combinations of an EM and advocating for embracing the differences in individuals and how these differences resulted in different behaviours or ways of thinking (Fayolle, Gailly and Lassas-Clerc, 2006; Masoumi, 2023). The advancement of this research is how differently thoughts and feelings can be used in combination for action to change them, being applied in the different individual journeys. Sometimes thoughts and feelings worked together, and sometimes one brought a change in the other because of the intervention.

Changed actions to tackle sustainability issues

The findings in Section 4.3.3 indicated that the students had changed their EM about what they could do for society and how they could contribute, which has implications that the personalising of these goals could have longer-term resonance that can impact their future behaviour, while the sharing of these newly formed goals could perhaps impact the people they meet in their future interactions. My findings contribute to the literature in EE, which states that classroom interventions could be used to change behaviour (Mawson, Casulli and Simmons, 2022; Van Gelderen, 2022). For my research, the implication of using EE to change an EM toward sustainability was the realisation that their value led to a change in mindset, with entrepreneurial problems confronting sustainability being a focus. My findings develop the requests by a body of research that shows that EE-initiated changes in an EM that

are entrepreneurial and include sustainability in their mantra (Brentnall and Higgins, 2024; Champenois *et al.*, 2024). However, Brentnall and Higgins have not come up with suggestions as to how changes in an EM through EE can be done successfully.

A body of researchers assessing the Enactus programme operated by a private company that is currently operating in a few universities (Otache, Akubo and David, 2024). The Enactus programme operates by having student-led groups operating social enterprises. My research provides a university in-house alternative to this programme as to how EE can change the mindset toward sustainability (Tomasella, Wylie and Gill, 2023; Otache, Akubo and David, 2024). The Enactus programme is all about starting new social business projects and does not consider other ways that value can be added by simply thinking differently. My research develops the idea of value that an individual can contribute in ways other than just starting a business.

The findings in Section 4.3.3 uncovered that the nudging process being used in education, as recommended by a body of researchers, proved to be impactful (Thaler and Sunstein, 2008; Neergaard, Robinson and Jones, 2021). Nudging is proving successful in encouraging behaviour because of the setting of self-directed personal goals, which were set by the learners themselves. The EE nudged students toward environmentally friendly behaviour by exposing learners to critical discussions and personal research of real-life situations. This served as an ideal opportunity to elicit behaviour and action that can potentially tackle the issues facing humanity. This proposal that EE be used to elicit behaviours that display entrepreneurial and sustainability competencies was recommended by a body of researchers (Dodd *et al.*, 2022; Klapper and Fayolle, 2023). My findings imply that EE can indeed be a force that could be used for change to nudge students to challenge the complex issues facing society. The body of researchers above recommended additional research on this because little was known about the outcomes. A discussion can now be provided on how it can be done using the evidence from these individual case studies. With further knowledge in this area, an EE programme for changing an EM using the educational conditions in Section 5.3 can bring about changes in an EM that have been unveiled above, which could tackle some uncertainties being faced in society (Mindt and Rieckmann, 2017; Dodd *et al.*, 2022).

5.5.2 Changed Perspectives about Personal Value Creation for Society

The findings in Section 4.3.3.4, 4.3.3.5 and 4.3.3.6 on pages 120 to 122 extend current knowledge about how value can be created by having an EM. This new knowledge was

acquired through the EE class, illuminating to students how they could come up with ways of addressing sustainability issues themselves. Their prior knowledge had been that entrepreneurship was about new venture creation and making a profit, and they were ‘surprised’ at this new information. The findings extend research about an EM and students coming through an EE programme and how value can be created through an EE programme (Mawson, Casulli and Simmons, 2022; Larsen and Neergaard, 2024). Mawson *et al.* have identified the personal value that can be attained through having an EM; however, my research provides knowledge about triggers to bring about this outcome. This is a new learning intervention which can inspire new approaches for the benefit of society.

5.5.3 Changed Beliefs and Assumptions about Group Work

The findings in Sections 4.3.3.7 and 4.3.3.8 extend knowledge about how learning interventions brought about a change of beliefs about the importance of collaboration and how it can be useful for the discussion of new ideas for the good of society. The triggers which emerged from the findings in Figure 7, page 123, in phase 3, can be used in their current form to apply to research considering real-life problem solving (Klapper and Fayolle, 2023; Brandshaug, 2024). The triggers can then be applied to developing group work free from previous restraints. In this case, the students are then able to consider what other people have to say about the topics being discussed to arrive at an entrepreneurial action. Collaboration is a skill that was being fine-tuned during this learning intervention by allowing current thoughts and feelings about group work and its benefits to be challenged and subsequently, in some cases, completely changed.

This research in Sections 4.3.3.7 and 4.3.3.8 on pages 121 to 122 advances literature on the benefits of collaboration (Klapper and Fayolle, 2023; Brandshaug, 2024) to be also used in the context of EE to change EM toward entrepreneurial sustainability. Current research about EE has often used group work and, therefore, the group outcomes within the class settings to assess performance rather than individuals (Gregory and Thorley, 2013; Zheng *et al.*, 2025). My research is different in that each person was a case study that was then examined to assess the changes and the impacts thereof, caused by individual discussions to get the rich data (Yin, 2018). This process advances knowledge about EE being applied to individual journeys.

5.6 Summary

The discussion above aims to answer the research questions in terms of contributing to the literature, illustrating how emotions, cognitions and behaviour work together to change an EM. How EE interventions nudge by challenging and encouraging the learners' self-directed journey toward entrepreneurial competence development for sustainability. Each of the research questions was discussed, and the discussions ensued about each research question.

Research Question 1: How Do Cognition, Emotion and Behaviour Shape an Entrepreneurial Mindset? This question was answered by discussing how conversations were enabled about social issues. A discussion then unfolded about discussing the initial thoughts and feelings students had about themselves. A discussion then took place about introducing EM and volunteering.

Research Question 2: How Do Teaching and Education Shape an Entrepreneurial Mindset? The question was answered by discussing the awareness of personal societal impact that students could have. Next, a discussion took place about developing thoughts and feelings about personal value and finally, their beliefs and assumptions were challenged.

Research Question 3: How Can an Entrepreneurial Mindset Be Shaped Toward Entrepreneurship Competence Development for Sustainability? This question was discussed in the development of a new EM toward sustainability. Next, a discussion about changed perspectives on personal value and finally a discussion on changed beliefs and assumptions about group work.

The following chapter will reiterate the conclusions based on this discussion.

CHAPTER 6: CONCLUSIONS

6.1 Introduction

This chapter represents the culmination of the work presented in the previous chapters. It concludes the thesis by summarising its key findings and using them as a base to derive how the nudging of mindset took place, what the results were, and how this contributes to the field.

The chapter is structured in the following manner. Firstly, it returns to the original research questions posed at the beginning of the thesis in Chapter 1 and articulates answers based on key research findings, stemming from the data analysis in Chapter 4. Secondly, this chapter concludes how the findings contribute to understanding how Entrepreneurship Education (EE) can shape an Entrepreneurial Mindset (EM) toward Entrepreneurship Competence Development for sustainability. Thirdly, this chapter discusses the contributions this study can make theoretically and practically. Finally, limitations and avenues for future research exploration have been identified during this research, and they are articulated at the end of the chapter.

6.2 Research Findings Conclusions

The research presented in this thesis has been driven by the desire to understand how an EE class can shape an EM toward Entrepreneurship Competence Development for sustainability. The research presented in this thesis has been driven by the following questions:

1. How do cognition, emotion and behaviour shape an EM?
2. How does teaching and education shape an EM?
3. How can an EM be shaped toward Entrepreneurship Competence Development for sustainability?

The answers to each of these questions were based on the findings in Section 4.3, pages 113 to 126, which were summarised in the Model of EE triggers for changing an EM in Figure 7 on page 123. The conclusions are outlined in turn in the following sections. To answer those questions, the data have been collected and analysed inductively, although thoughts, feelings and behaviour were used for understanding and coding the narrative (as outlined in Chapter 3). The data analysis has then been assigned to the individual questions based on the separate stages of the change occurring as the journey of the student unfolds. I will outline the key conclusions from my research and work through a list of them for each research question.

There are more conclusions for research question 2 about EE, and this is because of the importance of EE in this whole process.

6.2.1 Research Question 1: How Do Cognition, Emotion and Behaviour Shape an Entrepreneurial Mindset?

Group norms and behaviours can arise through having conversations. Complex social issues were discussed, which had a deep impact on individual learning. Students appreciated the time and space given to help them develop based on what they were interested in. This happened because of the individual choice of topics that were selected for discussion and the choice and organisation of volunteering they had to undertake.

Open discussions should be provided where knowledge exchange takes place between individuals. The students reacted to each other as part of their learning, and this was important to them. Open discussions were valuable in learning journeys. Open discussions during a programme which fosters knowledge exchange in the form of conversations about individual experiences, impacted beliefs and opinions. Opening complex issues for discussion creates a forum for students to shape their mindset and engage in action by seeing sustainability not just as a necessity but as an opportunity for entrepreneurial action.

When preparing an EE programme, the facilitator should build in time for the interplay between thoughts and feelings so that a change in mindset might be elicited. This is done by encouraging reflection by individuals on their thoughts and feelings. Reflection can be used as a tool to develop EM further into the future, and some students got into a regular habit of journaling, and they reflected on their reflections as part of their reflexivity. As one of the facilitators in my research, I managed the reflections by discussing with the other facilitators how we were managing the student reflections to ensure consistency as part of my own reflexive methodology.

Personalisation and choice were important in an educational setting, and more specifically, to be considered in EE. These findings indicate that thoughts, emotions and behaviour do work together to change EM, and this is then revealed by the change in thoughts, emotions and behaviour. In conclusion, from my research, competency teaching elements of EE to shape EM involve application to real-life situations. Personal values that were added were varied in terms of their outcomes, and this reflects the uniqueness of each participant.

Educational nudging as an intervention in the learning journey stimulates a deeper understanding of personal values. This might become more than just a temporary change, as

indicated by the personal goals that were set and the learning journeys that were experienced and pivotal points discussed a year after the event, which benefit society. Previously held beliefs and assumptions were challenged. This caused a redraft of beliefs and assumptions, which then impacted future thoughts, emotions and actions. Future actions changed because of a realisation of personal impact on society, which in turn prompted more sustainable thinking.

6.2.2 Research Question 2: How Does Teaching and Education Shape an Entrepreneurial Mindset?

The model in Figure 7 on page 123 uncovered how teaching and education can shape mindset. Teaching from the findings has been about the specific new topic areas introduced, but education seems to include the actual changes in mindset. In some instances, the reasoning and feelings led to a complete change in mindset and the creation of personal value. New venture creation, new products, or services are not indicators of personal value creation, although they might be an offshoot of a different objective.

An awareness of personal value creation and its impact was developed, and this involved three areas where awareness was established, see Figure 7. The three areas where awareness was established were thoughts and feelings about personal value, personal societal impact and the value of group work. There was a shift from what had previously been thought to be entrepreneurship, away from just being focused on profit-driven to a focus on value creation, and this challenged students' preconceptions. Students were made aware of what an EM means, and this initiated thoughts and emotions resulting in action, which involved personal value creation. Personal value creation was not categorised but left to students to decide. The education programme encouraged a realisation of the personal value that can be created.

My research contributes to an awareness of the personal impact an individual can have and the context of being made aware that an EM creates value. It also raised awareness of how anyone could make a personal impact instead of being a bystander and watching what is happening in the world.

There were indicators of the impact of challenging preconceptions about entrepreneurship. Learners unpacked what entrepreneurship and EM meant to them, where previously they had not thought about being an entrepreneur themselves, and it opened possibilities that they could have an EM. This generated a change in their perspective about entrepreneurship only being about making profits to a more personal perspective in that they can have an EM

without just starting a business, and opened their thoughts and feelings toward their possible actions and what they could do that could be entrepreneurial by having an EM. The findings extended knowledge and ownership of knowledge that we all can be members of society by each member playing a part in its future for the overall good of society.

The discussion in Section 5.3.2, page 137, reveals there was a lot of personal reflection on personal goals, and this was driving learners to set new goals from the realisation that there were aspects about themselves they wanted to change. There has been some evidence from the findings of changes that occurred with the setting of different plans. This research has indicated how self-reflection can be used to stimulate thinking, feeling and behaviour about personal goals and personal drivers, and how it nudges a change. If the self-reflection conclusions indicate a change was needed, for whatever reason the learner felt was necessary. The importance of this reflexivity part in students is missing from the research into this area. My research uncovered that drivers for change in oneself can be brought about by setting personal goals to achieve the changes. This sets out an understanding of how some people make self-changes by setting goals. This is widely recognised as occurring with athletes who set personal goals, for example, shorter running times. However, this research adds to knowledge about setting goals in terms of value being added.

This research reveals that students can foster an EM, and this could support starting a business or be an integral part of a business. The nuance of these findings is that the individual comes up with transformative entrepreneurial thinking and/or actions and effective plans for the future, rather than just striving for new venture creation.

The findings from this research provided some evidence of everyone's learning journey and how there were pivotal times of recognition by the student that they needed to do a variety of tasks, but each task could be done their way. Feedback was provided based on what they each did individually. The implications of this are that the student should drive their teaching and learning by making their own choices in what they study that interests them, with students taking ownership of their active learning. This research extends research about how the competences that they wanted to achieve evolved with the learner being the driver of their learning journey.

My research uncovered that the journeys involved a realisation that, as individuals, they could create personal and/or societal changes with their efforts, and the independence resulting from taking ownership of their learning journey fostered this realisation of the

changes they could make. They realised this would help them prepare for the uncertainties of the world and equip the individuals with an EM that can respond to those uncertainties by actively tackling issues or acting to mitigate the effects of uncertainty.

Previously held beliefs, assumptions and distinctions were made regarding how the value of other people's opinions was highlighted, and for some of the participants, this meant that they then valued one another's contributions to discussions and ideas. There was a recognition of the transformation in themselves that occurred with this new belief in place. The benefits of collaborating in terms of the interactions between the educator and the learners and between the learners themselves developed a more critical understanding of the different opinions that were being discussed and achieved a deeper level of learning.

A group working situation was provided for complex problems that require the uniqueness of a diversity of minds to work toward tackling them, or at least provide a way to navigate toward a forward plan. In conclusion, these social competencies are critical to solving complex global issues. This research is different in that collaboration has been recognised for achieving a group shared understanding, but the knowledge acquired by this research is about the uniqueness of how a change was brought about to the individual EM and how working together and discussing complex issues can successfully bring about indicative changes in an EM, and it was acceptable to think differently from others.

Introducing new perspectives and new knowledge through EE, and because of this exposure to different perspectives, highlighted areas that had not been considered before. The findings indicate that all people, regardless of age or cultural differences, who go through an EE programme with the introduction of new perspectives regarding worldviews received these new perspectives, and there was an early indication that this caused a change in their mindset.

6.2.3 Research Question 3: How Can an Entrepreneurial Mindset be Shaped Toward Entrepreneurship Competence Development for Sustainability?

My research showed some early indication that embedding sustainability in EE led to some changes in behaviour toward sustainability thinking and/or actions, which were continued sometime after the EE intervention. There were indications that EM can be shaped toward entrepreneurship competence development for sustainability. In some instances, the reasoning and feelings led to a fundamental change in EM for sustainability, and in some

cases, fully committing to personal action in the form of recycling and/reusing resources. Some are now actively seeking ideas to tackle sustainability problems.

The conclusions imply that this change is the release of students to choose what they learned about, which then inspired a change in their mindset. This led them to develop entrepreneurship competencies for a cause, and incorporating the choice of what they did can be part of that story. The EE programme embraced the different identities of students and their different goals and intentions. The programme recognised the different combinations of an EM and embraced the differences in individuals and how their differences resulted in different behaviours or ways of thinking, with the outcomes/competencies being different.

A conclusion from my research is that the students had changed their mindsets about what they could do for society and how they could contribute. Personalising goals could impact future behaviour, and the sharing of these newly formed goals could perhaps impact the people they meet in their future interactions. For this research, the implications of using EE to change the mindset toward sustainability were the realisation that their change in desire to add value led to a change in mindset, with entrepreneurial ways to address sustainability being a focus.

A conclusion from my research was that fostering collaboration competence can be used to effectively address the complex problems facing society, and it can add value for the benefit of society to products, processes and possibly new business ventures by collaborating.

6.3 Contribution of this Study, Theoretically and Practically

This research aimed to explore the impact of EE on EM toward Entrepreneurial Competence development for sustainability. The findings provide contributions toward the literature in two areas: firstly, a theoretical contribution, secondly, a practical contribution and finally, policy and practice contributions. These will be discussed in turn.

6.3.1 Theoretical Contribution

Research has identified that young people are seen as having the potential to make changes by not accepting the status quo (Dodd *et al.*, 2022; Hoppe and Namdar, 2023). The contribution from this body of research is how, using this process, competences can be developed that entrepreneurially drive through action for sustainability with Entrepreneurship Education (EE) as the intervention. Indeed, it is especially through EE that the EM of students were found to be more open to nudging in a particular direction (Burnette *et al.*, 2020; Neergaard, Robinson and Jones, 2021), and these authors made a call specifically for

research into growing mindset. My research advances this discourse, with a specific purpose to grow EM toward sustainability for the good of society. Using the individual case studies of the students' journeys in the class and specifically researching the interplay of their thoughts and emotions and how these evolved, has shown that indicative changes in EM did in fact take place.

This research advances discourse on the model of the triad of the Entrepreneurial Mindset (Kuratko, Fisher and Audretsch, 2021), Figure 2, page 27. The development of the triad is shown in Figure 8, page 160, with EE working on cognitions, emotions, and behaviour. The gap in knowledge of how the conceptual model of the triad works has now been filled, showing how thoughts, emotions and behaviour work together by using EE as the intervention, resulting in an EM. More specifically, a body of research has identified that more research into developing competencies to tackle real-world problems is required, and this research advances this body of research (Mindt and Rieckmann, 2017; Hermann and Bossle, 2020; Hoppe and Namdar, 2023). Dodd *et al.* specifically mentioned changing thinking by changing pedagogy in EE and recommended further research (Dodd *et al.*, 2022). The gap between recommending more research into developing competencies to tackle real-world problems has now been attempted to be filled. From my research, triggers emerged that can be used to bring about an EM that is not only aware of but has changed to looking toward sustainability options. This research advances research further by discussing not only how EM can be changed by the intervention of EE, but also, in some instances, there was a change in the actions and behaviour of the students. Participant 10 in Appendix 4 said that they 'now actively engage in sustainable practices' had changed their actions because of the EE class.

A model was developed from Figure 2, page 27, from the triad of the Entrepreneurial Mindset (EM), and the development of the triad is depicted in Figure 8, page 160. The development of the EM shows where EE triggers for changing EM took place during the entrepreneurship learning journeys of the participants. The conceptual model from Figure 1, page 13, depicts this looping feedback between EM and emotions, cognitions and behaviour from an EE class. The impact on an EM of the EE class on cognitions and emotions was depicted by the red arrows. This resulted in a change in emotions, cognitions and behaviour, and that is represented by the green arrows, which represent the green sustainability competencies being developed. This fits in with the Model of the Findings in Figure 7, page 123, which depicts three phases of how triggers caused pivots in the individual learning

journeys. The feedback, whether from teacher or reflective feedback, nudged these changes, and an EM is constantly updating to reflect current thoughts, feelings and behaviours.

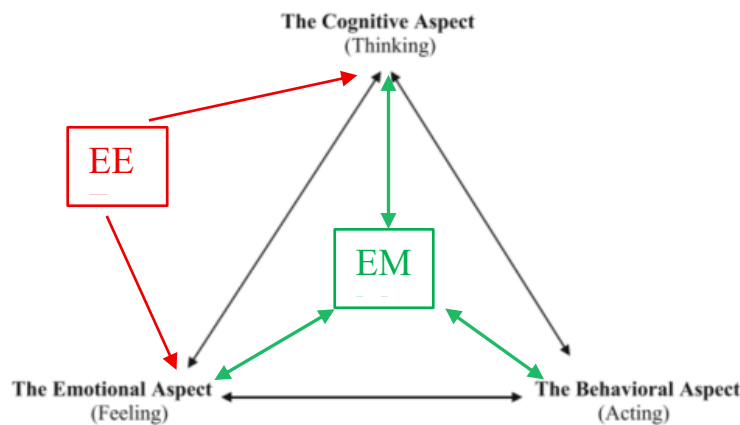


Figure 8: Theoretical Development of The Entrepreneurial Mindset (Kuratko, Fisher and Audretsch, 2021).

