

DOCTORAL THESIS

L

Learning from the Land  
*The Lifelong Environmental Learning  
of Farmers in Northern Sweden*



Niklas Johansson

Education



# LEARNING FROM THE LAND

The Lifelong Environmental Learning  
of Farmers in Northern Sweden

Niklas Johansson



# ABSTRACT

In the far north of Sweden, there exists a small agricultural community of farmers. Currently, these farmers are on the outskirts of the global agricultural industry, but soon, they will probably be placed at the forefront of worldwide food and lumber production. This prediction emanates from the fact that climate change is currently about to transform the subarctic landscape, which may revolutionize the preconditions for the agriculture industry in northern Sweden. Already by the turn of the next century, research indicates that the subarctic regions of the world could have become new agricultural frontiers with a considerably renewed capacity for agricultural production.

If these environmental changes occur, it will undoubtedly entail several educational challenges for the farmers of northern Sweden, as they inevitably must begin to redevelop their local knowledge and understanding of their different farmlands. However, there is a significant lack of educational research that has explored how farmers learn and redevelop their local knowledge and understanding of their different farmlands in their everyday lives, especially in the geographical context of northern Sweden. Fundamentally, this doctoral thesis seeks to explore and address this research gap.

The objective of the research endeavour is to explore, describe, and understand how farmers in northern Sweden learn and redevelop their local land knowledge in their everyday lives. In doing so, the doctoral thesis seeks to facilitate and support the continuous redevelopment of a sustainable and climate change resilient agricultural industry within the subarctic region of Norrbotten in northern Sweden. The following research questions have informed and guided the practical implementation of the research endeavour: What learning practices and experiences do farmers emphasize and describe as educationally significant within their learning process by which they learn and redevelop their local land knowledge? What characterizes the learning process by which farmers learn and redevelop their local land knowledge? How may farmers' lifelong environmental learning be facilitated and supported in times of climate change?

To fulfil this research objective, the doctoral thesis methodologically employs a qualitative narrative inquiry based on 30 interviews with 14 different farmers. Theoretically, the doctoral thesis also draws upon John Dewey's theoretical framework of experiential learning.

The empirical results show that the farmers' lifelong environmental learning process is grounded in the three interrelated learning practices of sensing, storying, and shaping the land. Conceptually, the learning practice of sensing the land is argued to mirror Dewey's concept of aesthetic experience. The learning practice of storying the land is reasoned to resemble Dewey's reflective experience of analytical thinking. And the learning practice of shaping the land is proposed to echo Dewey's reflective experience of trial and error. Together, these results then suggest that the farmers' lifelong environmental learning process is characterized by an integration of body and mind, as well as a deep embeddedness within different geographical contexts and local agricultural communities. In the context of climate change, supporting farmers' lifelong environmental learning is therefore argued to require strengthening their sensory engagement with their local natural environments, fostering their ability to exchange and reflect upon various kinds of environmental and agricultural experiences within their local agricultural communities, and enhancing their capacity for diverse forms of on-farm experimentation.

**KEYWORDS:** Farmer, Farmers Education, Farmers Learning, Lifelong Learning, Environmental Learning, Experiential Learning, Outdoor Learning, Outdoor Education, Northern Sweden

# FOREWORD

With the completion of this doctoral thesis, a long and eventful academic and personal journey is now finally ending. During the last few years, I have had the incredible opportunity to meet many inspiring people from all over the world, and I have also had the chance to think long and hard about what it truly means to learn from the land as a farmer in the far north of Sweden. I have had the great joy of working with reading and writing books, while also having the opportunity to explore the gorgeous Swedish taiga. Throughout the years, I have travelled countless kilometres on remote country roads to meet different farmers who live and work on seemingly remote farmsteads deep inside the beautiful woodlands of northern Sweden. And despite the sometimes lonely and monotonous tasks of countryside driving and thesis writing, I have continuously felt a profound sense of exploration throughout this research project. And in many ways, this academic pursuit has deeply changed me as a person. My doctoral studies have been a time of much academic and personal growth, and I will treasure this experience for the rest of my life.

However, research is never truly a solitary pursuit. All scientific endeavours are always launched and conducted within different academic contexts and communities, and the completion of this doctoral thesis would not have been possible without the help and support of many different individuals and organizations. Without the following people, groups, and institutions, I would simply not have been able to conquer and overcome the many personal and academic struggles that have followed me throughout this research project.

First and foremost, I would like to thank all the different people that I hold near and dear in my life. Without their precious love and support, I would not have been able to endure the long, lonely, and sometimes also tedious process of writing a doctoral thesis. As you might know, life can take many twists and turns, and it has been invaluable to have had them tirelessly loving and supporting at my side.

Secondly, I would like to express my sincerest gratitude for the support given by my academic supervisors, Anna Öqvist, Caroline

Graeske, and Anna-Karin Gullberg. Likewise, I would also like to express my highest appreciation for my external examiners and reviewers, Gunnar Jonsson, Eila Jeronen, and Cecilia Bjursell. Without their academic wisdom and guidance, this doctoral thesis would not have been able to reach the same level of quality it has today and would undoubtedly also have consisted of hundreds more pages. Everyone who embarks on the adventure of pursuing a doctorate degree needs guides on their journey, and I am very pleased and honoured to have had them on my adventure.

Thirdly, I would also like to acknowledge all the different organizations and institutions that have made this research project possible. Without the formal and financial support of Luleå University of Technology, NorrlandsNavet, and The Kamprad Family Foundation for Entrepreneurship, Research, and Charity, this doctoral thesis and all my other publications (Johansson 2023; Johansson & Lundqvist Jones 2026) would not simply have been possible and seen the light of day. Few have received the honour to be able to pursue a doctorate degree, and I will forever be grateful that they decided to support and believe in me early on in my academic career.

Fourthly, I would like to express my deepest appreciation for the support and feedback given to me by the various researchers, scholars, and practitioners belonging to the Life History and Biography Network within the European Society for Research on the Education of Adults (ESREA), the Research Forum for Outdoor and Environmental Education at Linköping University, and the Swedish National Network for Promoting Outdoor-Based Learning (Utenavet). Without their enthusiasm, eagerness, and thoughtful feedback regarding my research project, my ongoing inspiration and drive to continuously conduct this doctoral thesis would, for sure, not have been the same and as rewarding and enjoyable as it has been throughout the years.

Fifthly, I would also like to thank all the different farmers who have wholeheartedly participated in my research project. Without their inspiring openness, kindness, and hospitality, this doctoral thesis and all its produced insights would not simply exist. The knowledge, wisdom, and histories they carry about their lands in the far north of

Sweden are nothing else than remarkable. It has been my greatest pleasure to meet all of them, and they have left such a mark on my mind and heart that I have considered writing another book capturing all my different travels and our many profound and meaningful encounters. However, I wish them nothing but the best in the exciting future that lies ahead. The natural landscape in the far north of Sweden is on the verge of changing, and they will undoubtedly be at the forefront of the worldwide quest to overcome the pressing environmental and agricultural issues and challenges caused by climate change. To some degree, they could thus be perceived and regarded both as the future and the solution to the current environmental crisis, and I believe it is now time for them to get the support and acknowledgment that they need and deserve from the wider society.

Sixthly, I also wish to express my heartfelt gratitude to my beloved mother, Annika Johansson, who painted the cover image depicting the landscape of northern Sweden. For me, the painting serves as a reminder of the many country roads, deep inside the Swedish taiga, I travelled throughout the course of this research project.

And finally, I wish that you, the reader, who has stumbled upon this doctoral thesis, will find the peace and the answers that your heart, mind, and soul are searching for. If you cannot find them in this book, I sincerely hope that you find them elsewhere. What it means to learn from the land is such a profound question that permeates not only educational endeavours like this, but also social, theological, spiritual, biological, and psychological ones. Sometimes, you might need to search wide and long before you reach your destination. But hopefully, this doctoral thesis will take you one step further on your quest and journey. Peace be with you!

Niklas Johansson  
Linköping, May 2026

# CONTENTS

<b>Introduction .....</b>	<b>1</b>
Agricultural Context .....	2
Agricultural Challenges .....	3
Research Gap.....	6
Research Aim .....	8
Thesis Structure .....	9
<b>Background .....</b>	<b>11</b>
Education of Farmers.....	11
Informal Education of Farmers .....	12
Non-Formal Education of Farmers.....	13
Formal Education of Farmers .....	16
Farmers' Local Knowledge .....	18
Local Ecological Knowledge.....	19
Local Land Knowledge .....	21
Farmlands as Landscapes .....	25
Research Field .....	28
Lifelong Learning .....	28
Environmental Learning .....	32
Lifelong Environmental Learning.....	34
Previous Research .....	35
Learning by Making Experience .....	36
Learning by Sharing Experience .....	39
Overall Picture from Previous Research .....	41
<b>Theoretical Framework.....</b>	<b>43</b>
Philosophical Orientation of Experiential Learning .....	43
Theory and Philosophy of Experience .....	46
Process of Experiential Learning .....	49
Limitations of Experiential Learning .....	53
Relevance of Experiential Learning .....	55

<b>Methodology</b> .....	<b>61</b>
Research Philosophy .....	61
Interpretivist Philosophical Orientation.....	62
Inductivist Approach to Theorizing .....	64
Research Design .....	67
Narrative Research Design.....	67
Narratives as Empirical Data .....	69
Rationale of the Research Design Application.....	70
Research Population .....	71
Participating Farmers .....	71
Sampling and Recruitment Process .....	72
Data Production .....	74
Life Story Interviews .....	74
Walking Interviews .....	77
Limitations with the Interviews .....	80
Transcription Process .....	82
Data Analysis.....	84
Process of Reflective Thematic Analysis .....	85
Theoretical Sufficiency in the Data Analysis.....	89
Limitations of the Data Analysis .....	91
Results Presentation .....	92
Confessional Writing Approach .....	92
Integration of the Theoretical Framework.....	94
Ethical Considerations .....	95
Researcher Reflexivity.....	100
<b>Results</b> .....	<b>103</b>
Sensing the Land .....	103
Sensing Systematically .....	104
Sensing Slowly and Attentively .....	111
Storying the Land.....	115
Storying across Generations .....	117
Storying across Communities .....	123

Shaping the Land .....	127
Shaping Systematically .....	129
Shaping Collectively .....	134
Summary of the Results .....	138
<b>Discussion .....</b>	<b>141</b>
Characteristics of Farmers' Lifelong Environmental Learning ..	142
Learning that Integrates Body and Mind.....	142
Learning Embedded in Local Agricultural Communities .....	145
Learning Embedded in Geographical Contexts .....	147
Habits as Educational Resources and Constraints .....	151
Theoretical Contribution to the Research Field.....	153
Facilitating Farmers' Lifelong Environmental Learning .....	155
Strengthening Sensing the Land.....	155
Fostering Storying the Land.....	156
Enhancing Shaping the Land.....	157
Implications for the Formal Education of Farmers .....	158
Directions for Further Research .....	160
<b>Sammanfattning.....</b>	<b>165</b>
Problemformulering.....	165
Syfte och frågeställningar.....	166
Bakgrund .....	167
Teoretiskt ramverk.....	168
Forskningsdesign och metod .....	168
Empiriska resultat .....	169
Resultatdiskussion .....	171
<b>References .....</b>	<b>174</b>
<b>Appendix .....</b>	<b>226</b>



## Chapter I

# INTRODUCTION

In the far north of Sweden, there exists a small agricultural community of farmers (Jonasson 2020; Jonsson 2023). Currently, these farmers are on the outskirts of the global agricultural industry, but soon, they will probably be placed at the forefront of worldwide food and lumber production. This prediction emanates from the fact that climate change is currently about to transform the subarctic landscape and revolutionize the preconditions for the local agricultural industry (Altdorff et al. 2022; Unc et al. 2021). Already by the turn of the next century, prior research indicates that the subarctic regions of the world could have become new agricultural frontiers with a renewed capacity for agricultural production (Unc et al. 2021).