The Figure 8 development and Figure 1 both show there is a looping between thinking, emotion and behaviour and how that is changing EM through EE. The development of Figure 8 is different in that the changing outcomes are not only entrepreneurial competencies that are developed, but they also have a sustainability focus, like the GreenComp values on pages 18 and 19 (Bianchi, Pisiotis and Cabrera Giraldez, 2022). This is in line with Figure 1, which shows EE changing EM outcomes, and outcomes are Entrepreneurship Competencies for Sustainability, which is research question 3 and Figure 8 shows these outcomes as the Green colour to depict the outcomes.

6.3.2 Practical Contributions

Recent research in EE about nudging students toward Entrepreneurial Competencies for sustainability has all concluded that the actions of the EE students can bring sustainability, which could change the world (Sachs *et al.*, 2019; Dodd *et al.*, 2022; Hoppe and Namdar, 2023). These authors all agreed that EE was the intervention which could bring about a change and that young people had the potential to make changes by not accepting the status quo. The authors all agreed specifically that competencies could be developed during EE, which can help respond to real-world problems and noted the need for equipping students through participatory learning. Another part of the contribution my research makes is how EE can draw on students' knowledge and experiences to develop EM. For example, participant 1 found the lecture and tutorial unexpectedly insightful, learning that entrepreneurship could be

used for social good beyond business ventures. The full vignette is included in Appendix 4, titled Summaries of Participant Journeys.

The findings indicated a development in the entrepreneurship competencies for sustainability. The framing of these competencies is that they follow the much discussed triple bottom line approach (Elkington, 1999) first suggested regarding the definition of sustainability in that it can be displayed through any of the three competences of sustainability and these are environmental competences, social competences and economic competences (Mindt and Rieckmann, 2017; Eizaguirre, García-Feijoo and Laka, 2019; Tomasella, Wylie and Gill, 2023). These findings develop the extant research in the area to incorporate changes that occurred and provide evidence of the social competence being developed. This development is along with environmental actions taken, and changes in perceptions of students' value they add to society. For example, participant 25 said that before the class, he had little knowledge of sustainability, but the discussions sparked a passion for addressing social problems. He is now deeply invested in exploring sustainability in business, even choosing it as his dissertation topic.

My research in Section 4.3.1 has extended knowledge about how thoughts, feelings and behaviour are being provoked. This was done by raising awareness of what an EM is and its personal societal impact, and enabling nudging through EE to bring about a change in students. This change presented as students undertaking new entrepreneurship actions toward sustainability, having changed perspectives and finally the changing of their beliefs and assumptions because of the intervention. For example, participant 14 said she has since adopted more sustainable habits, such as using reusable bags and being mindful of waste.

These findings reveal that the intervention used to bring about these changes was to make them aware of their mindset and their desire to change their mindset. This results in new entrepreneurial actions and new perspectives, and changes in beliefs and assumptions. These findings contribute to the discussion surrounding EE and how it can be used as a tool for the good of humanity (Dodd *et al.*, 2022). For example, Participant 4 said, 'I am more aware of social issues, and I am considering voluntary work in the future'.

More was uncovered about how the entrepreneurial mindset can be developed or taught so that it can be nudged toward Entrepreneurship Competence Development for sustainability,

and this thesis develops what is already known and conceptualises a plan that could provide a way forward in EE to develop awareness.

The role EE can have in changing mindset has been tested from a different philosophical underpinning, from testing hypotheses and the empirical evidence that was found from the testing. The conclusion made from this testing was that the mindsets of the students could be changed, which resulted in a growth mindset with entrepreneurial self-efficacy. This research adds to this extant discussion with evidence of triggers that are used to encourage this change (Burnette *et al.*, 2020). The findings of this research go into the richer narrative of what happened in the participants' journey through the individual case studies.

The contribution is the use of educational enablers in the class that were used to nudge the changes that occurred in the students' entrepreneurial competence development toward sustainability, which added a reflective element to the class. This allowed the students time and psychological space to journal and reflect on their EM in the class. Open discussions were encouraged, and this allowed students to discuss their thoughts and feelings about themselves. This contributes to the discussion that EMs are 'malleable' (Burnette *et al.*, 2020, p. 899). This was done through nudging (Neergaard, Robinson and Jones, 2021), and this was found to work, which supports scholarly research on the nudging process. This contribution goes further in that it shows how the resulting behaviour changed because of the EE intervention.

The pedagogies used in my research were the use of group work in fostering sustainability and entrepreneurial competencies. These should be included in the pedagogies used to teach EE.

6.3.3 Policy and Practice Contributions

Heads of Departments and policy heads of institutions and policy makers can use the triggers to bring about changes in an EM through EE on Figure 7, page 123. These could be incorporated in part or in their entirety, some of the tools regarding what is taught in the curriculum in my research, to include in their curriculum if they want to include a specific focus on accelerating a sustainability transition through EE/EM. This knowledge can involve the shaping of future EE design, as it provides knowledge about how EE has influenced individual changes and transformed learners.

Time could be allocated to enable an EM to be fostered, to allow for thoughts and feelings to develop about sustainability. As a university tutor myself, the focus can often be on getting

through the curriculum, which does not allow much time, if any, for reflection. This research in Section 4.3.1 reveals a complexity in understanding that can be fostered and understood by having these spaces. This research is about how an EM is shaped, and to do this, the importance of individual choice is paramount in harnessing personal interest; it is not about group development with a shared objective toward a specific venture being created.

A volunteering part could also be allocated to immerse students in undertaking this. Some of them had not volunteered before, and the concept of giving up their time in this way had not been considered. When the researcher discussed having volunteering as part of an entrepreneurship education class at a TrEE event, the other entrepreneurship educators were very interested to know how volunteering had been received by the students and how it was assessed. They were very interested to know that the students chose and arranged their own volunteering. Heads of institutions and policy makers could be trying to do more to encourage volunteering as part of a sustainability programme to foster an EM. The feedback from students interviewed was positive, and this was confirmed by the reflections. All the student reflections were positive. The students were free to write any negatives about this experience, but instead, they wrote positive comments.

Governments could plan financial resources to direct Entrepreneurship Education at national and local levels to incorporate these triggers for change in an EM from Figure 7 on page 123 into a country-wide strategy to develop entrepreneurship competencies for sustainability. EE should be taught at the local and National level, and policy should be set to include teaching aspects that focus on sustainability. Knowledge should be included in a policy that includes the value that having an EM can have. An EM should be harnessed by including a discussion about what value added by EM could be developed by focusing on sustainability throughout the process. At the national and local level, institutions should have policies which include a redrafting of outcomes from EE to include developing competencies that straddle GreenComp and EntreComp competencies. Reflective and reflexive approaches should be used to develop the skills of educators and policymakers to harness the potential in students to develop these competencies for sustainability for the good of society.

Scholars have accepted that students can improve their knowledge and skills through a robust entrepreneurship education course (Duval-Couetil, 2013), and this thesis aims to add to this discussion about what the pedagogy of the class will look like in the future of EE in universities. There has been a call for entrepreneurship education to use the actions that are

being taught as part of courses globally, so that they are steered on a new course through individual reflections to drive society toward sustainable outcomes (Lans, Blok and Wesselink, 2014; Hoppe and Namdar, 2023). This research aims to contribute to that discussion to help give hope for the future of humanity (Dodd *et al.*, 2022). For example, participant 28 said that they ‘now recognise the significant role of sustainability in business’ and have actively started researching and implementing sustainable practices in their daily life and professional activities.

6.4 Limitations and Avenues for Future Research

Establishing boundaries for this research has been a challenging task, as entrepreneurship involves unlimited possible avenues or ventures to pursue. The definition of entrepreneurship is also varied and open to debate. The definitions, therefore, that are being used for this context of entrepreneurship education have been included in Section 1.7 under the definitions of key terminology and the lens used for this research.

As was mentioned in Section 1.1.1, there is no clear distinction between ethics and sustainability, and a definition has been widely adopted from Elkington’s book (Elkington, 1999). With more research about EE as an intervention to change EM for sustainability, this could be a time for future research to attempt a distinction. As was mentioned in the context of this thesis, the position of this research is that sustainability and ethics are used interchangeably.

Also, as was mentioned in Section 1.1.1, there was no clear distinction between teaching and education when it comes to mindset changes. The definition of EE adopted in this thesis uses the terms teaching and education interchangeably, but this distinction from the view of changing mindset may be quite different and is an avenue identified in Section 6.4 for future research. Teaching from the findings seems to have been about the specific new topic areas introduced to students, but education seems to include the actual mindset changes.

As was mentioned in Section 1.7, there has been no discussion of the context used in this thesis of competing mindsets as proposed by Mathisen and Arnulf (Mathisen and Arnulf, 2013), where the gap between intention and action could take longer with certain mindsets. This could be an avenue for future research.

As was mentioned in Section 2.3.3, there has been no attempt in my research to measure the intervention, as it was not considered necessary, since this is qualitative research, but quantitative research on this could be an avenue for future research.

As was mentioned in Section 3.5.2, there was an unplanned link between the action of reflection that students had to undertake and the reading on reflection they conducted. This link was inadvertently built on the nudging process proposed by Thaler and Sunstein (2008). This subsequently links to the proposal of pedagogical nudging by Neergaard *et al.* (Neergaard, Robinson and Jones, 2021). This link had not been thought out in advance of the class, but could be an avenue for future research on nudging that is outlined in Section 2.4.4.

From what was discussed in Section 5.4.1 about an EM geared toward sustainability, this will have implications for a free-market capitalist model. There are clear implications about how this can affect a free-market capitalist model, and so the issue is complex and out of the scope of this research.

From the discussion in Section 5.4.1, there appears to be no scholarly agreement as to what constitutes competence development or skill development, which can create value (Mawson, Casulli and Simmons, 2022; Van Gelderen, 2022). This might be because competence development or skill development refers to the same outcome, and nuances have not been ascertained. This might be a possible future research area that is outside the scope of this research, and for this reason, competence development and skill development are assumed to both contain elements of competence and skill development. This suggests a possible area for future research to make a distinction between skill and competence development.

In Section 2.4.2, there is a limitation in this thesis about how emotion and cognition work together to shape behaviour. It was uncovered that this does happen, and this seems to be a synergistic effect, and this is an avenue for future research into when and how and why they may reshuffle as to which is more important at the time of any pivotal change.

During the data collection, going into the added value and what constitutes added value could have been probed more during the interview, as to what students mean by value creation, to inform the lens each student was looking at it from, and this could be a topic of interest that could present some interesting findings. This is a recommendation for further research.

Another limitation was that the participants in the research were complimentary about the various aspects of the teaching and learning that took place. In the findings, there wasn't

really anything negative. This may be because only those who enjoyed it volunteered for the interview. See Section 3.7 for limitations of the methodology.

Another limitation was the time factor of the thesis, as interviewing students one year later could potentially produce some interesting findings. Also, a check in with students as to when they changed could be an interesting topic for further research as to pivotal moments in their journeys, and when they change, as this research was how they changed, but it was not possible to pinpoint exact changes due to the time elapsing between the class and the interview a year later. Maybe if students kept diaries between interviews, this would help with that.

Another recommendation for future research from Section 2.4.4. is that after an EE programme, when behavioural changes are displayed that are attributed to topics discussed in class, that pedagogical nudging may have taken place? This effect is a recommendation for future research because changes are required in the skills of students to achieve the goals of the SDGs (Sachs *et al.*, 2019).

An avenue for future research could be to quantitatively test the triggers that emerged from the research in the students' journeys to identify whether this is an identifiable journey that can be applied to an EE programme to foster sustainability.

Another recommendation for future research from Section 3.2.4 could be that similar comparative research be conducted in different universities.

After the uncovering of themes from my research, it is proposed that in the future, theory will be developed in line with a Straussian Grounded Theory approach, see Section 3.3.3, using a specific research problem and hypothesis to test. This is the recommendation for future research after all the themes and intricacies of the rich data have been uncovered, and these can then be used to develop a theory.

6.5 Summary

An EE programme should consist of new knowledge acquisition about entrepreneurship and a chance to dispel the myths surrounding its negative connotations and inspire curricula that use it for societal good. Open discussions can foster change to occur in an EM. Policymakers at local, national and institutional levels and educators should consider the reflective and reflexive methodology in future curricula decisions surrounding EE. Personal goal setting was used to arrive at the desired changes. Previously held beliefs and assumptions were dispelled to make room for changes in their beliefs and assumptions

by working in groups to tackle complex problems. The complex problems included a sustainability focus, and an EE class was and is an ideal context for introducing ideas for tackling complex problems related to sustainability. Real-world problems should be introduced, and student volunteering can contextualise these problems through personalisation and choice by individuals.

The conclusions above aim to answer the overarching research questions in terms of explaining How Entrepreneurship Education Shapes Entrepreneurial Mindset Toward Entrepreneurship Competence Development for Sustainability.

EPILOGUE

This research began with three research questions and concludes with an understanding that the has evolved as to what triggers changes in an Entrepreneurial Mindset (EM). These triggers can be used in an Entrepreneurship Education (EE) context and have evolved. While the preceding chapters have sought to examine the research problem through methodological and theoretical frameworks, the process of inquiry has revealed complexities that extend beyond the boundaries of this study.

The findings presented here contribute to the existing body of knowledge by clarifying key relationships and offering insights. However, they also underscore the limitations inherent in any single investigation. The data reflect a particular moment, context, and set of assumptions, all of which are subject to change as the field continues to develop. In this sense, the conclusions drawn are not definitive endpoints but provisional contributions to an ongoing scholarly conversation.

Equally significant has been the intellectual journey undertaken during this research. The doctoral process has demanded sustained critical reflection, methodological discipline, and an openness to uncertainty. Moments of ambiguity and revision were not obstacles to progress but essential components of scholarly growth and the development of my own reflexivity. Through them, this work has been shaped as much by reconsideration as by confirmation.

I am confident that this research will serve as a contribution to future research, inviting further exploration, refinement, and challenge. More broadly, it stands as a reminder that knowledge production is cumulative and collaborative, advancing not through final answers but through carefully articulated questions.

With this work concluded, the inquiry does not end. Rather, it continues—reshaped, extended, and informed by the insights gained here.

GLOSSARY OF TERMS

Term	Definition
Entrepreneurship	Entrepreneurship is when you act upon opportunities and ideas and transform them into value for others. The value that is created can be for profit, for people and for the planet.
Entrepreneurship Education (EE)	EE is developing the mindset, skill set and practice necessary.
Entrepreneurial Mindset	This is depicted as the triad and is the combination of ‘1. the cognitive aspect – how entrepreneurs use mental models to think, 2. the behavioural aspect – how entrepreneurs engage or act for opportunities and finally 3. the emotional aspects – what entrepreneurs feel in entrepreneurship’.
Personal value creation	This includes value creation as someone creates something that is both novel and valuable for others, but extends this to include a personal interest in this creation based on a journey they have travelled, with a focus on tackling real-life problems.
Sustainability	The triple bottom line definition applies to the value proposition that combines the needs of people, planet and profit. The triple bottom line involves ‘ensuring that our actions today do not limit the range of economic, social and environmental options open to future generations’.
Sustainability Competence	This is where learners embody sustainability values and take or request action that restores and maintains ecosystems and generates visions for a sustainable future.
Value Creation	This is where someone creates something that is both novel and valuable for others.

BIBLIOGRAPHY

- Ajzen, I. (1991) 'The theory of planned behavior', *Organizational behaviour and human decision processes*, 50 (2), pp. 179-211. Available at: [http://dx.doi.org/10.1016/0749-5978\(91\)90020-T](http://dx.doi.org/10.1016/0749-5978(91)90020-T).
- Ajzen, I. (2002) 'Perceived Behavioral Control, Self-Efficacy, Locus of Control, and the Theory of Planned Behavior', *Journal of Applied Social Psychology*, 32 (4), pp. 665-683. Available at: <http://dx.doi.org/10.1111/j.1559-1816.2002.tb00236.x>.
- Akrivou, K. and Bradbury-Huang, H. (2015) 'Educating Integrated Catalysts: Transforming Business Schools Toward Ethics and Sustainability', *Academy of Management Learning and Education*, 14 (2), pp. 222-240. Available at: <http://dx.doi.org/10.5465/amle.2012.0343>.
- Ansar, A., Rafi, A. and Rizvi, R.M. (2021) 'Is behaviourism really dead? A scoping review to document the presence of behaviourism in current medical education', *Journal of the Pakistan Medical Association*, 71 (4), pp. 1214-1220. Available at: <http://dx.doi.org/10.47391/JPMA.830>.
- Arsel, Z. (2017) 'Asking Questions with Reflexive Focus: A Tutorial on Designing and Conducting Interviews', *Journal of Consumer Research*, 44 (4), pp. 939-948. Available at: <http://dx.doi.org/10.1093/jcr/ucx096>.
- Bacigalupo, M. et al. (2016) 'EntreComp - The Entrepreneurship Competence Framework'. Available at: <http://dx.doi.org/10.2791/160811>.
- Bali Swain, R. and Yang-Wallentin, F. (2020) 'Achieving sustainable development goals: predicaments and strategies', *International journal of sustainable development and world ecology*, 27 (2), pp. 96-106. Available at: <http://dx.doi.org/10.1080/13504509.2019.1692316>.
- Banha, F. et al. (2025) 'A critical analysis of the Portuguese Framework for entrepreneurship education considering the EntreComp competence framework', *Entrep Educ*, 8 (1), pp. 1-28. Available at: <http://dx.doi.org/10.1007/s41959-025-00135-y>.
- Bassot, B. (2019) 'Action without action planning: the potential of the Career Thinking Session in enabling transformational career learning and development', *British Journal of Guidance & Counselling*, 47 (5), pp. 545-555. Available at: <http://dx.doi.org/10.1080/03069885.2017.1293937>.
- Bassot, B. (2020) *The reflective journal* 3rd edn. London: Macmillan Education UK.
- Belk, R.W., Fischer, E. and Kozinets, R.V. (2013) *Qualitative consumer & marketing research*. London : SAGE.
- Bennis, W.G. and O'Toole, J. (2005) 'How business schools lost their way', *Harvard Business Review*, 83 (5), pp. 96-104+154. Available at: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-18144371236&partnerID=40&md5=6c776e6e868a0260a567a44c30c87a24>.

Bhatia, A.K. and Levina, N. (2020) 'Diverse rationalities of entrepreneurship education: An epistemic stance perspective', *Academy of Management learning & education*, 19 (3), pp. 323-344. Available at: <http://dx.doi.org/10.5465/AMLE.2019.0201>.

Bianchi, G., Pisiotis, U. and Cabrera Giraldez, M. (2022) *GreenComp The European sustainability competence framework*. (Accessed: 31 January 2026).

Bicchieri, C. and Dimant, E. (2022) 'Nudging with care: the risks and benefits of social information', *Public Choice*, 191 (3-4), pp. 443-464. Available at: <http://dx.doi.org/10.1007/s11127-019-00684-6>.

Bloom, B.S. (1956) *Taxonomy of educational objectives : the classification of educational goals, handbook 1 : Cognitive domain*. Longman.

Blundel, R. (2021) *Exploring entrepreneurship*. 3rd edn. London: SAGE.

Bojana, L., Morgan, D. and Hoffman, K. (2020) 'Qualitative Data Collection in an Era of Social Distancing', *International Journal of Qualitative Methods*, pp. Available at: <http://dx.doi.org/https://doi.org/10.1177%2F1609406920937875>.

Brandshaug, S.W. (2024) 'Transformation in the liminal space 'in between' student and entrepreneur', *International Journal of Management Education*, 22 (2), pp. 1-13. Available at: <http://dx.doi.org/10.1016/j.ijme.2024.100962>.

Brännback, M. and Carsrud, A.L. (2017) *Revisiting the entrepreneurial mind : inside the black box*. Switzerland: Springer.

Braun, V. and Clarke, V. (2006) 'Using thematic analysis in psychology', *Qualitative research in psychology*, 3 (2), pp. 77-101. Available at: <http://dx.doi.org/10.1191/1478088706qp063oa>.

Braun, V. and Clarke, V. (2021) 'One size fits all? What counts as quality practice in (reflexive) thematic analysis?', *Qualitative research in psychology*, 18 (3), pp. 328-352. Available at: <http://dx.doi.org/10.1080/14780887.2020.1769238>.

Brentnall, C. et al. (2025) 'Provocation: what is the world asking of entrepreneurship education?', *International Journal of Entrepreneurial Behaviour & Research*, pp. 1-15. Available at: <http://dx.doi.org/10.1108/IJEBR-08-2024-0910>.

Brentnall, C. and Higgins, D. (2024) 'Entrepreneurship Educators in an Age of Climate and Ecological Breakdown', *Entrepreneurship education and pedagogy*, pp. 1-25. Available at: <http://dx.doi.org/10.1177/25151274241277828>.

Brockbank, A. (2006) *Facilitating reflective learning through mentoring & coaching* London: Kogan Page.

Brookfield, S. (2017) *Becoming a critically reflective teacher* 2nd edn. San Francisco, CA : Jossey-Bass.

Burnette, J.L. et al. (2020) 'A Growth Mindset Intervention: Enhancing Students' Entrepreneurial Self-Efficacy and Career Development', *Entrepreneurship Theory and Practice*, 44 (5), pp. 878-908. Available at: <http://dx.doi.org/10.1177/1042258719864293>.

Burrell, G. and Morgan, G. (2016) *Sociological Paradigms and Organisational Analysis: Elements of the Sociology of Corporate Life*. Routledge.

Campos-Mercade, P. (2021) 'The volunteer's dilemma explains the bystander effect', *Journal of Economic Behaviour and Organization*, 186 pp. 646-661. Available at: <http://dx.doi.org/10.1016/j.jebo.2020.11.012>.

Cardon, M.S. *et al.* (2012) 'Exploring the heart: entrepreneurial emotion is a hot topic', *Entrepreneurship: Theory and Practice*, 36 (1), pp. 1-10. Available at: <https://link.gale.com/apps/doc/A280300956/AONE?u=ustrath&sid=bookmark-AONE&xid=b673d382>.

Champenois, C. *et al.* (2024) 'The Other Organization: Heterotopia, Management, and Entrepreneurship', *Journal of management inquiry*, pp. 1-16. Available at: <http://dx.doi.org/10.1177/10564926241281080>.

Cheng, J.H.S. and Marsh, H.W. (2010) 'National Student Survey: are differences between universities and courses reliable and meaningful?', *Oxford Review of Education*, 36 (6), pp. 693-712. Available at: <http://dx.doi.org/10.1080/03054985.2010.491179>.

Christensen, B.T., Arendt, K.M. and Hjorth, D. (2023) 'How learning spaces matter in entrepreneurship education: introducing the concept of topopraxis', *Entrepreneurship and Regional Development*, 35 (3-4), pp. 317-336. Available at: <http://dx.doi.org/10.1080/08985626.2023.2176549>.

Cohen, B. (2018) *Post-capitalist entrepreneurship [internet resource] : startups for the 99%*. First edition. edn. Boca Raton, FL: CRC Press.

Cottrell, S. (2014) *Dissertations and project reports : a step by step guide*. Basingstoke, Hampshire.

Cuellar, T.L. (2019) *Cultivating an entrepreneurial mindset* New York: Business Expert Press.

Damasio, A. and Carvalho, G.B. (2013) 'The nature of feelings: evolutionary and neurobiological origins', *Nature Reviews Neuroscience*, 14 pp. 143-152. Available at: <https://link.gale.com/apps/doc/A316796359/AONE?u=ustrath&sid=bookmark-AONE&xid=6523bd1a>.

Das, A. and Bocken, N. (2024) 'Regenerative business strategies: A database and typology to inspire business experimentation towards sustainability', *Sustainable Production and Consumption*, 49 pp. 529-544. Available at: <http://dx.doi.org/10.1016/j.spc.2024.06.024>.

Daspit, J.J., Fox, C.J. and Findley, S.K. (2021) 'Entrepreneurial mindset: An integrated definition, a review of current insights, and directions for future research', *Journal of Small Business Management*, pp. 1-33. Available at: <http://dx.doi.org/10.1080/00472778.2021.1907583>.

DeTienne, K.B. *et al.* (2021) 'Moral Development in Business Ethics: An Examination and Critique: JBE', *Journal of Business Ethics*, 170 (3), pp. 429-448. Available at: <http://dx.doi.org/https://doi.org/10.1007/s10551-019-04351-0>.

Di Carlo, E.B., Sandro (2020) *Accountability, Ethics and Sustainability of Organizations: New Theories, Strategies and Tools for Survival and Growth*. Cham: Springer International Publishing.

Dodd, S. *et al.* (2022) 'Transforming enterprise education: sustainable pedagogies of hope and social justice', *Entrepreneurship & Regional Development*, pp. 1-15. Available at: <http://dx.doi.org/10.1080/08985626.2022.2071999>.

Duval-Couetil, N. (2013) 'Assessing the Impact of Entrepreneurship Education Programs: Challenges and Approaches', *Journal of Small Business Management*, 51 (3), pp. 394-409. Available at: <http://dx.doi.org/10.1111/jsbm.12024>.

Eden, C., Ackermann, F. and Cropper, S. (1992) 'The Analysis of Cause Maps', *Journal of management studies*, 29 (3), pp. 309-324. Available at: <http://dx.doi.org/10.1111/j.1467-6486.1992.tb00667.x>.

Edgeman, R. and Eskildsen, J. (2014) 'Modeling and Assessing Sustainable Enterprise Excellence', *Business Strategy and the Environment*, 23 (3), pp. 173-187. Available at: <http://dx.doi.org/10.1002/bse.1779>.

Eisenhardt, K.M., Graebner, M.E. and Sonenshein, S. (2016) 'Grand challenges and inductive methods: Rigor without rigor mortis', *Academy of Management journal*, 59 (4), pp. 1113-1123. Available at: <http://dx.doi.org/10.5465/amj.2016.4004>.

Eizaguirre, A., García-Feijoo, M. and Laka, J.P. (2019) 'Defining sustainability core competencies in business and management studies based on multinational stakeholders' Perceptions', *Sustainability*, 11 (8), pp. 1-21. Available at: <http://dx.doi.org/10.3390/su11082303>.

Elkington, J. (1999) *Cannibals with forks : the triple bottom line of 21st century business*. Oxford: Riley, Dunnn and Wilson Ltd.

Engen, M. and Holen, I.E. (2014) 'Radical Versus Incremental Innovation: The Importance of Key Competences in Service Firms', *Technology Innovation Management Review*, 4 (4), pp. 15-25. Available at: <http://dx.doi.org/10.22215/timreview781>.

Eriksson, P. and Kovalainen, A. (2016) *Qualitative methods in business research*. 2nd edn. London

European Union (n.d.) *Transforming Enterprise Education*. Available at: <https://www.transformingee.eu/> (Accessed: 25 September 2025).

Fayolle, A., Gailly, B. and Lassas-Clerc, N. (2006) 'Assessing the impact of entrepreneurship education programmes: A new methodology', *Journal of European Industrial Training*, 30 (9), pp. 701-720. Available at: <http://dx.doi.org/10.1108/03090590610715022>.

Feldman, D.B. and Kaal, K.J. (2007) 'Vicarious Trauma and Assumptive Worldview: Beliefs About the World in Acquaintances of Trauma Victims', *Traumatology* 13 (3), pp. 21-31. Available at: <http://dx.doi.org/10.1177/1534765607305437>.

- Franzosi, R. (1998) 'Narrative Analysis-Or Why (And How) Sociologists Should be Interested in Narrative', *Annual Review Sociology*, 24 (1), pp. 517-554. Available at: <http://dx.doi.org/10.1146/annurev.soc.24.1.517>.
- Fritson, K.K. (2008) 'Impact of Journaling on Students' Self-Efficacy and Locus of Control'. Available at: <https://files.eric.ed.gov/fulltext/EJ888412.pdf>.
- Gagné, M. and Deci, E.L. (2005) 'Self-determination theory and work motivation', *Journal of Organisational Behaviour*, 26 (4), pp. 331-362. Available at: <http://dx.doi.org/10.1002/job.322>.
- Gartner, W.B. and Birley, S. (2002) 'Introduction to the special issue on qualitative methods in entrepreneurship research', *Journal of Business Venturing*, 17 (5), pp. 387-395. Available at: [http://dx.doi.org/10.1016/S0883-9026\(01\)00077-5](http://dx.doi.org/10.1016/S0883-9026(01)00077-5).
- Gioia, D. (2020) 'A Systematic Methodology for Doing Qualitative Research', *The Journal of Applied Behavioral Science*, 57 (1), pp. 20-29. Available at: <http://dx.doi.org/10.1177/0021886320982715>.
- Gioia, D.A., Corley, K.G. and Hamilton, A.L. (2013) 'Seeking Qualitative Rigor in Inductive Research: Notes on the Gioia Methodology', *Organizational research methods*, 16 (1), pp. 15-31. Available at: <http://dx.doi.org/10.1177/1094428112452151>.
- Gioia, D.A. and Pitre, E. (1990) 'Multiparadigm Perspectives on Theory Building', *The Academy of Management review*, 15 (4), pp. 584-602. Available at: <http://dx.doi.org/10.5465/amr.1990.4310758>.
- Glaser, B.G. and Strauss, A.L. (2017) *Discovery of Grounded Theory: Strategies for Qualitative Research*. First edition. edn. London: Taylor and Francis.
- Glasgow, U.o.S. (n.d.) *Sustainable Strathclyde*. (Accessed: 25 September 2025).
- Grégoire, D.A., Barr, P.S. and Shepherd, D.A. (2010) 'Cognitive Processes of Opportunity Recognition: The Role of Structural Alignment', *Organization science* 21 (2), pp. 413-431. Available at: <http://dx.doi.org/10.1287/orsc.1090.0462>.
- Gregory, R. and Thorley, L. (2013) *Using group-based learning in higher education*. Routledge.
- Hallonsten, O. (2023) *Empty innovation : causes and consequences of society's obsession with entrepreneurship and growth / [internet resource]*. Cham: Palgrave Macmillan.
- Hameed, I. and Irfan, Z. (2019) 'Entrepreneurship education: a review of challenges, characteristics and opportunities', *Entrepreneurship Education*, 2 (3-4), pp. 135-148. Available at: <http://dx.doi.org/10.1007/s41959-019-00018-z>.
- Hawn, O., Chatterji, A.K. and Mitchell, W. (2018) 'Do investors actually value sustainability? New evidence from investor reactions to the Dow Jones Sustainability Index (DJSI)', *Strategic management journal*, 39 (4), pp. 949-976. Available at: <http://dx.doi.org/10.1002/smj.2752>.

- Haynie, J.M. *et al.* (2010) 'A situated metacognitive model of the entrepreneurial mindset', *Journal of Business Venturing*, 25 (2), pp. 217-229. Available at: <http://dx.doi.org/10.1016/j.jbusvent.2008.10.001>.
- Haynie, J.M., Shepherd, D.A. and McMullen, J.S. (2009) 'An Opportunity for Me? The Role of Resources in Opportunity Evaluation Decisions', *Journal of Management Studies*, 46 (3), pp. 337-361. Available at: <http://dx.doi.org/10.1111/j.1467-6486.2009.00824.x>.
- Hermann, R.R. and Bossle, M.B. (2020) 'Bringing an entrepreneurial focus to sustainability education: A teaching framework based on content analysis', *Journal of cleaner production*, 246 pp. 1-19. Available at: <http://dx.doi.org/10.1016/j.jclepro.2019.119038>.
- Hill, L.S., Ghorpade, S. and Galappaththi, M. (2023) 'Toward decolonizing sustainability research: a systematic process to guide critical reflections', *FACETS*, 8 pp. 1-11. Available at: <http://dx.doi.org/10.1139/facets-2022-0254>.
- Hoppe, M. and Namdar, K. (2023) 'Towards Entrepreneurship for a Cause: Educating Transformative Entrepreneurial Selves for a Better World', *Entrepreneurship Education and Pedagogy*, pp. 1-18. Available at: <http://dx.doi.org/10.1177/25151274221148222>.
- Howorth, C., Smith, S.M. and Parkinson, C. (2012) 'Social learning and social entrepreneurship education', *Academy of Management Education journal*, 11 (3), pp. 371-389. Available at: <http://dx.doi.org/10.5465/amle.2011.0022>.
- Huoponen, A. (2024) 'From concern to behavior: barriers and enablers of adolescents' pro-environmental behavior in a school context', *Environmental Education Research*, 30 (5), pp. 677-699. Available at: <http://dx.doi.org/10.1080/13504622.2023.2180374>.
- Husain, M.M. (2022) 'To what extent emotion, cognition and behaviour enhance a student's engagement: A case study on the MAJA teaching approach', *Policy futures in education*, 20 (1), pp. 86-97. Available at: <http://dx.doi.org/10.1177/14782103211032076>.
- Hussain, I. *et al.* (2019) 'The Voice Bystander Effect: How Information Redundancy Inhibits Employee Voice', *Academy of Management Journal*, 62 (3), pp. 828-849. Available at: <http://dx.doi.org/10.5465/amj.2017.0245>.
- Huxley, A. (2014) *Brave new world*. New edition / introductions by Margaret Atwood and David Bradshaw. edn. London: London : Vintage Classic.
- Jane Lu, H. and Pivec, M. (2021) 'Integration of Sustainability Awareness in Entrepreneurship Education', *Sustainability*, 13 (9), pp. 1-14. Available at: <http://dx.doi.org/https://doi.org/10.3390/su13094934>.
- Janoff-Bulman, R. (1989) 'Assumptive Worlds and the Stress of Traumatic Events: Applications of the Schema Construct', *Social Cognition*, 7 (2), pp. 113-136. Available at: <http://dx.doi.org/10.1521/soco.1989.7.2.113>.
- Joensuu-Salo, S., Viljamaa, A. and Varamäki, E. (2022) 'Testing the EntreComp framework and its relation to start-up behaviour in seven European countries', *Journal of small business and enterprise development*, pp. 1-20. Available at: <http://dx.doi.org/10.1108/JSBED-04-2021-0156>.

Keet, A. and Rafaely, D. (2025) 'Beyond' critique: universities, human rights, decolonisation, and the Sustainable Development Goals', *Comparative Education*, pp. 1-19. Available at: <http://dx.doi.org/10.1080/03050068.2025.2463811>.

Kickul, J. *et al.* (2025) 'Baking In Purpose: How Activist Pedagogies Can Transform Entrepreneurship Education for Collective Impact', *Entrepreneurship education and pedagogy*, 8 (4), pp. 511-529. Available at: <http://dx.doi.org/10.1177/25151274251360568>.

Klapper, R.G. and Fayolle, A. (2023) 'A transformational learning framework for sustainable entrepreneurship education: The power of Paulo Freire's educational model', *International Journal of Management Education*, 21 (1), pp. 1-14. Available at: <http://dx.doi.org/10.1016/j.ijme.2022.100729>.

Klotz, A.C. and Neubaum, D.O. (2016) 'Article Commentary: Research on the Dark Side of Personality Traits in Entrepreneurship: Observations from an Organizational Behavior Perspective', *Entrepreneurship Theory and Practice*, 40 (1), pp. 7-17. Available at: <http://dx.doi.org/10.1111/etap.12214>.

Kohlberg, L. and Hersh, R.H. (1977) 'Moral Development: A Review of the Theory', *Theory Into Practice*, 16 (2), pp. 53-59. Available at: <http://www.jstor.org/stable/1475172>.

Kopnina, H. (2016) 'victims of unsustainability: a challenge to sustainable development goals', *International Journal of Sustainable Development and World Ecology*, 23 (2), pp. 113-121. Available at: <http://dx.doi.org/10.1080/13504509.2015.1111269>.

Krueger, N.F. and Carsrud, A.L. (1993) 'Entrepreneurial intentions: Applying the theory of planned behaviour', *Entrepreneurship & Regional Development*, 5 (4), pp. 315-330. Available at: <http://dx.doi.org/10.1080/08985629300000020>.

Kuhn, T.S. (2000) *The road since Structure : philosophical essays, 1970-1993, with an autobiographical interview*. Chicago.

Kuratko, D.F., Fisher, G. and Audretsch, D.B. (2021) 'Unraveling the entrepreneurial mindset', *Small Business Economics*, 57 (4), pp. 1681-1691. Available at: <http://dx.doi.org/10.1007/s11187-020-00372-6>.

Lackeus, M. (2020) 'Comparing the impact of three different experiential approaches to entrepreneurship in education', *International Journal of Entrepreneurial Behaviour and Research*, 26 (5), pp. 937-971. Available at: <http://dx.doi.org/10.1108/IJEBr-04-2018-0236>.

Landstrom, H. *et al.* (2016) *Challenging Entrepreneurship Research*. London.

Lans, T., Blok, V. and Wesselink, R. (2014) 'Learning apart and together: towards an integrated competence framework for sustainable entrepreneurship in higher education', *Journal of Cleaner Production*, 62 pp. 37-47. Available at: <http://dx.doi.org/https://doi.org/10.1016/j.jclepro.2013.03.036>.

Larios Hernández, G.J.s., Walmsley, A. and Lopez-Castro, I. (2022) *Theorising undergraduate entrepreneurship education : reflections on the development of the entrepreneurial mindset* Cham : Palgrave Macmillan.

- Larsen, I.B. and Neergaard, H. (2024) 'What lies beneath: using student reflections to study the entrepreneurial mindset in entrepreneurship education', *International Journal of Entrepreneurial Behavior and Research*, 30 (5), pp. 1149-1176. Available at: <http://dx.doi.org/10.1108/IJEBr-06-2023-0578>.
- Lerner, D.A., Hunt, R.A. and Dimov, D. (2018) 'Action! Moving beyond the intendedly-rational logics of entrepreneurship', *Journal of Business Venturing*, 33 (1), pp. 52-69. Available at: <http://dx.doi.org/https://doi.org/10.1016/j.jbusvent.2017.10.002>.
- Linton, G. and Klinton, M. (2019) 'University entrepreneurship education: a design thinking approach to learning', *Journal of Innovation and Entrepreneurship*, 8 (1), pp. 1-11. Available at: <http://dx.doi.org/10.1186/s13731-018-0098-z>.
- Lourenço, F., Jones, O. and Jayawarna, D. (2012) 'Promoting sustainable development: The role of entrepreneurship education', *International Small Business Journal*, 31 (8), pp. 841-865. Available at: <http://dx.doi.org/10.1177/0266242611435825>.
- Lucy, B. *et al.* (2020) 'The Impact of Entrepreneurship Education on the Entrepreneurial Intention of Students in Tertiary Institutions', *International Journal of Management, Accounting & Economics*, 7 (4), pp. 180-212. Available at: https://www.researchgate.net/publication/342335159_The_Impact_of_Entrepreneurship_Education_on_the_Entrepreneurial_Intention_of_Students_in_Tertiary_Institutions.
- Lynch, M.P. and Corbett, A.C. (2023) 'Entrepreneurial mindset shift and the role of cycles of learning', *Journal of Small Business Management*, 61 (1), pp. 80-101. Available at: <http://dx.doi.org/10.1080/00472778.2021.1924381>.
- M. Alammari, F. *et al.* (2019) 'Grounded Theory in Practice: Novice Researchers' Choice Between Straussian and Glaserian', *Journal of Management Inquiry*, 28 (2), pp. 228-245. Available at: <http://dx.doi.org/10.1177/1056492618770743>.
- Mamas, C. (2017) *Friendships and group work dynamics in higher education : applying a critical case study design* London.
- Martínez-Campillo, A., Sierra-Fernández, M.d.P. and Fernández-Santos, Y. (2019) 'Service-Learning for Sustainability Entrepreneurship in Rural Areas: What Is Its Global Impact on Business University Students?', *Sustainability*, 11 (19), pp. 5296. Available at: <http://dx.doi.org/10.3390/su11195296>.
- Maslow, A.H. *et al.* (1987) *Motivation and Personality*. Harper and Row.
- Masoumi, M. (2023) 'Exploring the influence of entrepreneurial identity on students' choice between entrepreneurship courses and university-based incubators', *Asia Pacific journal of innovation and entrepreneurship* 17 (2), pp. 137-153. Available at: <http://dx.doi.org/10.1108/APJIE-03-2023-0052>.
- Mathisen, J.-E. and Arnulf, J.K. (2013) 'Competing mindsets in entrepreneurship: The cost of doubt', *The International Journal of Management Education*, 11 (3), pp. 132-141. Available at: <http://dx.doi.org/https://doi.org/10.1016/j.ijme.2013.03.003>.