If these environmental changes occur, it will undoubtedly entail several educational challenges for the farmers of northern Sweden, as they inevitably must redevelop their local knowledge and understanding of their different farmlands (Reidsma et al. 2010; Wiréhn 2018; Neset et al. 2019b). However, there is a significant lack of educational research that has explored how farmers learn and redevelop their local knowledge and understanding of their different farmlands in their everyday lives, especially in the far north of Sweden (Quinn & Halfacre 2014; Šūmane et al. 2018; Garavito-Bermúdez 2016). Fundamentally, this doctoral thesis explores and addresses this research gap by narratively examining and investigating the lifelong environmental learning of farmers in the Swedish region of Norrbotten.

The purpose of this introductory chapter is to outline and describe this emerging picture and make an argument for why educational research on the subject is highly relevant and needed in contemporary times. The chapter begins by outlining the broader agricultural context, the underlying agricultural challenges following climate

change, and the existing research gap. Lastly, the research aim is presented, followed by an outline of the overall thesis structure.

## AGRICULTURAL CONTEXT

This study has been launched within the Swedish subarctic region of Norrbotten, which might be one of the most alluring and fascinating places in the world from an agricultural perspective (McCannon 2012). This is because the region experiences extended snow cover and limited daylight during its winter months, which significantly constrain the local agricultural production (Jonsson 2023). The region lies near the Arctic Circle and encompasses vast expanses of deep coniferous forests, roaring rivers, and rolling mountains. And every autumn, when the days become shorter and the first snowfall arrives on the ground, this vast and rugged landscape falls into hibernation and does not wake up for six long months. For about half a year, the landscape rests beneath thick layers of snow and ice while the dark and frigid polar nights pass by. But when the days become longer and warmer, and spring finally arrives, the landscape then eventually wakes up and begins to exuberate with life. And for about three short summer months, when the sun barely sets, the landscape never rests before it once again falls asleep next autumn. Managing this harsh, intense, and rugged natural environment makes the farmers of Norrbotten geographically unique from an agricultural perspective. Nowhere else in the world is agriculture<sup>1</sup> currently practiced as far north as the region of Norrbotten (Jonasson 2020; Rööös et al. 2016).

Historically, agriculture was first established in Norrbotten around the late Bronze Age (Sjögren & Arntzen 2013), and nowadays, there are about one thousand farmers, of whom 40 percent are female, who live and work in the region, especially along the somewhat fertile coastline of the Bothnian Bay (Jonasson 2020; Jonsson 2023). Economically, they account for roughly 1 percent of Sweden's total agricultural production, although their economic and productive share

---

<sup>1</sup> Within this doctoral thesis, the term agriculture will take on a broad and comprehensive meaning as the Swedish word 'lantbruk'. It will denote farming in the sense of both forestry, crop production, and grass cultivation.

has slowly shrunk and gradually declined in recent decades due to various economic and demographic changes (Jonasson 2020).

The farmers of Norrbotten are also overwhelmingly concerned with animal husbandry, and particularly pastoralism, focused on dairy and cattle production (Jonasson 2020; Jonsson 2023). They mainly manage Swedish Red-Browed Cattle, Swedish Lowland Cattle, and Swedish Kullig Boskap (Jonsson 2023), and their yearly turnover currently roughly equates to 170 million Swedish Krona (Jonasson 2020). The few fields that exist throughout the region are thus naturally mainly used for ley farming and pastures for different kinds of herds of cattle, although small-scale grain and crop cultivation can also be found in a few places (County of Norrbotten 2023; Jonasson 2020; Jonsson 2023). Notably, only 0,4 percent of the entire land area of Norrbotten consists of crop fields (Blix Germundsson 2020).

However, the most significant revenue source for the farmers of Norrbotten is arguably their forests (Normark 2024), which predominantly consist of Norway Spruce, Scots Pine, Silver Birch, and Downy Birch (Portin et al. 2013). In Sweden, about half of all forest lands are owned by family enterprises (Normark 2024), and in Norrbotten, roughly 80 percent of all farmers have historically owned more than 100 hectares of forests (Höglin 1998). Hence, agriculture and forestry have thus historically often been regarded as one coherent and unified form of agricultural practice called 'lantbruk' (Normark 2024; Waldenström 2022). Considering the existence of this local notion, this doctoral thesis will thus pay no particular attention to the specific local natural environment that the farmers' lifelong environmental learning process encompasses and concerns.

## AGRICULTURAL CHALLENGES

Although Norrbotten is already among the most difficult and challenging regions in the world to practice and conduct agriculture within, due to its subarctic climate, the local farming practice is unfortunately also predicted to become even more arduous and demanding in the upcoming decades. Nowadays, the farmers of Norrbotten are increasingly confronted with the daunting reality that their local

knowledge and understanding of their different farmlands might become outdated and obsolete as the immense forces of climate change slowly begin to transform the outlines of the subarctic landscape (Meredith et al. 2019). These predictions have thus recently given rise to a growing uncertainty regarding what a sustainable local agricultural industry in Norrbotten might look like in the future.