- Matlay, H. (2008) 'The impact of entrepreneurship education on entrepreneurial outcomes', *Journal of Small Business and Enterprise Development*, 15 (2), pp. 382-396. Available at: <http://dx.doi.org/10.1108/14626000810871745>.
- Mawson, S., Casulli, L. and Simmons, E.L. (2022) 'A Competence Development Approach for Entrepreneurial Mindset in Entrepreneurship Education', *Entrepreneurship Education and Pedagogy*, pp. 1-21. Available at: <http://dx.doi.org/10.1177/25151274221143146>.
- McMullen, J.S., Brownell, K.M. and Adams, J. (2021) 'What Makes an Entrepreneurship Study Entrepreneurial? Toward A Unified Theory of Entrepreneurial Agency', *Entrepreneurship Theory and Practice*, 45 (5), pp. 1197-1238. Available at: <http://dx.doi.org/10.1177/1042258720922460>.
- Mets, T., Holbrook, J. and Läänelaid, S. (2021) 'Entrepreneurship Education Challenges for Green Transformation', *Administrative Sciences*, 11 (1), pp. Available at: <http://dx.doi.org/10.3390/admsci11010015>.
- Mezirow, J. (2000) *Learning as transformation : critical perspectives on a theory in progress*. 1st edn. San Francisco: Jossey-Bass.
- Middleton, T. *et al.* (2023) 'Developing effective assessment feedback: academic buoyancy and the relational dimensions of feedback', *Teaching in Higher Education*, 28 (1), pp. 118-135. Available at: <http://dx.doi.org/10.1080/13562517.2020.1777397>.
- Miller, D. (2015) 'A Downside to the Entrepreneurial Personality?', *Entrepreneurship Theory and Practice*, 39 (1), pp. 1-8. Available at: <http://dx.doi.org/10.1111/etap.12130>.
- Mills, S. (2022) 'Personalized nudging', *Behavioural Public Policy*, 6 (1), pp. 150-159. Available at: <http://dx.doi.org/10.1017/bpp.2020.7>.
- Mindt, L. and Rieckmann, M. (2017) 'Developing competencies for sustainability-driven entrepreneurship in higher education: A literature review of teaching and learning methods', *Teoría de la educación*, 29 (1), pp. 129-159. Available at: <http://dx.doi.org/10.14201/teoredu2017291129159>.
- Minocha, S., Reynolds, M. and Hristov, D. (2017) 'Developing imaginers not managers – How to flip the business school model', *The international journal of management education*, 15 (3), pp. 481-489. Available at: <http://dx.doi.org/10.1016/j.ijme.2017.08.002>.
- Mishra, M., Ghosh, K. and Sharma, D. (2021) 'Unethical Pro-organizational Behavior: A Systematic Review and Future Research Agenda', *Journal of Business Ethics*, 179 (1), pp. 63-87. Available at: <http://dx.doi.org/10.1007/s10551-021-04764-w>.
- Naumann, C. (2017) 'Entrepreneurial Mindset: A Synthetic Literature Review', *Entrepreneurial Business and Economics Review*, 5 (3), pp. 149-172. Available at: <http://dx.doi.org/10.15678/EBER.2017.050308>.
- Neck, H.M. and Corbett, A.C. (2018) 'The Scholarship of Teaching and Learning Entrepreneurship', *Entrepreneurship Education and Pedagogy*, 1 (1), pp. 8-41. Available at: <http://dx.doi.org/10.1177/2515127417737286>.

- Neergaard, H., Robinson, S. and Jones, S. (2021) 'Transformative learning in the entrepreneurship education process: the role of pedagogical nudging and reflection', *International journal of entrepreneurial behaviour & research*, 27 (1), pp. 251-277. Available at: <http://dx.doi.org/10.1108/IJEER-04-2020-0235>.
- Otache, I., Akubo, A.J. and David, B.B. (2024) 'Factors and challenges affecting Enactus members' social entrepreneurial actions: a focus group study', *Social enterprise journal*, 20 (4), pp. 566-584. Available at: <http://dx.doi.org/10.1108/SEJ-06-2023-0077>.
- Patton, M.Q. (2015) *Qualitative research and evaluation methods [internet resource] : integrating theory and practice*. Fourth edition. edn. Washington: SAGE Publications.
- Pidduck, R.J., Clark, D.R. and Lumpkin, G.T. (2023) 'Entrepreneurial mindset: Dispositional beliefs, opportunity beliefs, and entrepreneurial behavior', *Journal of small business management*, 61 (1), pp. 45-79. Available at: <http://dx.doi.org/10.1080/00472778.2021.1907582>.
- Piderit, S.K. (2000) 'Rethinking resistance and recognizing ambivalence: A multidimensional view of attitudes toward an organizational change', *Academy of Management Review*, 25 (4), pp. 783-794. Available at: <https://www.proquest.com/scholarly-journals/rethinking-resistance-recognizing-ambivalence/docview/210980597/se-2?accountid=14116>.
- Pittaway, L. (2005) 'Philosophies in entrepreneurship: a focus on economic theories', *International journal of entrepreneurial behaviour & research*, 11 (3), pp. 201-221. Available at: <http://dx.doi.org/10.1108/13552550510598790>.
- Pittaway, L. and Cope, J. (2007) 'Entrepreneurship Education: A Systematic Review of the Evidence', *International Small Business Journal*, 25 (5), pp. 479-510. Available at: <http://dx.doi.org/10.1177/0266242607080656>.
- Plutchik, R. (1982) 'A psychoevolutionary theory of emotions', *Social Science Information*, 21 (4-5), pp. 529-553. Available at: <http://dx.doi.org/10.1177/053901882021004003>.
- Popoola, I.T. (2018) 'Accountability and governance in implementing the Sustainable Development Goals in a developing country context: evidence from Tanzania', *Accounting, auditing & accountability journal*, 31 (2), pp. 748-748. Available at: <http://dx.doi.org/10.1108/AAAJ-10-2017-3169>.
- Principles of Responsible Management Education (2007) *What is PRME?* Available at: <https://www.unprme.org/about/> (Accessed: 14 March 2024).
- Ramsay, J. (1993) 'The Hybrid Course: Competences and Behaviourism in Higher Education', *Journal of further and higher education*, 17 (3), pp. 70-89. Available at: <http://dx.doi.org/10.1080/0309877930170308>.
- Ramsgaard, M.B. and Blenker, P. (2022) 'Reinterpreting a signature pedagogy for entrepreneurship education', *Journal of small business and enterprise development*, 29 (2), pp. 182-202. Available at: <http://dx.doi.org/10.1108/JSBED-03-2021-0115>.
- Ripollés, M. and Blesa, A. (2024) 'The role of teaching methods and students' learning motivation in turning an environmental mindset into entrepreneurial actions', *International*

Journal of Management Education, 22 (2), pp. 1-15. Available at:
<http://dx.doi.org/10.1016/j.ijme.2024.100961>.

Rockström, J. (2009) 'Planetary Boundaries: Exploring the Safe Operating Space for Humanity', *Ecology & Society*, 14 (2), pp. 411-444. Available at:
<http://www.ecologyandsociety.org/vol14/iss2/art32/>.

Sachs, J.D. *et al.* (2019) 'Six Transformations to achieve the Sustainable Development Goals', *Nature Sustainability*, 2 (9), pp. 805-814. Available at: <http://dx.doi.org/10.1038/s41893-019-0352-9>.

Sadler-Smith, E. and Cojuharenco, I. (2021) 'Business schools and hubris: Cause or cure?', *Academy of Management Learning and Education*, 20 (2), pp. 270-289. Available at:
<http://dx.doi.org/10.5465/amle.2019.0289>.

Sanz-Velasco, S.A. (2006) 'Opportunity development as a learning process for entrepreneurs', *International Journal of Entrepreneurial Behavior & Research*, 12 (5), pp. 251-271. Available at: <http://dx.doi.org/10.1108/13552550610687637>.

Saptono, A. *et al.* (2020) 'Does entrepreneurial education matter for Indonesian students' entrepreneurial preparation: The mediating role of entrepreneurial mindset and knowledge', *Cogent Education*, 7 (1), pp. Available at:
<http://dx.doi.org/http://dx.doi.org/10.1080/2331186X.2020.1836728>.

Saunders, M.M.K., Philip, L. and Adrian, T. (2019) *Research Methods For Business Students*. Eighth edn. Pearson.

Schumpeter, J. (1934) *The Theory of Economic Development*. Harvard University Press.

Schwarz, E.J. *et al.* (2021) 'Entrepreneurial lean thinking for sustainable business modeling: a workshop design for incumbent firms', *NachhaltigkeitsManagementForum*, 29 (1), pp. 41-55. Available at: <http://dx.doi.org/10.1007/s00550-020-00508-y>.

Shepherd, D.A. and Patzelt, H. (2011) 'The New Field of Sustainable Entrepreneurship: Studying Entrepreneurial Action Linking “What is to be Sustained” with “What is to be Developed”', *Entrepreneurship Theory and Practice*, 35 (1), pp. 137-163. Available at:
<http://dx.doi.org/10.1111/j.1540-6520.2010.00426.x>.

Shepherd, D.A. and Patzelt, H. (2018) *Entrepreneurial Cognition : Exploring The Mindset of Entrepreneurs*. Cham: Springer Open.

Skinner, B.F. (1965) *Science and human behavior*. New York: Free Press.

Soden, B.J. and Held, I.M. (2006) 'An Assessment of Climate Feedbacks in Coupled Ocean–Atmosphere Models', *Journal of Climate*, 19 (14), pp. 3354-3360. Available at:
<http://dx.doi.org/10.1175/jcli3799.1>.

Storbeck, J. and Clore, G.L. (2007) 'On the interdependence of cognition and emotion', *Cognition and Emotion*, 21 (6), pp. 1212-1237. Available at:
<http://dx.doi.org/10.1080/02699930701438020>.

Sweller, J. (1988) 'Cognitive load during problem solving: Effects on learning', *Cognitive Science*, 12 (2), pp. 257-285. Available at: http://dx.doi.org/10.1207/s15516709cog1202_4.

Tanu, D. and Parker, L. (2018) 'Fun, 'Family', and Friends: Developing pro-environmental behaviour among high school students in Indonesia', *Indonesia and the Malay World*, 46 (136), pp. 303-324. Available at: <http://dx.doi.org/10.1080/13639811.2018.1518015>.

Thaler, R.H. and Sunstein, C.R. (2008) *Nudge : improving decisions about health, wealth, and happiness*. New Haven.

Thalmann, M., Souza, A.S. and Oberauer, K. (2019) 'How Does Chunking Help Working Memory?', *Journal of Experimental Psychology: Learning, Memory and Cognition*, 45 (1), pp. 37-55. Available at: <http://dx.doi.org/10.1037/xlm0000578>.

Thomsen, B. *et al.* (2024) 'Reimagining entrepreneurship in the Anthropocene through a multispecies relations approach', *Journal of Business Venturing Insights*, 22 pp. 1-10. Available at: <http://dx.doi.org/10.1016/j.jbvi.2024.e00507>.

Tomasella, B., Wylie, A. and Gill, D. (2023) 'The role of higher education institutions (HEIs) in educating future leaders with social impact contributing to the sustainable development goals', *Social Enterprise Journal*, 19 (4), pp. 329-346. Available at: <http://dx.doi.org/10.1108/SEJ-03-2022-0027>.

Tunstall, R. *et al.* (2009) 'Achieving Strategic Intent through Corporate Venturing: The Role of Strategic Relationships and Market Orientation', *The International Journal of Entrepreneurship and Innovation*, 10 (4), pp. 301-312. Available at: <http://dx.doi.org/10.5367/000000009790012318>.

United Nations (2015) *The Paris Agreement*. Available at: <https://www.un.org/en/climatechange/paris-agreement> (Accessed: 21 April 2026).

United Nations (2022) 'The Sustainable Development Goals Report'. Available at: <https://unstats.un.org/sdgs/report/2022/The-Sustainable-Development-Goals-Report-2022.pdf> (Accessed: 9.8.22).

United Nations (n.d.) 'Transforming Our World The 2030 Agenda For Sustainable Development'. Available at: <https://sdgs.un.org/sites/default/files/publications/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf> (Accessed: 9 August 2022).

University, E. (n.d.) *Sustainability*. Available at: <https://sustainability.ed.ac.uk/take-action/framework> (Accessed: 25 September 2025).

Uzuntiryaki-Kondakci, E. *et al.* (2022) 'A Qualitative Examination of Science Teachers' Emotions, Emotion Regulation Goals and Strategies', *Research in Science Education*, 52 (4), pp. 1131-1155. Available at: <http://dx.doi.org/10.1007/s11165-020-09986-y>.

Van Gelderen, M. (2022) 'Developing entrepreneurial competencies through deliberate practice', *Education Training*, pp. 1-18. Available at: <http://dx.doi.org/10.1108/ET-10-2021-0396>.

- Vestergaard, L., Moberg, K. and Jorgensen, C. (2012) 'Impact of Entrepreneurship Education in Denmark - 2011'. Available at: https://eng.ffe-ye.dk/media/202248/impact_of_entrepreneurship_education_in_denmark_2011.pdf (Accessed: 24.8.25).
- Waddock, S. (2020) 'Will businesses and business schools meet the grand challenges of the era?', *Sustainability*, 12 (15), pp. 1-11. Available at: <http://dx.doi.org/10.3390/su12156083>.
- Wang, Y.-Y., Wang, Y.-S. and Wang, Y.-M. (2022) 'What drives students' Internet ethical behaviour: an integrated model of the theory of planned behaviour, personality, and Internet ethics education', *Behaviour and Information Technology*, 41 (3), pp. 588-610. Available at: <http://dx.doi.org/10.1080/0144929X.2020.1829053>.
- Weick, K.E. (2009) *Making sense of the organization. Vol. 2, The impermanent organization*. Wiley.
- Wilhelm, M.M. et al. (2016) 'Sustainability in multi-tier supply chains: Understanding the double agency role of the first-tier supplier', *Journal of operations management*, 41 (1), pp. 42-60. Available at: <http://dx.doi.org/10.1016/j.jom.2015.11.001>.
- Winkler, C. (2013) 'Toward a Dynamic Understanding of Entrepreneurship Education Research across the Campus – Social Cognition and Action Research', *Entrepreneurship research journal*, 4 (1), pp. 69-93. Available at: <http://dx.doi.org/10.1515/erj-2013-0039>.
- Wise, C. (2011) *Chomsky and deconstruction : the politics of unconscious knowledge* New York: Palgrave Macmillan.
- Wood, M.S. and Williams, D.W. (2014) 'Opportunity Evaluation as Rule-Based Decision Making', *Journal of Management Studies*, 51 (4), pp. 573-602. Available at: <http://dx.doi.org/https://doi.org/10.1111/joms.12018>.
- Woods, C., Dell, K. and Carroll, B. (2022) 'Decolonizing the Business School: Reconstructing the Entrepreneurship Classroom through Indigenizing Pedagogy and Learning', *Academy of Management Learning & Education*, 21 (1), pp. 82-100. Available at: <http://dx.doi.org/10.5465/amle.2020.0366>.
- Woollard, J. (2010) *Psychology for the classroom : behaviourism*. Abingdon.
- World Commission on Environment and Development (1987) 'Brundtland Report'. Available at: <https://www.brundtland.co.za/2022/08/03/brundtland-report-1987-our-common-future/> (Accessed: 6.3.24).
- Wunderling, N. et al. (2020) 'Global warming due to loss of large ice masses and Arctic summer sea ice', *Nature Communications*, 11 (1), pp. 5177-5178. Available at: <http://dx.doi.org/10.1038/s41467-020-18934-3>.
- Yamini, R., Soloveva, D. and Peng, X. (2022) 'What Inspires Social Entrepreneurship? The Role of Prosocial Motivation, Intrinsic Motivation, and Gender in Forming Social Entrepreneurial Intention', *Entrepreneurship Research Journal*, 12 (2), pp. 71-105. Available at: <http://dx.doi.org/10.1515/erj-2019-0129>.
- Yin, R.K. (2014) *Case study research : design and methods*. 5th edn. Los Angeles: SAGE.

Yin, R.K. (2018) *Case study research and applications : design and methods*. 6th edn. California: Thousand Oaks.

Zhang, T. *et al.* (2024) 'Greening ambitions: exploring factors influencing university students' intentions for sustainable entrepreneurship', *International Entrepreneurship and Management Journal*, 20 (4), pp. 2863-2899. Available at: <http://dx.doi.org/10.1007/s11365-024-00991-5>.

Zheng, Z. *et al.* (2025) 'Understanding the Group Differences Among University Students: Exploring the Relationships Between School Climate, Teacher–Student Interactions, Academic Self-Efficacy, and Academic Achievement', *Psychology in the Schools*, 62 (9), pp. 3390-3402. Available at: <http://dx.doi.org/10.1002/pits.23547>.

APPENDIX 1: Full Interviews Mapping to Literature (Interviews 1,10, and 30)

INTERVIEW GUIDE Interview 1			
Q no.	Research Question RQ/ Context Question CQ	Interview Question	Literature Review
1	CQ	Thank you for joining the interview. Are you clear about why we are carrying out this interview? All responses will be anonymised. Are you happy for me to RECORD this interview?	(Saunders, Philip and Adrian, 2019)
2	CQ	What age are you? 36 Gender? Male Background? Born in Scotland and lived in Scotland. What course are you studying? BBA in Business Administration	
2	CQ	What were you looking forward to with the class, or not looking forward to? I wasn't looking forward to it, thought it would be a lot of rubbish. There wasn't much to choose from. New venture, setting up your own business. I thought it was something. Thought it was repetitive. Didn't enjoy the MDP. Lecturers didn't appreciate that. Didn't like the MDP course; it is the worst course, and the university should be ashamed of it, the way it is delivered and managed.	(Kuratko, Fisher and Audretsch, 2021)
3	CQ	Had you thought about sustainability, or had you started with sustainability competencies/skills? Not on my radar. If you did, what did you identify as the	(Hermann and Bossle, 2020), (Lans, Blok

		skills you had, and which did you learn? Can you rank them in order of importance to you? • Systems thinking- the ability to think of the interdependency of subsystems. Personally, been a single parent. Able to juggle. Delivered that and made me think. 1. Nice the way nobody had the wrong opinion because every opinion could lead to change. It opened my mindset about that. • Embracing diversity through collaboration of different fields. Hope I developed from personal. How is the class? The class was good. • Foresighted thinking-into the future. Fluid plan, will change. Opened horizons. Not opposed to it. Not averse. Hunger issues, but made them think about volunteering. How your team can change. • Normative competence-see the world as it should be. Cynical how they see it. Not changed. Corruption and greed. Not need to be the best. Money doesn't drive you. • Action competence-actively involve oneself. Nope, but what fits. They do more when kids are older. Football raised money for children's swimming. Easter egg hunt. Mindset gives them a happy memory. 500 kids. • Interpersonal competence-communicating, collaborating. Avoid social interaction. Happy to interact. • Strategic management-design strategies. See the bigger picture.	and Wesselink, 2014)
--	--	---	----------------------

		No more. People can't debate, and the class removed their barriers. Fostered debate without the debate	
4	RQ1	Were you interested in social problems because of the social challenge class, or have you always been interested in them, and why? Can you rank them in order of importance to you? 1=low and 10=high • End poverty in all its forms everywhere • End hunger, achieve food security and improve nutrition and promote sustainable agriculture. • Ensure healthy lives and promote well-being for all at all ages • Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all • Achieve gender equality and empower all women and girls • Ensure the availability and sustainable management of water and sanitation for all • Ensure access to affordable, reliable, sustainable and modern energy for all • Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all • Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation. • Reduce inequality within and among countries. • Make cities and human settlements inclusive, safe, resilient and sustainable. • Ensure sustainable consumption and production patterns.	(Bali Swain and Yang-Wallentin, 2020)

		• Take urgent action to combat climate change and its impacts • Conserve and sustainably use the oceans, seas and marine resources for sustainable development • Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification and halt and reverse land degradation and halt biodiversity loss. • Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable, and inclusive institutions at all levels. • Strengthen the means of implementation and revitalise the Global Partnership for Sustainable Development. All the SDGs are a load of nonsense. They are not achievable. Sounds good, but money comes into it. Accept somebody. People are greedy. Someone to suffer.	
5	RQ2	What did you like most about the social challenge class, and can you rank these in order of importance to you? • The topic, which in particular I don't remember • The readings, I don't remember • The mindset test, Don't remember • The teaching 1 • Group work 2	(Husain, 2022), (Fayolle, Gailly and Lassas-Clerc, 2006)

		• The assignment about your volunteering, I don't remember • The reflections/weekly blog 3 • Other please specify Why did you rank them that way? The reflections became easier. They became easier and helped with other classes. The teaching and the discussions where we listened to one another were interesting, and the sharing in our groups.	
6	RQ2	What did you feel about having to choose which volunteering you had to do? Yes , and why did you choose that social cause? Above Should you have just been given a social cause to volunteer for? Why was the choice important and why? Helping your kids. Making memories	(Dodd <i>et al.</i> , 2022), (Lans, Blok and Wesselink, 2014)
7	RQ1&3	Have you made key changes to your actions since the social challenge class, and why have you identified these as important to you? Can you rank them in order of importance to you, 1 low and 10 high? • You have kept volunteering. No always volunteered. • You do more recycling. No always • You have changed your buying habits. I have changed my car to an electric one and reflect. • You think about solutions to sustainability issues. I now foster during weekends and make you think. A few years. Changed my outlook to be more fluid.	(Sachs <i>et al.</i> , 2019)

		- You read labels on products more. No always done as I am a vegetarian - Other – please specify? The Approach of the class was good as discussions were encouraged, and opinions shared.	
8	RQ2	What key knowledge or insight did you acquire from the social challenge class? Why did you identify these specifically? Can you rank them in order of importance to you, 1=low, 10=high? - Learned more about the sustainable development goals, any in particular stand out to you and why? Not really acquired - Self-reflection skills: Why were they important to you? Improved a lot. How could that improve and cement a process? 2 - Self-awareness, mindset awareness or changes 2 not as dismissive. She wasn't as dismissive. E.g. gender toilets. - Key insights into the volunteering, what were they, and why were they important? No changes. Multiple different types were made aware of. Community volunteering at Tollcross	(Daspit, Fox and Findley, 2021)
9	RQ3	What key skills or competencies did you learn from the social challenge class? Why did you identify these as important? Can you rank them in order of importance? Considering other people's opinions and listening to them, and respecting them, was important. I hadn't thought about it like that; it opened my mindset. The interaction was considered and not dismissive.	(Jane Lu and Pivec, 2021)

10	RQ2	Reflection was mentioned as part of a way of changing your mindset. What key changes are there to your mindset, and why are they important to you? Can you rank the changes in order of importance to you? Your fluid, open to change. See a different viewpoint, being able to listen and hear views and people's opinions.	(Bassot, 2019)
11	RQ1,2,3	Feedback on your weekly blog was mentioned as the most useful feedback. How did that help, and why was it important to you? Feedback was positive and compared to Marketing and pointed out. Could have done this and now included. Progressive feedback and not having as much difficulty. Overkill and not done any other way. The name of the class didn't match the class. The social challenge. Inclusion is not exclusion. Tagged on the end and included.	(Husain, 2022), (Skinner, 1965)

INTERVIEW GUIDE 10			
Q no.	Research Question RQ/ Context Question CQ	Interview Question	Literature Review
1	CQ	Thank you for joining the interview. And are you clear about why we are carrying out this interview? All responses will be anonymised. Are you happy for me to RECORD this interview?	(Saunders, Philip and Adrian, 2019)
2	CQ	What age are you? 20 Sex Female Background Scotland and parents Scottish	
3	CQ	What were you looking forward to or not looking forward to with the class? I was excited about Entrepreneurship and exciting information, as online not always sure what is real or not.	(Kuratko, Fisher and Audretsch, 2021)
4	CQ	What were your thoughts on sustainability before the class? My thoughts were that it was important, but I didn't take much action toward it.	(Hermann and Bossle, 2020), (Lans, Blok and Wesselink, 2014)
5	CQ	Where would you say your competencies and skills on sustainability were before the class? I knew about it, but not a particular interest.	(Hermann and Bossle, 2020), (Lans, Blok and

			Wesselink, 2014)
6	CQ	Which sustainability skills did you learn from the class that you did not know before? Can you rank them in order of importance to you? 1-important, 10 not important • Ability to think of the interdependency of subsystems. Links to other classes and knowledge are built up 4 • Embracing diversity through collaboration of different fields. See more of how in a business setting, Department 3 • Foresighted thinking-into the future, Yes I do 2 because before I had the notion, successful businesses couldn't be sustainable. • You see the world as it should be; I can see how improvements can be made.4 • Get actively involved oneself I have been vegan for a long time.6 • Interpersonal competence-communicating, 3, because I do participate in discussions and communicate about what you are not happy about. • Strategic design strategies 5, because I do think if I sat and really worked on it, I could have good ideas. I haven't done that so far.	(Hermann and Bossle, 2020), (Lans, Blok and Wesselink, 2014)
7	RQ1	Did you have an interest in social problems before the class? If YES, so which ones and why?	(Bali Swain and Yang-Wallentin, 2020)

		Can you rank the SDGs in order of importance to you? 1=high and 10=low • End poverty, SDG1 4, because I have been involved and volunteered with local food banks • End hunger, SDG2 4, because I have been involved and volunteered with local food banks • Promote well-being and health, SDG3, 4. I have always done sports, and having access to sports clubs can impact. • Ensure inclusive and quality education, SDG4 4, because I think it improves your life, and I am from a poor school and a poor area. • Achieve gender equality SDG5, 2, because it is something I feel personally about that and entering a corporate workplace. • Ensure clean water for all SDG6, 4, because I have been involved and volunteered with local food banks. • Ensure affordable energy for all SDG7, 4, because I have been involved and volunteered with local food banks. • Promote sustainable economic growth, SDG8, 7, because I don't know much about it. • Build infrastructure, and foster innovation, SDG9, 7, because I don't know much about it. • Reduce inequality SDG10, 3, because I grew up in a deprived area and understand the importance of narrowing the gap. • Make human settlements safe, SDG11, 5, because I don't know much about but because of stabbings and antisocial behaviour. • Ensure sustainable consumption and production, SDG12, 7, because I don't know much about it.	
--	--	---	--

		• Combat climate change SDG13 5 because I know about it, and it is having an impact and is an overwhelming issue. • Conserve seas and marine life SDG14 4 because I don't eat meat or fish, so I am more passionate about that. • Protect land ecosystems SDG15. SDG13 5 because I know about it and it is having an impact, and is an overwhelming issue. • Promote peaceful and inclusive societies, SDG16, 3, because you see footage and see what divides can do and racism. • Strengthen Global Partnerships SDG17 6 because no investigated or seen examples in the media.	
7	RQ1	IF NOT, did taking part in the class raise an interest in social problems? If so, which ones? Can you rank the SDGs in order of importance to you? 1=high and 10=low • End poverty SDG1 • End hunger SDG2 • Promote well-being and health, SDG3. • Ensure inclusive and quality education, SDG4. • Achieve gender equality, SDG5. • Ensure clean water for all SDG6. • Ensure energy for all SDG7. • Promote economic growth, SDG8. • Build infrastructure and foster innovation, SDG9. • Reduce inequality SDG10. • Make human settlements safe, SDG11. • Ensure sustainable consumption and production, SDG12.	

		• Combat climate change SDG13 • Conserve seas and marine life SDG14 • Protect land ecosystems SDG15. • Promote peaceful and inclusive societies, SDG16. • Strengthen Global Partnerships SDG17	
8	RQ1	Have any of them become more important since the social challenge class, and if so, what were they and why? More important about sustainable consumption highlighted in class SDG12	(Bali, Swain and Yang-Wallentin, 2020)
9	RQ2	What did you like most about the social challenge class, and can you rank these in order of importance to you? (1=high importance and 10=low importance) And why rank them this way? • The topic, which in particular is the entrepreneurial mindset, I enjoyed and the angle it took, 3, because I just thought it was starting up a business. • Readings 4, I remember I used them in the blog and remember ones on the entrepreneurial mindset. • The mindset tests 5 because they were interesting, but didn't make me realise anything. • The lectures were 5 because I liked the content related to the tutorials and readings, and the theme throughout. • The tutorials 4, because I liked that we stopped and did group tasks, and it can seem like another lecture.	(Husain, 2022), (Fayolle, Gailly and Lassas-Clerc, 2006)

		• The weekly blog 2 I liked because I only had a week to get it done, and it helped me to write quicker and not feel an overwhelming assignment. • Group work 3 because I liked that the group had were challenging and not too hard for the group to work on. • The assignment about your volunteering 3 was real real-life experience and could be used on your CV. • Other please specify	
10	RQ2	How did you feel about having to choose what volunteering you had to do, and why did you choose that social cause? Why was the choice important to you? 2, because I could put it on my CV, and it was relevant and could come up in a job interview. SSPCA fundraiser and important to me because I have worked for the charity before and got my animals from them before.	(Dodd <i>et al.</i> , 2022), (Lans, Blok and Wesselink, 2014)
11	RQ2	Should you have just been given a social cause to volunteer for? If not, why not? 7 I think for some people it could have taken the pressure off. I think there are skills to get to finding your own.	(Dodd <i>et al.</i> , 2022), (Lans, Blok and Wesselink, 2014)
12	RQ1&3	What changes, if any, to your behaviours have you noticed since the social challenge class? Can you rank them in order of importance to you, 1=High and 10 Low? Why these in particular? • You have kept volunteering. No, because I used to volunteer before, but I have been busy with	(Sachs <i>et al.</i> , 2019)

		uni work as the workload is higher. 5 because I was already able to do it, but not spiked by the class. • You do more recycling. 4 I do more recycling because of the bins. I make sure it is the right bin • You have changed your buying habits. No, not changed the same 7 because not changed. • You think about solutions to sustainability issues. Yes, 4, because I am trying to come up with business ideas, and I am incorporating more sustainability practices. • You read labels on products more. No, not more than before 7 • Other – please specify? The entrepreneurial mindset has been more prominent in my train of thought 3 the most prominent.	
13	RQ2	What key knowledge or insight did you acquire from the social challenge class? Can you rank them in order of importance to you, 1=high, 10=low? • Self-reflection skills: Why were they important to you? Yes, 3 I journal now, and it has been helpful because you think you don't have thoughts, and something is annoying you, or you are quite stressed. • Self-awareness, mindset awareness or changes to the entrepreneurial mindset have been more prominent in my train of thought 3 the most prominent. • Key insights into the volunteering, what were they, and why were they important? No, nothing else. • Other?	(Daspit, Fox and Findley, 2021)

14	RQ2	Reflection was mentioned as part of a way of changing your mindset. What key changes are there to your mindset, and why are they important to you? Can you rank the changes in order of importance to you? The entrepreneurial mindset has been more prominent in my train of thought 3 the most prominent. Journaling also helps you day to day. 3	(Bassot, 2019)
15	RQ1,2,3	Feedback on your weekly blog was mentioned as useful feedback by most of the class. What is your own assessment of the usefulness of this? When I first saw the feedback and then it helped improve your blogs. 4	(Husain, 2022), (Skinner, 1965)
16	RQ3	What other key skills or competencies did you learn from the social challenge class that we have not discussed so far? Why do you identify these as important? Can you rank them in order of importance to you? 1=High and 10=low No, not missed anything.	(Jane Lu and Pivec, 2021)

INTERVIEW GUIDE 30			
Q no.	Research Question RQ/ Context Question CQ	Interview Question	Literature Review
1	CQ	Thank you for joining the interview and are you clear about why we are carrying out this interview? All responses will be anonymised. Are you happy for me to RECORD this interview?	(Saunders, Philip and Adrian, 2019)
2	CQ	What age are you? 21 Gender? Male Background? Born and Lived London and lived in Ayr for 10 years. What course are you studying? BA Business Enterprise and BA Business Enterprise and Technology. (Double honours)	
3	CQ	What were you looking forward to or not looking forward to with the class? I looked at it briefly because I wondered where it related to entrepreneurship and when I looked at the class	(Kuratko, Fisher and Audretsch, 2021)

		description and curious as to how this relates to be entrepreneurship. I was curious. Some of the things I was wondering how this relates to entrepreneurship and a reflective blog and did a lot in first year. I want to do consultancy so how did this reflection serve you and its relevance.	
4	CQ	What were your thoughts on sustainability before the class? It is interesting to me but also one of those things we covered a lot in first year and had come back in, in second year and is there any way to solve this.	(Hermann and Bossle, 2020), (Lans, Blok and Wesselink, 2014)
5	CQ	Where would you say your competences and skills on sustainability were before the class? I was well versed in it. Management development in first year pushed a lot of it because of Cop 26 was in Glasgow and had a lot of exposure to sustainability. I live on a farm and do look into factors and competent.	(Hermann and Bossle, 2020), (Lans, Blok and Wesselink, 2014)
6	CQ	Which sustainability skills did you learn from the class that you did not know before? Can you rank them in order of importance to you? 1-important, 10 not important • Ability to think of interdependency of sub systems. 4 because learning how everything works in longer processes can become very valuable. Don't remember from the class. • Embracing diversity-through collaboration of different fields. 3 I remember doing group work in tutorials and encouraged this group activity	(Hermann and Bossle, 2020), (Lans, Blok and Wesselink, 2014)

		and tasks that discussed things. Rate the importance of the issues and discuss the issues. • Foresighted thinking-into the future 6 We did look at impacts into the future in the class. • You see the world as it should be 2 the only thing about this one it was kind of thought provoking, and I see the world as my interpretation and I have a black and white mentality. • Get actively involved yourself. 1 because I do like to think of myself as getting involved and answered questions in the class. • Interpersonal competence-communicating, 4 because my ability was all right, good verbally but being dyslexic writing it down can be shocking. • Strategic design strategies 1 when we did the issues task and pick the issues and try and solve it and looked at solutions for the NHS and came up with strategies.	
7	RQ1	Did you have an interest in social problems before the class if YES so which ones and why? Can you rank the SDGs in order of importance to you? 1=high and 10=low • End poverty SDG1 2 because now in the economic climate it is affecting people I know. I see it all the time with the homeless shelter. • End hunger SDG2 2 because we have the resources they just need to be distributed. The food is not distributed equally. It was shocking the waste that goes on with people throwing away food. It is resource allocation.	(Bali Swain and Yang-Wallentin, 2020)

		• Promote well-being and health SDG3. 1 It is one of those things that relates to me as since I have the joined it has helped release frustration. Studies on physical activity. Good for mental stress. Covid was a big one for me as when Covid happened. I want to make sure I use those facilities. • Ensure inclusive and quality education SDG4. 1 Everyone deserves the right to an education. Need the skills in a country, even personally. What are the motivators for me coming to Strathclyde and it has won awards. There is a huge disparity in education across the UK. • Achieve gender equality SDG5. 2 because I worked in a Tech company and I learned a lot from that. If it is an even playing field, there should be no excuse. • Ensure clean water for all SDG6. 1 because if we don't have water is a basic human right for survival. South of England they are running out for people, there will be wars over water. • Ensure affordable energy for all SDG7. 1 For farming as a business you got hammered for electricity. I had to interview a hotel on the grand central hotel on the railway, business expenses quadrupled and there was no support for businesses. A lot of small businesses didn't survive. • Promote sustainable economic growth SDG8. 2 because it is important, looking at current situation, inflation caused by lack of economic growth, then people don't have jobs. • Build infrastructure, and foster innovation SDG9. 4 because looking at relevant infrastructure and	
--	--	--	--

		innovation we could access new things and a driving force. • Reduce inequality SDG10. 8 because it depends on what career you go into. Everyone has the same opportunity, and it is what you choose. A friend doing childcare as she sees the fun in it. I am doing technology because of the money. • Make human settlements safe, SDG11. 2 because everyone should have the right to feel safe in the city. I go to London and Glasgow had a major problem with knife crime. • Ensure sustainable consumption and production SDG12. 2 because of the fact that at the end of the day we need to make sure to prevent damage to the environment, communities and people. • Combat climate change SDG13 1 because it is one of the most important. I live near the sea because of water levels rising. • Conserve seas and marine life SDG14 3 from a biodiversity standpoint and some of the seas are overfished and causing chaos. • Protect land ecosystems SDG15. 2Because of the fact we must remember deforestation is wrong. Biodiversity is important and remember we are not the only inhabitants in the earth and keep them in mind because we are expanding at a rapid rate. • Promote peaceful and inclusive societies SDG16. 3 because peaceful is important but not as important as other SDGs. I do think there is a need for society to be inclusive and respect the opinions of others. How is Peace. achievable. • Strengthen Global Partnerships SDG17 2 very important because ally's trading and businesses.	
--	--	---	--

		The tech company I worked for had a reach. Forming partnerships can lead onto opportunities and endless possibilities.	
7	RQ1	IF NOT did taking part in the class raise an interest in social problems if so which ones? Can you rank the SDGs in order of importance to you? 1=high and 10=low • End poverty SDG1 • End hunger SDG2 • Promote well-being and health SDG3. • Ensure inclusive and quality education SDG4. • Achieve gender equality SDG5. • Ensure clean water for all SDG6. • Ensure energy for all SDG7. • Promote economic growth SDG8. • Build infrastructure, and foster innovation SDG9. • Reduce inequality SDG10. • Make human settlements safe, SDG11. • Ensure sustainable consumption and production SDG12. • Combat climate change SDG13 • Conserve seas and marine life SDG14 • Protect land ecosystems SDG15. • Promote peaceful and inclusive societies SDG16. • Strengthen Global Partnerships SDG17	
8	RQ1	Have any of them become more important since the social challenge class and if so, what were they and why?	(Bali, Swain and Yang-Wallentin, 2020)

		They remained the same just because I have put them as important anyway as they are all important. I just re-evaluated what you already knew.	
9	RQ2	What did you like most about the social challenge class and can you rank these in order of importance to you? (1=high importance and 10=low importance) and why rank them this way? • The topic, which. 4 One lecture on bootstrapping and how to take a business off the ground. I do remember enjoying it and relevant issues and being back at school in Modern Studies. • The readings 4 I don't remember them but there was a technique, but I can't remember what it was. • The mindset tests 2 interesting and found qualities I was surprised about. One of the qualities I got was organisation and I thinking how did I get this. I might have done it wrong. After the lecture thinking really. Group projects I can be organised. • The lectures Some of were 6 interesting and I find lectures normally boring as I prefer to be doing something. I detest lectures for everything. • The tutorials 1 I enjoyed them as I like practically doing something. My favourite was solving issues, and we had to argue our case but fun. • The weekly blog 3 because I sometimes enjoyed it and sometimes, I made reflections up. If I think something is important, I should reflect on	(Husain, 2022), (Fayolle, Gailly and Lassas-Clerc, 2006)

		what is important. I have been reflecting on questions now for my revision and it is helping. • Group work 1 because I remember one girl from my group. The whole working world is going to be about group work. It taught me how to get along with others. The ethos of the university is group work. • The assignment about your volunteering 2 this gave me a good chance to reflect on my volunteering and what I learnt. • Other please specify?	
10	RQ2	How did you feel about having to choose what volunteering you had to do and why did you choose that social cause? Why was the choice important to you? Volunteering I have done before, and I remember volunteering at the hospital as part of my gold DOE. Someone told me I could volunteer at the drug rehabilitation centre. I had no interest in doing it and I had a low view on drug users, and it made me more sympathetic to those people and hearing their stories and how brutal they were.	(Dodd <i>et al.</i> , 2022), (Lans, Blok and Wesselink, 2014)
11	RQ2	Should you have just been given a social cause to volunteer for? If not, why not? I like to be able to choose and explore what they wanted to do. My case was drug rehabilitation, and I was dreading it, gardening with former addicts. I enjoyed it. I met smart people who aspired.	(Dodd <i>et al.</i> , 2022), (Lans, Blok and Wesselink, 2014)
12	RQ1&3	What changes if any to your behaviours have you noticed since the social challenge class? Can you rank them in order of importance to you 1=High and 10 low? Why these in particular?	(Sachs <i>et al.</i> , 2019)