In one sense, climate change may revolutionize the preconditions for subarctic agriculture (Unc et al. 2021; Klöffel et al. 2022). The rapid warming of the boreal regions will probably cause new weather patterns and ecosystems to emerge, likely transforming the vast, boreal landmass into fertile, arable lands (Altdorff et al. 2022; King et al. 2018; Unc et al. 2021; Wiréhn 2018). The increase in annual temperature and precipitation is thought to prolong the local growing season, enable more harvests, and increase yield productivity<sup>2</sup> (Nainggolan et al. 2023; Juhola et al. 2017), and such a development would arguably bring tremendous business opportunities for the farmers of Norrbotten (Altdorff et al. 2022; Unc et al. 2021). When the boreal landmass changes, northern Sweden might, for instance, emerge as an excellent ground for crop production, mainly because the region is thought to hold millions of acres of ‘untouched’ soils rich in different substances and minerals beneficial for farming (Altdorff et al. 2022; Unc et al. 2021). Already by the turn of the next century, scholars predict that the subarctic regions of the world could have become new global agricultural frontiers, with the potential and capacity to provide for millions of people (Unc et al. 2021). Hence, Norrbotten might thus soon become an agriculturally important place globally, as scholarly predictions reveal more positive effects in this region than elsewhere following the environmental transformations caused by climate change (Neset et al. 2019a; Olesen et al. 2011; Rötter et al. 2012).

However, in another sense, an increase in annual temperature and precipitation might also bring an improved and elevated risk of pest and weed infestations (Fogelfors et al. 2009; Uleberg et al. 2014), revved phenological development (Kristensen et al. 2010; Peltonen-

---

<sup>2</sup> Other studies that also describe and discuss the benefits for Nordic agriculture following climate change are, for instance, Bindi and Olesen (2011), Fogelfors et al. (2009), and Uleberg et al. (2014).

Sainio et al. 2010), tricky and challenging conditions for tilling (Fogelfors et al. 2009), sowing (Hakala et al. 2012; Uleberg et al. 2014), and harvesting (Larsson et al. 2013), as well as an increased risks of soil deterioration and nutrient leaching (Eckersten et al. 2008; Jeppesen et al. 2010), and different kinds of yield losses due to increased climate irregularity<sup>3</sup> (Rötter et al. 2012). The benefits of, for instance, a prolonged growing season might thus become cancelled in the future by an increase in challenging and difficult agricultural conditions throughout the various farming cycles. In other words, it is not entirely clear and obvious that the farmers of Norrbotten will be able to benefit from the environmental changes caused by climate change.

But overall, the local agricultural industry in Norrbotten could, nonetheless, be seen as having some potential to capitalize on the environmental changes linked to climate change in the upcoming decades. However, as previous studies have highlighted, realizing this potential will probably require substantial learning among farmers and their local agricultural communities (Reidsma et al. 2010; Wiréhn 2018; Neset et al. 2019b). Hence, it is now arguably vital for the farmers of Norrbotten to begin to engage in the practice of lifelong environmental learning to redevelop their local knowledge and understanding of their different farmlands so that they can manage and overcome the development of a new natural landscape in the far north of Sweden. And to succeed in this educational quest is undoubtedly of tremendous social significance, both locally and globally.

Farming is unquestionably the foundation of human civilization (Tauger 2021), and the food security of humankind undoubtedly rests upon local farmers' ability and capacity to know and understand how to manage and take care of their different farmlands<sup>4</sup> (Abdul Mumin & Abdulai 2022). Within the context of Norrbotten, local food security is currently also an especially pressing and worrying social issue (Jonsson 2023). The region is infamously known as a net importer of

---

<sup>3</sup> The agricultural challenges that may follow from climate change within the Nordic countries have also recently been outlined by Marttila et al. (2005), Maracchi et al. (2005), and Wivstad (2010).

<sup>4</sup> The social significance of agriculture has recently also been stressed by Shikuku and Melesse (2020), Song et al. (2018), and Zheng et al. (2020).

agricultural goods, and over the last few decades, this situation has unfortunately also slowly become increasingly aggravated and worsened (Röös et al. 2016). At the turn of the millennium, Norrbotten was about 50 percent self-sufficient, and today, the level of self-sufficiency has dropped to just over 20 percent (County of Norrbotten 2023). Hence, enabling the farmers of Norrbotten to capitalize on the environmental transformations following climate change is thus of the greatest importance and prominence locally since it might become a matter of survival for both the local society and the local agricultural businesses (Jonsson 2023). Fundamentally, this is an issue that unites both entrepreneurial, educational, and agricultural goals, visions, and interests. Simply put, without local food security, the subarctic region of Norrbotten cannot further survive, thrive, and expand in the future, which undoubtedly would be devastating, both socially and economically, for the various local rural communities.

## RESEARCH GAP

Nowadays, scientific knowledge is frequently recognized as the most valuable resource for the continuous redevelopment of a competitive, sustainable, and resilient agricultural industry worldwide (Cooreman et al. 2018; Waldenström 2022). As a response to the different educational challenges currently facing the worldwide agricultural industry, there has thus recently emerged a call for educational studies that seek to explore the lifelong learning of farmers (Lacoste et al. 2022). In particular, educational studies that focus on the development of farmers' local knowledge and understanding of their different farmlands are increasingly becoming perceived and regarded as fundamental assets in the ongoing quest to develop the capacity and climate change resilience of the modern agricultural industry (Grubbström & Joosse 2021; Bendfeldt et al. 2021; Gliessman 2018).

The main reason for this call for research orbits around the fact that farmers' practical wisdom fundamentally builds upon their ability and capacity to read and understand their different farmlands (Lindblom & Lundström 2014; Nerbonne & Lentz 2003; Nitsch 2009). Farmlands are undoubtedly more than physical spaces for

crop and plant cultivation (Quinn & Halfacre 2014). They are also meaningful places embedded with intricate webs of natural and agricultural histories (Quinn & Halfacre 2014). To be able to know what to do in different agricultural phases and cycles, farmers must thus unquestionably have a deep sense of how different natural and agricultural processes commonly unfold and interconnect on their different farmlands (Lindblom & Lundström 2014; Nitsch 2009; Šūmane et al. 2018). At its core, farming fundamentally “requires interpreting current conditions in the context of changes that have occurred over decades or centuries and balancing short-term and small-scale objectives against long-term and broadscale goals” (Dale et al. 2012:1118). This is because ecosystems tend to change both with regard to natural parameters and the intensification of different agricultural practices (Küster 2004). This local land knowledge is essentially what constitutes the ‘map’ through which different farmers navigate their local agricultural practices in their everyday lives (Lindblom & Lundström 2014; Nerbonne & Lentz 2003; Nitsch 2009). Consequently, farmers’ local knowledge and understanding of their different farmlands could thus, arguably, be considered to be a paramount component of all kinds of agricultural practices (Šūmane et al. 2018). This is, for instance, reflected in the fact that farmers commonly report in various studies that their local knowledge and understanding of their various farmlands are what they value and rely on the most in their everyday practice<sup>5</sup> (Šūmane et al. 2018; Wood et al. 2014). Prior research, therefore, commonly recognizes farmers’ local knowledge and understanding of their different farmlands as one of the most valuable and significant educational resources in the continuous redevelopment of the modern agricultural industry worldwide (Šūmane et al. 2018).

However, how farmers continuously learn and redevelop their local knowledge and understanding of their different farmlands in their everyday lives is currently not very well known from an educational perspective (Quinn & Halfacre 2014; Šūmane et al. 2018). Educational studies focusing on farmers’ lifelong environmental learning

---

<sup>5</sup> This is a common observation in previous research on farmers’ lifelong learning and has, for instance, also been noted by Dargan and Harris (2010), Fonte (2008), and Lyon et al. (2011).

process are today notably scarce and limited. There is an abundance of interdisciplinary studies that have sought to address and investigate farmers' lifelong learning and education from different perspectives<sup>6</sup>. But very few educational studies, if any, have so far sought to systematically compile the contemporary body of research on farmers' lifelong learning and empirically explore the learning process through which farmers cultivate and develop their local land knowledge in their everyday lives, especially in the geographical context of northern Sweden. Fundamentally, this doctoral thesis seeks to address and explore this research gap.

## RESEARCH AIM

The objective of this doctoral thesis is to explore, describe, and understand how farmers in northern Sweden learn and redevelop their local land knowledge in their everyday lives. In doing so, this doctoral thesis seeks to facilitate and support the continuous redevelopment of a sustainable and climate change resilient agricultural industry within the subarctic region of Norrbotten in northern Sweden. The following research questions have informed and guided the practical implementation of the research endeavour.

- What learning practices and experiences do farmers describe as educationally significant within their learning process by which they learn and redevelop their local land knowledge?
- What characterizes the learning process by which farmers learn and redevelop their local land knowledge?
- How may farmers' lifelong environmental learning be facilitated and supported in times of climate change?

---

<sup>6</sup> Although previous interdisciplinary studies on farmers' lifelong learning have a distinct educational focus, they often lack a traditional educational theoretical framework. Few studies on the subject have sought to analyse and discuss farmers' lifelong learning through the theoretical lens of educational theory. This must, arguably, be addressed in order to further advance the contemporary understanding of the lifelong learning of farmers.

## THESIS STRUCTURE

Following this introductory chapter, this doctoral thesis is rhetorically divided into seven different chapters, each addressing the different components collectively forming this research endeavour.

Chapter two presents the research background. It begins by outlining the historical trends and patterns within the formal, non-formal, and informal education of farmers. Next, it critically discusses different conceptualizations of farmers' local knowledge and understanding of their different farmlands and defines the applied concept of local land knowledge. Thereafter, it outlines farmers' lifelong environmental learning as an interdisciplinary field of research situated at the intersection of the two educational subfields of lifelong learning and environmental learning. Finally, the chapter reviews previous research on farmers' lifelong learning and contrasts it with prior research within the educational subfield of environmental learning.

Chapter three outlines the theoretical framework. It begins by describing John Dewey's educational framework of experiential learning and its philosophical positioning, followed by a critical examination of its theoretical limitations and relevance within this doctoral thesis.

Chapter four outlines the applied research methodology. It starts by describing the philosophical positioning of the research endeavour, the narrative research design, and narratives as empirical data. Thereafter, it introduces the group of research participants and explains how the methodological process of data production, transcription, analysis, and representation has been carried out in practice. Finally, the chapter addresses ethical considerations relevant to the applied study and critically discusses researcher bias.

Chapter five presents and analyses the results of the narrative inquiry. The focus is on how the farmers describe and convey their lifelong environmental learning process, with particular attention to which learning practices and experiences they emphasize and describe as especially educationally significant. Fundamentally, the empirical results show that the farmers' lifelong environmental learning process is grounded in the three interrelated learning practices of sensing, storying, and shaping the land.

Chapter six discusses the results of the research endeavour. The chapter mainly focuses on what characterizes the learning process through which farmers learn and redevelop their local land knowledge in their everyday lives, and on how their lifelong environmental learning process may be facilitated and supported in times of climate change. Moreover, the chapter also outlines how the results theoretically contribute to the research field on farmers' lifelong environmental learning and inform the development of formal agricultural education. Lastly, the chapter also gives suggestions for further research.

Chapter seven finally concludes the doctoral thesis by offering a concise summary in Swedish of the research endeavour. Following the Swedish summary, the doctoral thesis also includes a comprehensive bibliography of all referenced literature and an appendix encompassing a conceptual illustration of the data analysis.

## BACKGROUND

This second chapter aims to provide the background of the research endeavour. Specifically, the chapter begins by outlining the historical trends and patterns within the formal, non-formal, and informal education of farmers. Next, it critically discusses different theoretical conceptualizations of farmers' local knowledge and understanding of their different farmlands. Thereafter, it outlines farmers' lifelong environmental learning as an interdisciplinary field of research situated at the intersection of the educational subfields of lifelong learning and environmental learning. Lastly, the chapter presents the main empirical and theoretical insights emanating from previous interdisciplinary research on farmers' lifelong learning and former inquiries within the educational subfield of environmental learning.