		• You have kept volunteering. 4 I do with the management development, and I am volunteering there but not as much as I'd like to as I worked in the summer. • You do more recycling. 3 because on the farm we do. I am more aware and use the colour coded bins more. • You have changed your buying habits. 5 Not really, they are the same. I don't spend money often. • You think about solutions to sustainability issues, 1 Yes this has increased because the ultimate cure to sustainability is nuclear power and researched a lot after the class. They have found ways to negate the risk. • You read labels on products more. 8 Not really as long as it does the job. • Other – please specify?	
13	RQ2	What key knowledge or insight did you acquire from the social challenge class? Can you rank them in order of importance to you 1=high, 10=low? • Self-reflection skills, why were they important to you? 3 because I am using them now but for little notes to myself. I write arrows as to where I went wrong. How would you improve it and it has helped me a lot in that respect. It is a few bullet points. • Self-awareness, mindset awareness or changes. 1 The volunteering made me more sympathetic to situations. I wouldn't have cared before. I believed drug addicts are bad, and I had a low opinion. I had a new opinion altogether.	(Daspit, Fox and Findley, 2021)

		Key insights into the volunteering, what were they and why were they important? 1 The volunteering made me more sympathetic to situations. I wouldn't have cared before. I believed drug addicts are bad, and I had a low opinion. I had a new opinion altogether.	
14	RQ2	Reflection was mentioned as part of a way of changing your mindset. What key changes are there to your mindset and why are they important to you? Can you rank the changes in order of importance to you? 2 reflections has spurred a change and using the skills but some of the things in class I felt important and do I really need to reflect on that.	(Bassot, 2019)
15	RQ1,2,3	Feedback on your weekly blog was mentioned as useful feedback by most of the class. What is your own assessment of the usefulness of this? Can you rate it? 2 My biggest thing was lack of detail and the thing was I was happy with the 8 so I didn't go into more detail as requested	(Husain, 2022), (Skinner, 1965)
16	RQ3	What other key skills or competences did you learn from the social challenge class that we have not discussed so far? 1 The only thing I would say it taught me good teamworking skills. I didn't enjoy technology as much and the group projects sometimes drove me mad when I got a dud group. It taught me to enjoy doing the group work again and collaborating. Reinvigorating.	(Jane Lu and Pivec, 2021)

		Why do you identify these as important? One of these things is important for the workplace and heavily in a technology company. One thing about Strathclyde is the group projects and get the job done. Can you rank them in order of importance to you? 1=High and 10=low	
--	--	--	--

13	RQ2	What key knowledge or insight did you acquire from the social challenge class? Can you rank them in order of importance to you, 1=high, 10=low? • Self-reflection skills: Why were they important to you? 3 because the weekly blogs helped • Self-awareness, mindset awareness or changes 5 because I had that awareness before the class, and reflection put it into focus. • Key insights into the volunteering, what were they, and why were they important? 9. Because I went and contacted a company and got experience in contacting a business	(Daspit, Fox and Findley, 2021)
14	RQ2	Reflection was mentioned as part of a way of changing your mindset. What key changes are there to your mindset, and why are they important to you? Can you rank the changes in order of importance to you? 4, because the key changes in doing reflections, you can see it through a personal lens for yourself.	(Bassot, 2019)
15	RQ1,2,3	Feedback on your weekly blog was mentioned as useful feedback by most of the class. What is your own assessment of the usefulness of this? Can you rate it? 2 because it was important, it was important how you submitted, and timely feedback and on track and then get the result after. The weekly feedback showed where you were. And you got good grades. A blog each week. We have to submit them all by December, so no feedback until the end. The Entrepreneurial Capital class.	(Husain, 2022), (Skinner, 1965)

16	RQ3	What other key skills or competencies did you learn from the social challenge class that we have not discussed so far? Why do you identify these as important? Can you rank them in order of importance to you? 1=High and 10=low There was nothing else.	(Jane Lu and Pivec, 2021)
----	-----	---	---------------------------

APPENDIX 2: Mindset at The Start of The Social Challenge class

1. Note for Students

1. If there is an answer that may require follow-up, your contact email details would be appreciated, but this is entirely voluntary.			
Answer Choices		Response Percent	Response Total
1	Open-Ended Question	100.00%	21
		answered	21
		skipped	23

2. Student Details

2. Are you?				
Answer Choices			Response Percent	Response Total
1	Male		45.45%	20
2	Female		54.55%	24
3	Other		0.00%	0
4	Prefer not to say		0.00%	0
			answered	44
			skipped	0

3. How old are you?			
Answer Choices			Response Percent
			Response Total
1	Open-Ended Question		100.00%
	1	22/09/2022 14:26 PM ID: 199913898	19
	2	22/09/2022 14:33 PM ID: 199914690	20
	3	22/09/2022 14:51 PM ID: 199916370	19
	4	22/09/2022 14:56 PM ID: 199917633	20
	5	22/09/2022 14:56 PM ID: 199917613	24
	6	22/09/2022 17:09 PM ID: 199930619	20
	7	22/09/2022 17:14 PM ID: 199930269	19
	8	22/09/2022 17:37 PM ID: 199933053	18
	9	22/09/2022 18:10 PM ID: 199935244	20

3. How old are you?

10	22/09/2022 21:03 PM ID: 199943954	21
11	23/09/2022 12:25 PM ID: 199975268	20
12	23/09/2022 16:12 PM ID: 199994740	19
13	25/09/2022 13:25 PM ID: 200053624	19
14	26/09/2022 12:05 PM ID: 200093903	21
15	27/09/2022 15:13 PM ID: 200207381	19
16	01/10/2022 18:48 PM ID: 200530420	19
17	02/10/2022 02:40 AM ID: 200536325	20
18	02/10/2022 16:53 PM ID: 200552069	22
19	02/10/2022 22:14 PM ID: 200561563	21

3. How old are you?

20	03/10/2022 12:57 PM ID: 200594810	18
21	03/10/2022 13:01 PM ID: 200595276	24
22	03/10/2022 13:02 PM ID: 200595305	21
23	03/10/2022 13:03 PM ID: 200595297	20
24	03/10/2022 13:05 PM ID: 200595526	36
25	03/10/2022 13:13 PM ID: 200596486	19
26	03/10/2022 13:18 PM ID: 200596457	19
27	03/10/2022 13:26 PM ID: 200595403	19
28	03/10/2022 15:48 PM ID: 200617254	19
29	03/10/2022 16:07 PM ID: 200618874	19

3. How old are you?

30	03/10/2022 19:01 PM ID: 200634122	18
31	03/10/2022 19:11 PM ID: 200634422	22
32	03/10/2022 19:18 PM ID: 200634784	22
33	03/10/2022 21:10 PM ID: 200641932	19
34	03/10/2022 22:22 PM ID: 200645085	19
35	03/10/2022 23:16 PM ID: 200647009	21
36	04/10/2022 10:31 AM ID: 200668555	18
37	04/10/2022 11:03 AM ID: 200672076	23
38	04/10/2022 11:17 AM ID: 200673814	19
39	04/10/2022 11:53 AM ID: 200677111	21

3. How old are you?			
40	04/10/2022 12:05 PM ID: 200678956	19	
41	04/10/2022 13:29 PM ID: 200687297	19	
42	04/10/2022 13:32 PM ID: 200687650	19	
43	04/10/2022 14:39 PM ID: 200695594	20	
44	05/10/2022 12:38 PM ID: 200776768	22	
			answered 44
			skipped 0

4. What is your country of birth?			
Answer Choices		Response Percent	Response Total
1	Open-Ended Question	100.00%	44
1	22/09/2022 14:26 PM ID: 199913898	England	
2	22/09/2022 14:33 PM ID: 199914690	South Korea	

4. What is your country of birth?

3	22/09/2022 14:51 PM ID: 199916370	United Kingdom
4	22/09/2022 14:56 PM ID: 199917633	Scotland
5	22/09/2022 14:56 PM ID: 199917613	Sweden
6	22/09/2022 17:09 PM ID: 199930619	Cuba
7	22/09/2022 17:14 PM ID: 199930269	England
8	22/09/2022 17:37 PM ID: 199933053	United Kingdom
9	22/09/2022 18:10 PM ID: 199935244	Indonesia
10	22/09/2022 21:03 PM ID: 199943954	Thailand
11	23/09/2022 12:25 PM ID: 199975268	scotland
12	23/09/2022 16:12 PM ID: 199994740	Scotland

4. What is your country of birth?

13	25/09/2022 13:25 PM ID: 200053624	Scotland
14	26/09/2022 12:05 PM ID: 200093903	United Kingdom
15	27/09/2022 15:13 PM ID: 200207381	UK
16	01/10/2022 18:48 PM ID: 200530420	Scotland
17	02/10/2022 02:40 AM ID: 200536325	Indonesia
18	02/10/2022 16:53 PM ID: 200552069	United States of America
19	02/10/2022 22:14 PM ID: 200561563	United States
20	03/10/2022 12:57 PM ID: 200594810	Scotland
21	03/10/2022 13:01 PM ID: 200595276	Sweden
22	03/10/2022 13:02 PM ID: 200595305	United States of America

4. What is your country of birth?

23	03/10/2022 13:03 PM ID: 200595297	Thailand
24	03/10/2022 13:05 PM ID: 200595526	Scotland
25	03/10/2022 13:13 PM ID: 200596486	Scotland
26	03/10/2022 13:18 PM ID: 200596457	India
27	03/10/2022 13:26 PM ID: 200595403	Scotland
28	03/10/2022 15:48 PM ID: 200617254	Scotland
29	03/10/2022 16:07 PM ID: 200618874	England
30	03/10/2022 19:01 PM ID: 200634122	United Kingdom
31	03/10/2022 19:11 PM ID: 200634422	Spain
32	03/10/2022 19:18 PM ID: 200634784	Spain

4. What is your country of birth?

33	03/10/2022 21:10 PM ID: 200641932	Scotland
34	03/10/2022 22:22 PM ID: 200645085	Australia
35	03/10/2022 23:16 PM ID: 200647009	Malaysia
36	04/10/2022 10:31 AM ID: 200668555	Scotland
37	04/10/2022 11:03 AM ID: 200672076	Indonesia
38	04/10/2022 11:17 AM ID: 200673814	scotland
39	04/10/2022 11:53 AM ID: 200677111	Scotland
40	04/10/2022 12:05 PM ID: 200678956	Indonesia
41	04/10/2022 13:29 PM ID: 200687297	Scotland
42	04/10/2022 13:32 PM ID: 200687650	Scotland

4. What is your country of birth?			
43	04/10/2022 14:39 PM ID: 200695594	Netherlands	
44	05/10/2022 12:38 PM ID: 200776768	Norway	
			answered 44
			skipped 0

5. What is your city/town of birth?			
Answer Choices		Response Percent	Response Total
1	Open-Ended Question	100.00%	44
1	22/09/2022 14:26 PM ID: 199913898	Liverpool	
2	22/09/2022 14:33 PM ID: 199914690	Seoul	
3	22/09/2022 14:51 PM ID: 199916370	Glasgow	
4	22/09/2022 14:56 PM ID: 199917633	Wishaw	
5	22/09/2022 14:56 PM ID: 199917613	Ljungskile	

5. What is your city/town of birth?

6	22/09/2022 17:09 PM ID: 199930619	Camagüey
7	22/09/2022 17:14 PM ID: 199930269	Newbury
8	22/09/2022 17:37 PM ID: 199933053	Kirkcaldy
9	22/09/2022 18:10 PM ID: 199935244	Subang
10	22/09/2022 21:03 PM ID: 199943954	Nonthaburi
11	23/09/2022 12:25 PM ID: 199975268	glasgow - maryhill
12	23/09/2022 16:12 PM ID: 199994740	Aberdeen
13	25/09/2022 13:25 PM ID: 200053624	Dumfries & Galloway
14	26/09/2022 12:05 PM ID: 200093903	Glasgow
15	27/09/2022 15:13 PM ID: 200207381	Paisley

5. What is your city/town of birth?

16	01/10/2022 18:48 PM ID: 200530420	Melrose
17	02/10/2022 02:40 AM ID: 200536325	Subang
18	02/10/2022 16:53 PM ID: 200552069	Fort Wayne, IN
19	02/10/2022 22:14 PM ID: 200561563	Evansville
20	03/10/2022 12:57 PM ID: 200594810	Paisley
21	03/10/2022 13:01 PM ID: 200595276	Malmö
22	03/10/2022 13:02 PM ID: 200595305	South Bend
23	03/10/2022 13:03 PM ID: 200595297	Nonthaburi
24	03/10/2022 13:05 PM ID: 200595526	Falkirk
25	03/10/2022 13:13 PM ID: 200596486	Irvine

5. What is your city/town of birth?

26	03/10/2022 13:18 PM ID: 200596457	Nashik
27	03/10/2022 13:26 PM ID: 200595403	Kirkcaldy
28	03/10/2022 15:48 PM ID: 200617254	Edinburgh
29	03/10/2022 16:07 PM ID: 200618874	Gloucester
30	03/10/2022 19:01 PM ID: 200634122	Glasgow
31	03/10/2022 19:11 PM ID: 200634422	San Sebastián
32	03/10/2022 19:18 PM ID: 200634784	San Sebastian
33	03/10/2022 21:10 PM ID: 200641932	Aberdeen
34	03/10/2022 22:22 PM ID: 200645085	Perth
35	03/10/2022 23:16 PM ID: 200647009	Kuala Lumpur

5. What is your city/town of birth?

36	04/10/2022 10:31 AM ID: 200668555	Glasgow	
37	04/10/2022 11:03 AM ID: 200672076	Indonesia	
38	04/10/2022 11:17 AM ID: 200673814	glasgow	
39	04/10/2022 11:53 AM ID: 200677111	Aberdeen (But from Lerwick, Shetland Islands)	
40	04/10/2022 12:05 PM ID: 200678956	Jakarta	
41	04/10/2022 13:29 PM ID: 200687297	Stirling	
42	04/10/2022 13:32 PM ID: 200687650	Stirling	
43	04/10/2022 14:39 PM ID: 200695594	Vriezenveen	
44	05/10/2022 12:38 PM ID: 200776768	Oslo	
		answered	44
		skipped	0

6. In which country did you study before joining Strathclyde University?

Answer Choices			Response Percent	Response Total
1	Open-Ended Question		100.00%	44
1	22/09/2022 14:26 PM ID: 199913898	England		
2	22/09/2022 14:33 PM ID: 199914690	Germany		
3	22/09/2022 14:51 PM ID: 199916370	Scotland		
4	22/09/2022 14:56 PM ID: 199917633	Scotland		
5	22/09/2022 14:56 PM ID: 199917613	Lund		
6	22/09/2022 17:09 PM ID: 199930619	Cuba		
7	22/09/2022 17:14 PM ID: 199930269	England		
8	22/09/2022 17:37 PM ID: 199933053	United Kingdom		
9	22/09/2022 18:10 PM ID: 199935244	Indonesia		

6. In which country did you study before joining Strathclyde University?

10	22/09/2022 21:03 PM ID: 199943954	Thailand
11	23/09/2022 12:25 PM ID: 199975268	Scotland
12	23/09/2022 16:12 PM ID: 199994740	Scotland
13	25/09/2022 13:25 PM ID: 200053624	Scotland
14	26/09/2022 12:05 PM ID: 200093903	Scotland
15	27/09/2022 15:13 PM ID: 200207381	Scotland
16	01/10/2022 18:48 PM ID: 200530420	Scotland
17	02/10/2022 02:40 AM ID: 200536325	Indonesia
18	02/10/2022 16:53 PM ID: 200552069	United States of America
19	02/10/2022 22:14 PM ID: 200561563	United States

6. In which country did you study before joining Strathclyde University?

20	03/10/2022 12:57 PM ID: 200594810	---
21	03/10/2022 13:01 PM ID: 200595276	Swden
22	03/10/2022 13:02 PM ID: 200595305	United States of America
23	03/10/2022 13:03 PM ID: 200595297	Thailand
24	03/10/2022 13:05 PM ID: 200595526	Scotland
25	03/10/2022 13:13 PM ID: 200596486	Scotland
26	03/10/2022 13:18 PM ID: 200596457	India
27	03/10/2022 13:26 PM ID: 200595403	Scotland
28	03/10/2022 15:48 PM ID: 200617254	Scotland
29	03/10/2022 16:07 PM ID: 200618874	England

6. In which country did you study before joining Strathclyde University?

30	03/10/2022 19:01 PM ID: 200634122	Bishopbriggs
31	03/10/2022 19:11 PM ID: 200634422	Spain
32	03/10/2022 19:18 PM ID: 200634784	Spain
33	03/10/2022 21:10 PM ID: 200641932	Scotland
34	03/10/2022 22:22 PM ID: 200645085	Glasgow
35	03/10/2022 23:16 PM ID: 200647009	Malaysia
36	04/10/2022 10:31 AM ID: 200668555	Scotland
37	04/10/2022 11:03 AM ID: 200672076	Indonesia
38	04/10/2022 11:17 AM ID: 200673814	scotland
39	04/10/2022 11:53 AM ID: 200677111	Scotland

6. In which country did you study before joining Strathclyde University?			
40	04/10/2022 12:05 PM ID: 200678956	Indonesia	
41	04/10/2022 13:29 PM ID: 200687297	Scotland	
42	04/10/2022 13:32 PM ID: 200687650	Scotland	
43	04/10/2022 14:39 PM ID: 200695594	Netherlands	
44	05/10/2022 12:38 PM ID: 200776768	Norway	
			answered 44
			skipped 0

7. What was the name of the institution you studied at before joining Strathclyde University?			
Answer Choices		Response Percent	Response Total
1	Open-Ended Question	100.00%	44
1	22/09/2022 14:26 PM ID: 199913898	Formby High School	
2	22/09/2022 14:33 PM ID: 199914690	Universität Mannheim	

7. What was the name of the institution you studied at before joining Strathclyde University?

3	22/09/2022 14:51 PM ID: 199916370	St Andrews & st. brides
4	22/09/2022 14:56 PM ID: 199917633	City of Glasgow College
5	22/09/2022 14:56 PM ID: 199917613	Ekonomihögskolan Lund
6	22/09/2022 17:09 PM ID: 199930619	Martin Klein
7	22/09/2022 17:14 PM ID: 199930269	Millfield school
8	22/09/2022 17:37 PM ID: 199933053	St. George's School
9	22/09/2022 18:10 PM ID: 199935244	Politeknik Negeri Padang
10	22/09/2022 21:03 PM ID: 199943954	Mahidol University International College
11	23/09/2022 12:25 PM ID: 199975268	Hillhead High School
12	23/09/2022 16:12 PM ID: 199994740	Cults Academy

7. What was the name of the institution you studied at before joining Strathclyde University?

13	25/09/2022 13:25 PM ID: 200053624	Kirkcudbright Academy
14	26/09/2022 12:05 PM ID: 200093903	Strathallan School
15	27/09/2022 15:13 PM ID: 200207381	City of Glasgow College
16	01/10/2022 18:48 PM ID: 200530420	Galashiels Academy
17	02/10/2022 02:40 AM ID: 200536325	Politeknik Negeri Padang
18	02/10/2022 16:53 PM ID: 200552069	Purdue University
19	02/10/2022 22:14 PM ID: 200561563	Purdue University
20	03/10/2022 12:57 PM ID: 200594810	Williamwood High School
21	03/10/2022 13:01 PM ID: 200595276	Lund University
22	03/10/2022 13:02 PM ID: 200595305	Purdue University