### EDUCATION OF FARMERS

The education of farmers has traditionally encompassed both informal, non-formal, and formal learning processes. To situate the study phenomena of farmers' lifelong environmental learning within its broader social and educational contexts, this section thus seeks to outline the key historical trends, patterns, and conditions that have shaped the contemporary system surrounding the lifelong learning and education of farmers, particularly within the context of Sweden. In doing so, this section highlights how historical shifts in agricultural policy and education have influenced the lifelong learning of farmers over time. Taken together, this examination then establishes a solid foundation for analysing the complexities of farmers' lifelong environmental learning within contemporary times.

## INFORMAL EDUCATION OF FARMERS

Historically, the education of farmers in Sweden has primarily relied on informal modes of learning (Augère-Granier 2017; Grubbström & Joosse 2021). The main way that the education of farmers has transpired throughout history is through the educational practice of passing down local environmental and agricultural knowledge from one generation of agriculturalists to the next. In practice, this has mainly occurred through different forms of agricultural apprenticeships and intergenerational knowledge exchanges within different farming families (Grubbström & Joosse 2021). And today, this form of informal learning still plays a central role in how modern farmers learn and continuously redevelop their professional competence and knowledge of their different farmlands (Grubbström & Joosse 2021). Studies have estimated that approximately 70 percent of all Swedish farmers have acquired their professional competence and knowledge through different forms of informal learning within their different farming families (Augère-Granier 2017). Only about 20 percent of Swedish farmers are estimated to have completed full agricultural training, in the sense of at least two years of full-time study undertaken after compulsory schooling at an agricultural college (Augère-Granier 2017). However, the long-standing tradition of informal learning within the Swedish agricultural industry is today becoming progressively under pressure, as the demographic composition of the Swedish farming population is becoming increasingly unbalanced.

Currently, one out of three farmers in Europe are over the age of 65 and is thus likely to retire within the upcoming decade (European Union 2016), and a similar situation can also be observed all over Sweden. Almost 70 percent of all Swedish farmers are older than 50 (Antman et al. 2015), and more than 30 percent are also over the national retirement age of 65 (Grubbström & Joosse 2021). Presently, only 4,6 percent of Swedish farmers are younger than 34 years old, and just 15,4 percent of the farming population is below the age of 44 (Grubbström & Joosse 2021). This unbalanced demography within the agricultural industry has led to the so-called 'young farmer problem' (Zagata & Sutherland 2015; Hamilton et al. 2015; Eistrup et al. 2019), which recently has received a lot of attention from both

policymakers and researchers worldwide (Burton & Fischer 2015; Joosse & Grubbström 2017; Carolan 2018; Valliant et al. 2019). In a nutshell, the young farmer problem refers to the fact that the rapidly aging farming population creates difficulties for younger people to enter and be successful within the agricultural industry due to high economic costs, low profitability, and social barriers (Zagata & Sutherland 2015; Hamilton et al. 2015; Eistrup et al. 2019). And one of the most significant social barriers for young farmers is their access to informal education. Approximately 92 percent of all Swedish farmers are estimated to have received and redeveloped their professional competence and knowledge through informal modes of learning within their different farming families and local agricultural communities (Grubbström & Joosse 2021; Errington & Lodbley 2002). Consequently, the professional competence and knowledge of more experienced agriculturalists are thus at risk of soon being lost within the Swedish agricultural industry if new forms of intergenerational learning cannot soon be established (Waldenström 2022). Within the subarctic region of Norrbotten, this educational situation may also be especially pressing. This is because, for instance, the number of dairy farms in the region is rapidly declining by 7,4 percent annually, making scholars predict there might only be a handful of farmsteads left by the year 2050 (Jonasson 2020; Jonsson 2023). Overall, this suggests that while informal and intergenerational modes of learning have been the backbone of the lifelong learning and education of farmers in Sweden for a long time, contemporary demographic shifts and changes are now threatening this continuity, underscoring the urgent need for new modes of farmers' learning.

#### NON-FORMAL EDUCATION OF FARMERS

Although informal modes of learning historically have been the most normative means of education within the agricultural industry, non-formal modes of learning have also, for a long time, shaped the education of farmers. A key example of non-formal education within the Swedish agricultural context is the practice of agricultural extension, which has been an integral part of different agricultural development

programs all over the world for several decades (Adu et al. 2022). Agricultural extension programs have recently become regarded as an essential educational means for fostering both productivity and sustainability across the global agricultural industry (United Nations 2012; Cooreman et al. 2018). This is mainly because the agricultural enterprise is increasingly becoming perceived to be underpinned by complex socio-ecological systems deeply shaped and formed by the interplay between biophysical and social factors (Valley et al. 2017).

In Sweden, the current agricultural extension system is today built and connected to the European Agricultural Knowledge and Innovation System (AKIS), which basically could be described as a supranational policy framework for agricultural development embedded within the Common Agricultural Policy (CAP) of the European Union (Augère-Granier 2017; Movchan & Komisarenko 2019). This practically means that the Swedish agricultural extension system today consists of an intricate mix of small consultancy firms, large advisory organisations with regional presence, and public authorities, such as the Swedish Board of Agriculture and the County Administrative Boards<sup>7</sup> (Blix Germundsson 2020). Following recent policy reforms, regional knowledge centres and so-called ‘green clusters’ have also been established all over Sweden (Blix Germundsson 2020). Fundamentally, these establishments aim to stimulate agricultural development in areas such as animal production, environmental sustainability, business management, and digitalization, while also strengthening the linkages between the agri-food sector and the broader innovation system (Blix Germundsson 2020). Overall, the primary focus of the contemporary Swedish agricultural extension system is thus on the development of a sustainable agricultural industry and on the adaptation to market-oriented conditions (Gielen & Nyström; Blix Germundsson 2020). However, historically, the emphasis has also been on increasing the national agricultural production levels through, for instance, different forms of industrialization initiatives (Gielen & Nyström; Blix Germundsson 2020).