7. What was the name of the institution you studied at before joining Strathclyde University?

23	03/10/2022 13:03 PM ID: 200595297	Mahidol University International College
24	03/10/2022 13:05 PM ID: 200595526	South Lanarkshire College
25	03/10/2022 13:13 PM ID: 200596486	Queen Margaret Academy
26	03/10/2022 13:18 PM ID: 200596457	Bishop's Junior College
27	03/10/2022 13:26 PM ID: 200595403	Stewart's Melville College
28	03/10/2022 15:48 PM ID: 200617254	Stewart's Melville College
29	03/10/2022 16:07 PM ID: 200618874	St Peter's RC High School & Sixth Form Centre
30	03/10/2022 19:01 PM ID: 200634122	Bishopbriggs Academy
31	03/10/2022 19:11 PM ID: 200634422	Deusto
32	03/10/2022 19:18 PM ID: 200634784	Deusto

7. What was the name of the institution you studied at before joining Strathclyde University?

33	03/10/2022 21:10 PM ID: 200641932	Mintlaw Academy
34	03/10/2022 22:22 PM ID: 200645085	Saint Ninian's High School
35	03/10/2022 23:16 PM ID: 200647009	Mara Poly-Tech College, Ipoh
36	04/10/2022 10:31 AM ID: 200668555	Mearns Castle High School
37	04/10/2022 11:03 AM ID: 200672076	Universitas Brawijaya
38	04/10/2022 11:17 AM ID: 200673814	St Ninian's High School
39	04/10/2022 11:53 AM ID: 200677111	Anderson High School, Lerwick
40	04/10/2022 12:05 PM ID: 200678956	IICS (IPEKA Integrated Christian School)
41	04/10/2022 13:29 PM ID: 200687297	Alva Academy
42	04/10/2022 13:32 PM ID: 200687650	Alva Academy

7. What was the name of the institution you studied at before joining Strathclyde University?

43	04/10/2022 14:39 PM ID: 200695594	University of Twente	
44	05/10/2022 12:38 PM ID: 200776768	BI Business School	
		answered	44
		skipped	0

8. Please rate the reason/s you chose this class, The Social Challenge?

Answer Choices	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Response Total
Quality of Teaching	6.82% 3	50.00% 22	43.18% 19	0.00% 0	0.00% 0	44
Course Availability	20.45% 9	45.45% 20	31.82% 14	2.27% 1	0.00% 0	44
Academic Advice	11.36% 5	52.27% 23	31.82% 14	0.00% 0	4.55% 2	44
Interest in Social Problems	20.45% 9	54.55% 24	22.73% 10	2.27% 1	0.00% 0	44
It was my only choice	13.64% 6	9.09% 4	36.36% 16	20.45% 9	20.45% 9	44
Other	6.82% 3	6.82% 3	68.18% 30	4.55% 2	13.64% 6	44
					answered	44
					skipped	0

8. Please rate the reason/s you chose this class, The Social Challenge?

If you checked Other, please give details: (6)

1	23/09/2022 12:25 PM ID: 199975268	There were no other options, out of the little choice I had, this interested me the most.
2	03/10/2022 12:57 PM ID: 200594810	Most interesting, and most likely for future career plans.
3	03/10/2022 13:13 PM ID: 200596486	I want to learn more about entrepreneurship.
4	03/10/2022 15:48 PM ID: 200617254	I find entrepreneurship interesting.
5	04/10/2022 11:53 AM ID: 200677111	I am passionate about entrepreneurship, so I chose to study Business Analysis, Technology and Business Enterprise. After leaving school, I started my own remote computer support business, which I am still running.
6	05/10/2022 12:38 PM ID: 200776768	To learn about international entrepreneurship

9. If you checked an Interest in Social Problems, please list all that apply to you from the UN Sustainable Development Goals (SDGs)?

Answer Choices			Response Percent	Response Total
1	Goal 1 - End poverty in all its forms everywhere		55.88%	19
2	Goal 2 - End hunger, achieve food security and improved		67.65%	23

9. If you checked an Interest in Social Problems, please list all that apply to you from the UN Sustainable Development Goals (SDGs)?

	nutrition and promote sustainable agriculture.			
3	Goal 3 - Ensure healthy lives and promote well-being for all at all ages		47.06%	16
4	Goal 4 - Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all		50.00%	17
5	Goal 5 - Achieve gender equality and empower all women and girls		50.00%	17
6	Goal 6 - Ensure availability and sustainable management of water and sanitation for all		35.29%	12
7	Goal 7 - Ensure access to affordable, reliable, sustainable and modern energy for all		29.41%	10
8	Goal 8 - Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all		38.24%	13
9	Goal 9 - Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation		20.59%	7
10	Goal 10 - Reduce inequality within and among countries		50.00%	17
11	Goal 11 - Make cities and human settlements inclusive, safe, resilient and sustainable		41.18%	14

9. If you checked an Interest in Social Problems, please list all that apply to you from the UN Sustainable Development Goals (SDGs)?

12	Goal 12 - Ensure sustainable consumption and production patterns		38.24%	13
13	Goal 13 - Take urgent action to combat climate change and its impacts		50.00%	17
14	Goal 14 - Conserve and sustainably use the oceans, seas and marine resources for sustainable development		38.24%	13
15	Goal 15 - Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation and halt biodiversity loss.		35.29%	12
16	Goal 16 - Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.		17.65%	6
17	Goal 17 - Strengthen the means of implementation and revitalise the Global Partnership for Sustainable Development		17.65%	6
			answered	34
			skipped	10

Rank the social problems in order of interest to you, with 1 being of the most interest.
(17)

9. If you checked an Interest in Social Problems, please list all that apply to you from the UN Sustainable Development Goals (SDGs)?

1	22/09/2022 17:09 PM ID: 199930619	Goal 2 Goal 4 Goal 3 Goal 13
2	22/09/2022 17:14 PM ID: 199930269	The goal with the most interest is around goal 14, then 16, 11, and 15.
3	22/09/2022 21:03 PM ID: 199943954	Goal 11
4	23/09/2022 12:25 PM ID: 199975268	1. Goal 1 2. Goal 2 3. Goal 6 4. Goal 13 5. Goal 8 6. Goal 10 7. Goal 15 8. Goal 5
5	23/09/2022 16:12 PM ID: 199994740	1,6,13,5,2,14,10,15,3,4,8,11,16,7,9,12,17
6	25/09/2022 13:25 PM ID: 200053624	Goal 1 Goal 13 Goal 7
7	01/10/2022 18:48 PM ID: 200530420	Goal 3 - 1 Goal 12 - 2 Goal 10 - 3 Goal 2 - 4 Goal 4 - 5 Goal 9 - 6
8	02/10/2022 16:53 PM ID: 200552069	Of the ones I feel passionately about, I would rank goal 2 then 3

9. If you checked an Interest in Social Problems, please list all that apply to you from the UN Sustainable Development Goals (SDGs)?

9	02/10/2022 22:14 PM ID: 200561563	1 5 4 3
10	03/10/2022 13:03 PM ID: 200595297	Goal 10
11	03/10/2022 16:07 PM ID: 200618874	I have a neutral viewpoint when it comes to discussing the UN SDGs. I think each of them is of equal importance to the others, as they are individual goals.
12	03/10/2022 19:01 PM ID: 200634122	1) 1 2) 2 3) 10 4) 5 5)3
13	04/10/2022 11:03 AM ID: 200672076	poverty healthiness education
14	04/10/2022 11:53 AM ID: 200677111	I am most passionate about the right to repair. I believe strongly that we are not doing enough to ensure that a product's whole life cycle is considered and planned for when it is manufactured.
15	04/10/2022 13:32 PM ID: 200687650	5, 1, 2, 4, 12, 14
16	04/10/2022 14:39 PM ID: 200695594	I chose goal 2 as the most interesting to me, because it hurts me when I see someone starving while I have enough to eat.
17	05/10/2022 12:38 PM ID: 200776768	1: Goal 3 2: Goal 7 3: Goal 6 4: Goal 11

9. If you checked an Interest in Social Problems, please list all that apply to you from the UN Sustainable Development Goals (SDGs)?

		5: Goal 5 6: Goal 15
--	--	-------------------------

10. Please list your hobbies in order of importance to you. (i.e. 1st = most important).

Answer Choices			Response Percent	Response Total
1	Open-Ended Question		100.00%	44
1	22/09/2022 14:26 PM ID: 199913898	Cycling, music, and baking		
2	22/09/2022 14:33 PM ID: 199914690	Music, Sports, Online games		
3	22/09/2022 14:51 PM ID: 199916370	Don't have many hobbies.		
4	22/09/2022 14:56 PM ID: 199917633	1. Friends		
5	22/09/2022 14:56 PM ID: 199917613	1st		
6	22/09/2022 17:09 PM ID: 199930619	1st = gym 2nd = walking 3rd = traveling 4th = reading 5th = dancing 6th = music		
7	22/09/2022 17:14 PM ID: 199930269	rugby, seeing my friends, golf, reading		

10. Please list your hobbies in order of importance to you. (i.e. 1st = most important).

8	22/09/2022 17:37 PM ID: 199933053	Badminton, Art
9	22/09/2022 18:10 PM ID: 199935244	Traveling
10	22/09/2022 21:03 PM ID: 199943954	Cooking, Listening to music, Travelling
11	23/09/2022 12:25 PM ID: 199975268	1 = my gym/pool 2= socialising 3 = reading/studying 4= listening to podcasts 5 = watching tv 6= cooking
12	23/09/2022 16:12 PM ID: 199994740	Tennis, Gym, Art, Singing
13	25/09/2022 13:25 PM ID: 200053624	Horse riding, Going to the gym, Beauty, Music
14	26/09/2022 12:05 PM ID: 200093903	Weight lifting, exercise classes, and eating out
15	27/09/2022 15:13 PM ID: 200207381	Beauty & Makeup, Reading, Learning
16	01/10/2022 18:48 PM ID: 200530420	Keeping active, socialising, reading, travelling, and fashion
17	02/10/2022 02:40 AM ID: 200536325	Traveling

10. Please list your hobbies in order of importance to you. (i.e. 1st = most important).

18	02/10/2022 16:53 PM ID: 200552069	1. Graphic Design, 2. Travel, 3. Making Playlists
19	02/10/2022 22:14 PM ID: 200561563	travel, hiking, cooking
20	03/10/2022 12:57 PM ID: 200594810	University, socialising, work, driving, football, gym
21	03/10/2022 13:01 PM ID: 200595276	Golf
22	03/10/2022 13:02 PM ID: 200595305	Reading, hanging with friends, watching movies, listening to music
23	03/10/2022 13:03 PM ID: 200595297	Listening to music, cooking, and travelling
24	03/10/2022 13:05 PM ID: 200595526	1. Travel
25	03/10/2022 13:13 PM ID: 200596486	Investing, swimming
26	03/10/2022 13:18 PM ID: 200596457	Reading, Fitness, Shopping, Soccer, Watching F1
27	03/10/2022 13:26 PM ID: 200595403	Rugby gaming, seeing friends

10. Please list your hobbies in order of importance to you. (i.e. 1st = most important).

28	03/10/2022 15:48 PM ID: 200617254	Exercise, bring friends.
29	03/10/2022 16:07 PM ID: 200618874	1. Fitness (Running, Swimming, Basketball, etc) 2. Academics (Class assignments, lecture notes, reading) 3. Leisure (Going out, watching documentaries, listening to podcasts)
30	03/10/2022 19:01 PM ID: 200634122	1. photography 2. cooking
31	03/10/2022 19:11 PM ID: 200634422	Travelling, meeting friends and music
32	03/10/2022 19:18 PM ID: 200634784	1. Reading, 2. Films and TV shows, 3. Music, 4. Drawing, 5. Writing
33	03/10/2022 21:10 PM ID: 200641932	Drawing, Animation, Gaming
34	03/10/2022 22:22 PM ID: 200645085	1) socialising and personal growth 2) football 3) music 4) economics 5) travelling
35	03/10/2022 23:16 PM ID: 200647009	Crocheting
36	04/10/2022 10:31 AM ID: 200668555	Time with friends, gym
37	04/10/2022 11:03 AM ID: 200672076	1. Swimming

10. Please list your hobbies in order of importance to you. (i.e. 1st = most important).

38	04/10/2022 11:17 AM ID: 200673814	1. football 2. gym 3. hanging with friends	
39	04/10/2022 11:53 AM ID: 200677111	1.) Music (Strathclyde University Jazz Orchestra) 2.) Sports (running, road cycling, badminton, etc 3), creative (Strathclyde podcast Society)	
40	04/10/2022 12:05 PM ID: 200678956	Sports	
41	04/10/2022 13:29 PM ID: 200687297	Formula 1, going gym, eating out	
42	04/10/2022 13:32 PM ID: 200687650	Seeing my friends, watching F1, and going to the gym	
43	04/10/2022 14:39 PM ID: 200695594	1. Football 2. Gaming 3. Gym	
44	05/10/2022 12:38 PM ID: 200776768	1: Football 2: Activity: swim, walk, move 3: Graphic Design 4: Football coach 5:Travel	
		answered	44
		skipped	0

11. Please list the clubs you have joined or will be joining (either at Strathclyde or elsewhere) in order of importance to you (i.e. 1st = most important).

Answer Choices		Response Percent	Response Total
1	Open-Ended Question	100.00%	25

11. Please list the clubs you have joined or will be joining (either at Strathclyde or elsewhere) in order of importance to you (i.e. 1st = most important).

1	22/09/2022 14:26 PM ID: 199913898	Strath Road Club, Taylor Swift Society
2	22/09/2022 14:51 PM ID: 199916370	Strathclyde Inspire
3	22/09/2022 14:56 PM ID: 199917613	Tennis and golf
4	22/09/2022 17:14 PM ID: 199930269	rugby, STPMS
5	22/09/2022 17:37 PM ID: 199933053	Badminton
6	22/09/2022 18:10 PM ID: 199935244	Strathclyde History Society
7	22/09/2022 21:03 PM ID: 199943954	NAHS(art), Badminton, Language Cafe
8	23/09/2022 16:12 PM ID: 199994740	Strathclyde Tennis club, Strathclyde Badminton club
9	25/09/2022 13:25 PM ID: 200053624	Horseriding, Netball
10	02/10/2022 02:40 AM ID: 200536325	Medieval Society

11. Please list the clubs you have joined or will be joining (either at Strathclyde or elsewhere) in order of importance to you (i.e. 1st = most important).

11	02/10/2022 16:53 PM ID: 200552069	None at Strathclyde, I am an exchange student here for 3 months.
12	02/10/2022 22:14 PM ID: 200561563	None at Strathclyde, only an exchange student here for 3 months.
13	03/10/2022 13:01 PM ID: 200595276	Golf club
14	03/10/2022 13:02 PM ID: 200595305	Black Tie Dinner, HTM society, colour guard
15	03/10/2022 13:03 PM ID: 200595297	NAHS, Language Cafe, Badminton
16	03/10/2022 13:05 PM ID: 200595526	N/a
17	03/10/2022 13:26 PM ID: 200595403	Rugby
18	03/10/2022 16:07 PM ID: 200618874	1. Karate 2. Cross country & athletics (wanting to join) 3. Basketball
19	03/10/2022 19:01 PM ID: 200634122	1. WILN
20	03/10/2022 23:16 PM ID: 200647009	Strathclyde Malaysian Society, Strathclyde Language Cafe

11. Please list the clubs you have joined or will be joining (either at Strathclyde or elsewhere) in order of importance to you (i.e. 1st = most important).

21	04/10/2022 11:03 AM ID: 200672076	1. KIBAR GG 2. IndoSociety 3. Marymeals	
22	04/10/2022 11:17 AM ID: 200673814	football team	
23	04/10/2022 11:53 AM ID: 200677111	Strathclyde University Jazz Orchestra, 2.) Strathclyde Podcast Society, 3.) Strathclyde Harriers, 4.) Strathclyde Road Cycling Club 5.) Strath Speakers 6.) Strathclyde University Mountaineering Club (including indoor climbing)	
24	04/10/2022 14:39 PM ID: 200695594	1. Football club	
25	05/10/2022 12:38 PM ID: 200776768	1: Strathclyde Sport Centre 2: Strathclyde football team for women 3: Travel sites: to explore Scotland	
		answered	25
		skipped	19

12. If you have not joined any clubs, please tick the box I haven't joined/ do not intend to join a club

Answer Choices			Response Percent	Response Total
1	I haven't joined/ do not intend to join a club		100.00%	23
			answered	23
			skipped	21

13. Do you have any of the following health conditions?				
Answer Choices			Response Percent	Response Total
1	Physical Health		6.82%	3
2	Mental Health		20.45%	9
3	Neurodevelopmental		0.00%	0
4	Prefer not to say		77.27%	34
			answered	44
			skipped	0
Please specify: (21)				
1	22/09/2022 14:26 PM ID: 199913898	N/a		
2	22/09/2022 14:56 PM ID: 199917633	General Anxiety Disorder		
3	22/09/2022 14:56 PM ID: 199917613	No		
4	22/09/2022 17:09 PM ID: 199930619	I do not suffer from any of the above.		
5	22/09/2022 17:14 PM ID: 199930269	I have no health issues.		
6	22/09/2022 17:37 PM ID: 199933053	I have no health conditions.		

13. Do you have any of the following health conditions?

7	23/09/2022 12:25 PM ID: 199975268	Don't have any conditions.
8	23/09/2022 16:12 PM ID: 199994740	
9	26/09/2022 12:05 PM ID: 200093903	I take medication for anxiety and depression.
10	02/10/2022 02:40 AM ID: 200536325	Anxiety
11	03/10/2022 12:57 PM ID: 200594810	none
12	03/10/2022 13:13 PM ID: 200596486	No
13	03/10/2022 16:07 PM ID: 200618874	N/A
14	03/10/2022 19:11 PM ID: 200634422	I do not have any of them.
15	03/10/2022 19:18 PM ID: 200634784	Therapy for social anxiety
16	03/10/2022 22:22 PM ID: 200645085	I am healthy

13. Do you have any of the following health conditions?

17	04/10/2022 11:17 AM ID: 200673814	none
18	04/10/2022 12:05 PM ID: 200678956	-
19	04/10/2022 13:29 PM ID: 200687297	OCD, anxiety, and an eating disorder
20	04/10/2022 14:39 PM ID: 200695594	I have not
21	05/10/2022 12:38 PM ID: 200776768	I have been diagnosed with a rare migraine.

14. This class is about the entrepreneurial mindset and how putting it into action can add value to society. What knowledge/skills/attitudes do you possess that will help you achieve this outcome?

Answer Choices			Response Percent	Response Total
1	I have a belief in my ability		59.09%	26
2	I achieve personal goals		61.36%	27
3	I manage constraints well.		43.18%	19
4	I understand money		31.82%	14
5	I can organise people.		50.00%	22
6	I can work out how to do tasks		65.91%	29

14. This class is about the entrepreneurial mindset and how putting it into action can add value to society. What knowledge/skills/attitudes do you possess that will help you achieve this outcome?

7	I can think and organise ahead of time.		50.00%	22
8	I have a positive attitude, no matter the outcome		54.55%	24
9	I help other people		68.18%	30
10	I improve from past accomplishments and mistakes		61.36%	27
11	I try and do the right thing in terms of society and the environment.		54.55%	24
12	I consider information		50.00%	22
13	I look to the future.		70.45%	31
14	I have a good imagination		61.36%	27
15	I can recognise where there is a need.		40.91%	18
16	Other		4.55%	2
			answered	44
			skipped	0

Where you have checked Other, please specify what that is: (3)

1	22/09/2022 17:14 PM ID: 199930269	I believe I am proactive at work when I am vastly interested in it.
2	03/10/2022 22:22 PM ID: 200645085	I'm competitive and determined. If I set myself a goal, I will work hard to achieve it.

14. This class is about the entrepreneurial mindset and how putting it into action can add value to society. What knowledge/skills/attitudes do you possess that will help you achieve this outcome?

3	05/10/2022 12:38 PM ID: 200776768	When I am really interested in something, I also get "the drive", therefore I ticked all the boxes
---	---	--

15. Please add any other thoughts or information that you consider relevant but that wasn't captured in previous questions.

Answer Choices			Response Percent	Response Total
1	Open-Ended Question		100.00%	4
1	22/09/2022 21:03 PM ID: 199943954	Social connections, behaviours and personality.		
2	03/10/2022 13:03 PM ID: 200595297	-		
3	03/10/2022 16:07 PM ID: 200618874	N/A		
4	04/10/2022 11:53 AM ID: 200677111	The hobbies question was difficult; I haven't had to rank them before. Thank you for this interesting question and for making me consider my priorities. All the best with the research!		
			answered	4
			skipped	40

APPENDIX 3: Class/Module Descriptor for the Social Challenge Class

Educational Aim (Min 15 hours of fieldwork) (2 individual assessments)

When we think about entrepreneurship, we often think of a visionary entrepreneur with savvy business knowledge destined to be a big success and their main goal is to make as much money as possible. While on the contrary, entrepreneurship is much more than that. Also oftentimes, we think what sets successful entrepreneurs apart is just their business plan. We neglect the characteristics of the entrepreneur themselves, particularly the unique way they approach problems. Their mindset that helps them look at challenges ‘differently’. And this mindset is what we call the “entrepreneurial mindset”. But what happens if we learn how to develop an entrepreneurial mindset to do ‘good’ for our community? Can this mindset help us address and find solutions to challenges and issues in our society, such as poverty, hunger, environmental damage, social inequalities, violence against women? Can an entrepreneurial mindset pave the way for us to tackle the world’s wicked problems in innovative and creative ways? Is there an impact of entrepreneurial mindset that goes beyond just generating profits and can this mindset help us in adding value to ourselves and others? This class aims to guide you to re-evaluate your own views of entrepreneurship within the framework of entrepreneurial thinking and empower you to put this mindset into action to support a social cause of your choice. You will develop a mindset that will enable you to build a toolkit to create and evaluate entrepreneurial opportunities, marshal resources, and find how you can add ‘value’ in your community. This class is a core module part of our UG degree for the Hunter Centre for Entrepreneurship.

The learning journey of this class consists of a series of lectures, tutorial workshops, weekly reflections, fieldwork / community project, and private self-study. The main goal is to engage students to explore their social values and purpose, identify a cause or community development project that aligns with their values, and work/volunteer 15-20 hours as part of their coursework. Students are required to spend at least 15 hours to support a local cause in the community, and/or with a social enterprise or charity of their choice. Each lecture introduces the main concepts for students to understand first about who they are and how that links to entrepreneurial thinking, then how they can use that new understanding to create value in their own community ‘project’. There will be 5 lectures running on Mondays at 02:00pm-04:00pm in weeks 1, 3, 5, 8 and 11.

The tutorial workshops are an important part of the learning journey and designed primarily to help the students to take into practice the concepts they learn in the lectures through group activities and discussions. These sessions will act as drop-ins for students to support them in brainstorming social causes to support and deliver their 15-20 hours of fieldwork/ community project. And, also as 'check-ins' with the students to make sure the community project experience is going well, and how to connect this to their final assessment. There will be 6 tutorial workshops in weeks 3, 4, 6, 7, 9 and 10.

Learning Objectives

Objective 1 Discuss the attitudes, values, characteristics, behaviour, and processes associated with possessing an entrepreneurial mindset and behaviour.

Objective 2 Develop a personal development plan for future entrepreneurial action and continued learning based on personal reflection and external feedback.

Objective 3 Apply your understanding of the interconnections between your experience and your responsibilities as members of social or professional communities.

Assessment

The assessment for this class is 100% individual coursework. There are two components of the assessment.

Individual assignment – 5 reflective blogs (c. 500 word per blog) 50% This is an individual assignment where each student will submit 5 reflective blogs, discussing your weekly learnings and how your thinking has changed. You reflect on your learnings from the class material, lecture, tutorials and community project.

Individual assignment – Community Project Reflection (c. 1200 word essay format) This is an individual assignment where each student will submit a 1200-word reflection on your experience with the community project, what you have learned,

APPENDIX 4: Summaries of Participant Journeys (For Full Journeys see Appendix: Full Interviews, for Interviews 1, 10 and 30)

Participant 1 (37, M, Scotland): This participant found the lecture and tutorial unexpectedly insightful, learning that entrepreneurship could be used for social good beyond business ventures. The class shifted their mindset toward sustainability, which was previously not on their radar, and made them more open to change, resulting in fostering kids on weekends. They appreciated the respectful discussions in class and were surprised at their perseverance in completing the course materials. Now more aware of social issues, they are considering voluntary work in the future.

Participant 2 (19, F, Scotland): She learned that entrepreneurs could provide not just economic but also social and cultural value to society. Her research made her realise her concern for poverty and deprivation in Glasgow. The class also deepened her understanding of sustainability and the benefits of volunteering as an entrepreneur. She now values the impact of entrepreneurship on societal issues and has gained a broader perspective on how these efforts contribute to community well-being.

Participant 3 (36, M, Scotland): This participant was excited to develop his entrepreneurial mindset, recognising its benefits in making his volunteer work more impactful. He became more aware of sustainability and has changed his buying habits to support local products. The class broadened his perspective on various aspects of sustainability, influencing his lifestyle choices and increasing his engagement in community efforts.

Participant 4 (25, F, Scotland): The class solidified her commitment to volunteering, which she found to be a rewarding experience. She particularly valued the reflective practice through weekly blogs, which helped her understand her progress and areas for improvement. This reflective process emphasised her personal growth and development that come with volunteering and being mindful of one's actions.

Participant 5 (19, F, Scotland): She re-evaluated her views on entrepreneurs, realising they aren't solely profit-driven but can also be passionate about social causes. Research on local poverty statistics deeply impacted her, making her more compassionate toward others' situations. She appreciated the unique skill set taught in class, which focused on contributing positively to society beyond financial success, fostering a deeper sense of empathy and social responsibility.

Participant 6 (20, F, Scotland): She learned that entrepreneurship involves more than just profit; it's about adding value to others, which she found fulfilling. Volunteering at a soup kitchen made poverty and hunger more important issues to her. She now walks or takes the bus instead of driving and has become more mindful of what she has, recognising the struggles of those who lack basic needs. The class instilled in her a sense of gratitude and a commitment to living more sustainably.

Participant 7 (22, F, Oman): The class broadened her knowledge of sustainability topics she hadn't previously considered. She shared information about the SDGs during an internship back home, raising awareness among her peers. With a longstanding passion for protecting the planet, she now reads product labels more carefully and thinks critically about sustainable urban development, such as smart cities. The class strengthened her commitment to environmental awareness and advocacy.

Participant 8 (20, F, Cyprus and Ukraine): This participant realised that entrepreneurship is a learned skill, debunking her previous belief that entrepreneurs are born. She embraced the idea of learning from mistakes as part of self-improvement. Volunteering opened her eyes to the scale of poverty and social issues, driving her to stay engaged with these causes. She reflected on the unexpected discovery of her innovative potential, which she had not previously recognised as a strength.

Participant 9 (20, F, Scotland): She learned that entrepreneurship could add value beyond financial gain, inspiring her to contribute her time and support to community causes. Previously uninterested in social problems, volunteering changed her perception and highlighted the struggles many people face. She now consistently rounds up her bill for charity, recognising that small contributions can have a significant impact on someone's life, reinforcing her shift toward community-oriented actions.

Participant 10 (20, F, Scotland): She now understands that anyone can be an entrepreneur, and it's about enhancing the value of an idea through action. Her perspective on sustainability shifted, and she now actively engages in sustainable practices, such as recycling more and valuing sustainable production. The class challenged her belief that profitable businesses cannot be sustainable, altering her views on how business success can align with environmental responsibility.

Participant 11 (20, F, Scotland): This participant debunked the myth that entrepreneurship is solely about making money, learning instead about the broader value entrepreneurs can provide to their communities. She gained insights into social inequalities, which she now thinks about more often. She enjoyed the class discussions and interactions, which fostered a sense of community, and found attending the tutorials to be a rewarding experience that kept her engaged weekly.

Participant 12 (20, F, Scotland): She discovered that entrepreneurship goes beyond business creation and can be applied to everyday life to build value for oneself and others. The class introduced her to concepts of self-fulfilment, purposefulness, and self-reflection, which were new and challenging. Since the class, she has adopted more sustainable habits, such as shopping second-hand and recycling more. She also grew more open to group work, which positively changed her outlook.

Participant 13 (20, F, Scotland): She learned about the value that entrepreneurs add to society and identified qualities she possesses and those she can improve upon. Volunteering in a soup kitchen was an eye-opening experience, allowing her to see firsthand the struggles faced by others. The class discussions offered various perspectives, prompting her to think differently about social issues like homelessness and drug addiction. She has since adopted more sustainable habits, such as using reusable bags and being mindful of waste.

Participant 14 (22, M, Egypt): He discovered that entrepreneurship is not solely about financial gain but also about contributing to the common good, which resonated with his values. The class discussions were particularly impactful for him, as they broadened his understanding of sustainability and the SDGs. He now intends to keep sustainability at the forefront of his actions, not just professionally but in his personal life as well.

Participant 15 (22, M, Malaysia): He learned that entrepreneurship is about adding value, not just making money, and recognised that the entrepreneurial mindset (EM) is a skill that can be developed. The class deepened his understanding of SDGs, particularly "Life Below Water" and "Climate Action," which he now feels more connected to. His increased awareness of sustainability has motivated him to consider how he can contribute to addressing these global issues.

Participant 16 (22, M, Scotland): He realised that entrepreneurship is not merely profit-driven but often focused on solving social and environmental problems. Since the class, he has adopted small sustainable practices, like using reusable flasks and bags, and found personal fulfilment in volunteering at a charity shop. The interactions with people at the shop highlighted the social value of simply engaging and listening to others.

Participant 17 (20, M, England): The class prompted him to reflect on whether everyone can develop an entrepreneurial mindset, enhancing his self-awareness of his strengths and weaknesses. He found the volunteering component rewarding and continues to volunteer regularly. The class discussions encouraged him to think critically about his traits and how they can be applied to make a positive impact through his volunteer work.

Participant 18 (21, F, India): She discovered that entrepreneurship goes beyond financial motivations and aims to address societal issues. Inspired by the class, she prioritised the UN SDGs in her venture and even proposed solutions for climate change, demonstrating her active engagement with sustainability. She now feels more aware and proactive, using her entrepreneurial skills to contribute to societal betterment.

Participant 19 (23, M, India/Oman): He learned to distinguish between EM and traditional entrepreneurship, realising the importance of purpose and sustainability. This newfound awareness has motivated him to consider the future impacts of resource limitations and advocate for responsible consumption among his peers. Before the class, he was unaware of

the SDGs and how businesses could focus on them, but now he actively promotes sustainability.

Participant 20 (23, F, Malaysia): She realised there's more to entrepreneurship than just making money, discovering the value of self-awareness and reflection. She has shifted her buying habits toward sustainable products and engages more with thrift shopping. The class transformed her understanding of an entrepreneurial mindset as a flexible approach to problem-solving rather than just business creation, leading her to think more deeply about her actions.

Participant 21 (21, M, England): Researching disadvantaged areas made him aware of the importance of supporting local causes, inspiring him to use his business knowledge for societal benefit rather than just profit. He now volunteers for Sustainable Strathclyde, marking a significant shift in his mindset toward sustainability. The class prompted him to explore how his skills could help address broader social issues beyond financial objectives.

Participant 22 (20, F, Scotland): She found the entrepreneurial mindset intriguing and was motivated to explore whether she possessed it. Learning about the shocking cancer statistics inspired her to start volunteering, and she continues to work with Macmillan. The experience has encouraged her to adopt a more positive outlook on life and be more proactive in her community involvement.

Participant 23 (21, M, England): He learned the significance of an entrepreneurial mindset and found initial collaboration with new peers challenging. However, he appreciated how teamwork and feedback allowed him to practice entrepreneurial skills like collaboration. The class broadened his perspective on social issues, such as poverty and hunger, which he now sees as areas where he can make a difference with his skills.

Participant 24 (20, M, India): Exposure to practical learning and open discussions was new for him, making him more confident and aware of diverse social issues. He felt uplifted by the non-judgmental environment in class, which encouraged self-reflection and a deeper understanding of topics he was previously unaware of. This experience helped him build confidence and motivated him to engage more deeply with social issues.

Participant 25 (21, M, Morocco): He realised that entrepreneurship is about adding value rather than just financial gain, and this understanding reshaped his goals toward socially driven initiatives. Before the class, he had little knowledge of sustainability, but the discussions sparked a passion for addressing social problems. He is now deeply invested in exploring sustainability in business, even choosing it as his dissertation topic.

Participant 26 (21, M, Italy): He learned how an entrepreneurial mindset can impact social well-being and community connections. The class was an eye-opener for him, particularly regarding sustainable economic growth and consumption, which have since become important to him. This newfound understanding has influenced his personal and professional outlook on sustainability.

Participant 27 (21, F, Scotland): She found the early weeks of the social challenge eye-opening, prompting her to adopt more sustainable habits, like buying sustainable fashion and recycling. Volunteering expanded her awareness of different charities and their roles in society, reinforcing the importance of active participation in community efforts.

Participant 28 (22, F, Malaysia): The class challenged her initial perception of entrepreneurship as profit-focused, encouraging her to engage more deeply with her mistakes as part of her growth. She now recognises the significant role of sustainability in business and has started actively researching and implementing sustainable practices in her daily life and professional activities.

Participant 29 (25, M, Scotland): He realised that entrepreneurship should focus on adding value to society, not just profits. Observing how businesses can positively impact communities inspired him to think critically about sustainability and make more mindful purchasing decisions. He now considers the broader societal impact of his actions and is more conscious of sustainability in his daily life.

Participant 30 (21, M, Scotland): He learned that developing an entrepreneurial mindset can make him a more well-rounded individual. The class discussions changed his views significantly, making him more sympathetic and understanding of others. He has since become more invested in strengthening global partnerships and has researched extensively on sustainability, even advocating for nuclear power as a solution.

APPENDIX 5: Cross-Case Analysis

Table Definitions P=Participant Number, G=Gender N=Nationality, S=Scotland, O=Oman, C=Cyprus and Ukraine, E=Egypt, M=Malaysia, EN=England, I=India, MO=Morocco, IT=Italy. PV=Personal Values, EM=Entrepreneurial Mindset

P	G	N	Blog 1	Blog 2	Blog 3	Blog 4	Blog 5	Interview, personal changes they identified
1	F	S	EM new concept	PV test	EM Test	Creativity test	Causation and effectuation of new concepts	Now think about SDGs when you did not before. Discussions were healthy
2	F	S	EM new concept	PV test	EM Test	Creativity test	Causation and effectuation of new concepts	Now think about sustainability when you did not before.
3	M	S	EM new concept	Journaling	Reflective writing	Reflective writing	Causation and effectuation of new concepts	Aware of buying locally
4	F	S	EM can-do attitude	PV Test	EM Test	Creativity Test	Causation and effectuation	She would volunteer again. Like

								doing reflections
5	F	S	EM new concept	Poverty statistics shocking	Match skills for volunteering	Creativity Test	Causation and effectuation	Now more compassionate about other people's opinions
6	F	S	EM's new concept of adding value	Reflective writing	Reflective writing	Creativity Test	Sharing reflective methods	My mindset improved about being grateful for what I had. Class discussions important
7	F	O	Personal reflections	Personal reflections	EM Test	Creativity Test	Causation and Effectuation	Open doors for her to topics that she did not know about on sustainability. Enjoyed class discussions
8	F	C	EM born not made was a myth.	Shocking statistics about	EM Test	Creativity Test	Causation and Effectuation	Poverty had become more important to

				drug abuse				them, and she surprised herself with teamwork.
9	F	S	EM value	Personal Values Test	EM Test	Creativity Test	Causation and Effectuation	Realised some people struggle so much
10	F	S	EM new concept	Reflection now important	EM Test	Creativity Test	Causation and Effectuation	They do more recycling. Realise businesses can be profitable and sustainable.
11	F	S	EM creates value for the community	Reflective writing important	EM Test and Emotive moment	Creativity Test	Causation and Effectuation	Think more about social inequalities. Liked discussions
12	F	S	EM creating value	Personal values test	Finding her purpose	EM skills	Causation and Effectuation	Now, being more sustainable and loving group work
13	F	S	The value an entrepreneur adds and the social impact	Homelessness statistics were	Personal reflection	Creativity Test	Causation and Effectuation	Eyes opened to sustainability and the

				alarmin g				suffering of people. Multiple perspectives on discussions
14	M	E G	Entrepreneur ship is not all about money	Persona l Values Test	EM Test	Creativity Test	Causation and Effectuation	Going to keep the SDGs in mind.
15	M	M	EM is adding value and not just about money	Persona l Values Test	EM Test	Creativity Test	Causation and Effectuation	Interpersona l skills grew as group work was insightful. Life below water and climate action are more important. He gained interpersona l skills.
16	M	S	EM is not about profit but about social problems	Benefit s of reflecti ng	Reflecting on Mindfulne ss	Innovative mindset	Critical incidents	All the SDGs are more important
17	M	E	EM is something	Reflect on	EM Test	Creativity Test	Personal Mindset Test	Carried their knowledge of their

			everyone can achieve	reflecting				traits into continuing volunteering
18	F	I	EM is not just about money	Produced solutions to climate change	EM Test	Creativity Test	Causation and Effectuation	Interested in the SDGs and am more careful when shopping with a focus on sustainability
19	M	I	EM and having positive thoughts	Finding my purpose 'got my gears running'	EM Test	Creativity Test	Causation and Effectuation	He enjoyed the group work. More focused on the SDGs
20	F	M	EM is a hidden soft skill not taught at school	Personal reflection	Researching academic poverty in Malaysia	Creativity Test	Reflected on their volunteering	Changed their buying habits. Liked sharing ideas in group work
21	M	E	Academic journalling	Personal Values Test	EM Test	Creativity Test	Volunteering to do data wrangling	Big shift in mindset toward sustainability

22	F	S	EM and valuable skills in EE	Some statistics were shocking	They were finding their passion	Creativity Test	Causation and Effectuation	Kept volunteering . Trying to be more positive
23	M	E	EM and how it can create value	Teamwork and collaboration are put into practice	Guest speakers and their values and passions	Creativity Test	Causation and Effectuation	Going to put their energy into infrastructure or energy, which has opened my eyes to. Liked the discussions in group work
24	M	I	Nothing was submitted by a participant	Felt uplifted that no opinion was criticised	Thrilled by the process of journaling	Group interactions built confidence	Causation and Effectuation	Raised his awareness of what existed that he did not know
25	M	M O	EM knew about adding value	He learned to be reflective	Reflected on reflection	Creativity Test	Personal Mindset Test	They have become more passionate about social problems.

								Liked the sharing of points in group work
26	M	I T	EM impact on social, raising well-being and how the community is connected	Scared they had not found a community project	EM Test	Creativity Test	Causation and Effectuation	Opened their eyes to the SDGs, as this was the first time they had seen them
27	F	S	She learned she could train herself to think and act entrepreneurially	Thinking about what causes she wanted to help with and find her passion	Skills she wants to develop	Reading about reflecting	Causation and Effectuation	Helped them be more aware of the different charities and what they do, and they felt this was important.
28	F	M	EM is not about profits	Not submitted by a participant	EM Test	Creativity Test	Personal mindset test results	Her internship after the class made her realise how key a role sustainability is.

								Group discussions had a significant impact on her.
29	M	S	EM is to add value	Business can be a force for good	He reflected on his values	Creativity Test	Causation and Effectuation	He takes more time over purchasing decisions
30	M	S	EM will develop them into a well-rounded individual	Passionate about helping people	EM Test	Creativity Test	Causation and Effectuation	He is now more sympathetic to the drug addicts. He found that the points made in discussions were listened to