---

<sup>7</sup> More precise and comprehensive typologies or classifications of agricultural extension services and initiatives can, for instance, also be found in Nettle et al. (2022) and Davis (2008).

From an educational perspective, agricultural extension initiatives have historically employed a wide range of different educational approaches. The most common educational strategies include, for instance, on-farm demonstrations (Ingram et al. 2018), farmer discussion groups (Knook et al. 2018; Nettle et al. 2022), and ‘model farmers’ (Franzel et al. 2013; Taylor & Bhasme 2018). However, in the last few years, information and communication technologies have also slowly become an increasingly important means for education within the agricultural extension systems globally (Kelly et al. 2017; Paudi et al. 2022; Sanga et al. 2016). Digital technologies are frequently argued to enable flexible and geographically independent learning opportunities for different farmers, in the sense that they become able to easily access different communities of practice consisting of both researchers, extension workers, and other professional agriculturalists<sup>8</sup> (Kelly et al. 2017; Bamka et al. 2020; Caffaro et al. 2020). However, some studies have recently shown that agricultural extension initiatives that revolve around the use of digital technologies often tend to rely on top-down information dissemination, lack locally relevant learning content, and fail to include human interaction and social engagement (Sulaiman et al. 2012). This is arguably problematic because effective educational approaches within the agricultural extension system are nowadays often considered to be context-sensitive pedagogical strategies orbiting around the social interactions between different farmers (Klerkx & Leeuwis 2008; Starasts 2005, 2015; Nordlund & Norrby 2021). This notion reflects the slow shift toward more learning-centred educational approaches within the agricultural extension system in the last few decades (Kelly et al. 2017).

The Swedish agricultural extension system has, however, even more challenges considering the education of farmers. Several scholars have described the Swedish agricultural extension system as a fragmented approach to agricultural development due to seemingly limited coordination and collaboration between different actors (OECD 2018; Johansson & Gidlund 2021). Recent studies have also

---

<sup>8</sup> Further studies suggesting that digital technologies may provide favourable educational means with regard to farmers' non-formal education include, for instance, Llewellyn (2007), Cornelisse et al. (2011), and Leeuwis (2008).

suggested that the Swedish agricultural extension system, in many ways, also has failed to support the long-term development of a sustainable agricultural industry in Sweden (Höckert 2017; Blix Germundsson 2020). This is partly due to structural constraints within the system, but also different kinds of reductionist ideas and notions considering the professional competence and knowledge of farmers (Höckert 2017; Blix Germundsson 2020). From an educational perspective, there appears thus to be a great need for educational research that could facilitate and support the redevelopment of the Swedish agricultural extension system. Arguably, addressing the contemporary challenges may require rethinking how local land knowledge is continuously produced, shared, and validated within the Swedish agricultural extension system, particularly in relation to the learning practices and experiences of local farmers.

#### FORMAL EDUCATION OF FARMERS

Although informal and non-formal learning traditionally have been the primary ways through which farmers acquire their professional competence and knowledge, the formal education of farmers has also played an important part historically. In Sweden, higher education focused on agriculture and forestry was established already in the late nineteenth century, and today most research and higher education connected to the agricultural industry are conducted by the Swedish University of Agricultural Sciences (Lyhagen et al. 2022). However, the largest part of the formal education of farmers is today organized by upper secondary schools within the national study programme known as ‘Naturbruk’, which annually enrolls just under 3 percent of all upper secondary school students in Sweden (Karlsson 2023). Within these programs, the pedagogical approach to teaching various agricultural subjects have also notably remained largely consistent over time (Lyhagen et al. 2022). Already in the early twentieth century, the formal education of farmers in Sweden emphasized experiential learning and problem-based pedagogical approaches, and this pedagogical orientation still permeates the formal education of farmers to this day (Lyhagen et al. 2022).

From a historical perspective, experiential learning has been the foundational pedagogical tenet of agricultural education all over the world since its inception<sup>9</sup> (Baker et al 2012; Coleman et al. 2024). This is because agricultural education is particularly well-suited to various kinds of experiential approaches to teaching, due to the subject's practical nature, which then, over time, has resulted in the widespread use of different kinds of project-based pedagogical activities (Coleman et al. 2024; Phipps et al. 2008). For instance, former studies have tested the effectiveness of experiential learning and its theoretical components and found significant effects in favour of experiential learning approaches within the context of agricultural education compared to other pedagogical strategies<sup>10</sup> (Baker et al. 2014; Baker & Robinson 2017a, 2017b; Bradford et al. 2019). Moreover, prior studies have also shown that experiential, interactive, and participatory learning experiences (Randall 2012; Jose et al. 2017; Clover et al. 2013; Angstmann et al. 2019), building on hands-on activities (Kossack & Bogner 2012; Nedovic & Morrissey 2013; Benavot 2014; Wals & Benavot 2017) and agricultural demonstrations (Sutherland & Marchand 2021; Adamsone-Fiskovica & Grivins 2022; Ingram et al. 2018) may be especially beneficial pedagogical approaches to environmental learning.

Historically, the formal education of farmers has thus often been organized through farmer field schools (Smeds 2017; Smeds et al. 2015a, 2015b; Smeds et al. 2011), which fundamentally build upon the century-old pedagogical technique of demonstrating different farming techniques on an agricultural test site<sup>11</sup> (Mazurkewicz et al. 2012; Monaghan et al. 2017). At their core, farmer field schools provide their students with environmental and agricultural knowledge emanating

---

<sup>9</sup> Other notable publications claiming that experiential learning constitutes the historical pedagogical foundation of formal agricultural education include, for instance, Roberts (2006) and Knobloch (2003).

<sup>10</sup> Further studies that have investigated the pedagogical approach of experiential learning within the context of formal agricultural education include, for instance, Baker and Robinson (2016, 2019), Blackburn et al. (2015), Bradford et al. (2019), Coleman et al. (2020, 2021, 2024), DiBenedetto et al. (2017), and Smith & Rayfield (2017).

<sup>11</sup> Other notable studies that also outline the educational concept and history of farmer field schools include, for instance, Leis et al. (2011), Sayre & Clark (2011), and Charatsari et al. (2018).

from experiential learning, by applying various kinds of teaching strategies based on the pedagogical approaches of learning by doing (Parr & Trexler 2011; Monaghan et al. 2017), hands-on experimentation, and farmer-to-farmer communication (Charatsari et al. 2018). In other words, farmer field schools seek to integrate the pedagogical tenets of experiential learning (Nederlof & Odonkor 2006; Taylor et al. 2012), allowing their participants to acquire practical knowledge, problem-solving skills, and a holistic understanding of various kinds of agroecosystems (Ortiz et al. 2004; Feder et al. 2004; Dalton et al. 2014). Moreover, recent studies have also shown that graduates from farmer field schools often tend to achieve higher yields and incomes from their professional practice (Cai et al. 2016; Sanglestsawai et al. 2015) and also continue to share their knowledge and competence within their local agricultural communities, thereby expanding the educational impact of farmer field schools across the wider agricultural industry (Jørs et al. 2016; Charatsari et al. 2018).

The formal education of farmers has thus traditionally been grounded in the pedagogical approach of experiential learning, which, for instance, is reflected in various kinds of educational initiatives such as farmer field schools. This suggests that the educational value of experiential learning has long been recognized within the academic and agricultural community, and that farmers have consistently been exposed to such educational approaches through their professional training. From a historical perspective, the notions underpinning the pedagogical approach of experiential learning might therefore be central to understanding the lifelong learning of farmers.

## FARMERS' LOCAL KNOWLEDGE

Farmers' local knowledge and understanding of their different farmlands can undoubtedly be conceptualized and understood in an array of different ways. It is therefore essential to clarify what the farmers' local knowledge and understanding of their various farmlands precisely means and denotes within the context of this educational study, as it arguably confines and demarcates what theoretically is to be learned by the farmers. As the Swedish educationalist Ference Marton

once argued, “learning is always the learning of something” (Marton 2015:22), which consequently means that “we cannot talk about learning without first clarifying ‘what’ we are learning” (Ling Lo 2012:14-15). This section begins, therefore, by situating the research endeavour in relation to former research by reviewing the concept of local ecological knowledge that has commonly been employed within previous studies to demarcate farmers’ local knowledge and understanding of their different farmlands. Thereafter, the section introduces the applied concept of local land knowledge that commonly has been used to define the farmers’ local knowledge and understanding of their different farmlands. Finally, the section briefly outlines the applied understanding of farmlands as different forms of natural and agricultural landscapes.

#### LOCAL ECOLOGICAL KNOWLEDGE

Prior research has shown that people who directly depend upon nature to maintain their different livelihoods, such as farmers, often tend to develop rich and nuanced understandings of their different local natural environments that they care for and manage<sup>12</sup> (Garavito-Bermudez & Boonstra 2023; Knapp & Fernandez-Gimenez 2008, 2009). This seemingly obvious observation has recently given rise to a multitude of scientific studies seeking to explore how humans perceive, know, and understand their different local natural environments<sup>13</sup> (Garavito-Bermúdez 2019). Within these explorations, the concept of local ecological knowledge<sup>14</sup> has thus gradually developed and emerged throughout the years. Nowadays, the term is commonly used in an array of different educational and interdisciplinary studies concerned with the learning and redevelopment of farmers’ local

---

<sup>12</sup> This theoretical notion can also be found in Lauer and Aswani (2009) and Boonstra and Hentati-Sundberg (2014)

<sup>13</sup> Not so recent, but nonetheless notable, studies on the subject also include Fazey et al. (2006) and Möller et al. (2004).

<sup>14</sup> Another related theoretical concept is the term agroecology, which refers to "the holistic view of the agroecosystem which emphasizes the various and often unpredictable interrelations between biotic and abiotic factors" (Chatsari et al. 2022:1).

knowledge and understanding of their different farmlands (Garavito-Bermúdez 2019; Garavito-Bermudez & Boonstra 2023).

Theoretically, the term local ecological knowledge is commonly defined as the “cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission regarding the relationship of living beings, including humans, about one another and their environment” (Berkes 2017:7). While this definition has been valuable within prior research, the definition proves somewhat insufficient for an educational inquiry into the lifelong environmental learning of farmers. This is because the definition carries explicit and implicit assumptions about how local ecological knowledge is learned and developed by people. By framing local ecological knowledge as something that is simply regenerated, retained, and transmitted through the practice of adaptation and cultural exchange, it inevitably reduces the inherent complexity of human learning (Garavito-Bermúdez 2016, 2019). Furthermore, it also constrains the scientific opportunities of exploring other dimensions of human learning that are not included within the definition.

To move beyond the limitations inherent with the term local ecological knowledge, this doctoral thesis will thus instead adopt the concept of local land knowledge to describe and demarcate the farmers’ local knowledge and understanding of their different farmlands. This theoretical term resembles the concept of local ecological knowledge, but it also integrates other aspects drawn from the geographical concept of sense of place<sup>15</sup>, thereby offering a more educationally relevant and context-sensitive concept for demarcating the content of the farmers’ lifelong environmental learning process. This shift in terminology allows for a broader and more place-based interpretation of how farmers learn and relate to their different farmlands.

---

<sup>15</sup> The term ‘sense of place’ has, throughout the years, often been characterized by an inconsistent and ambiguous use within academic circles (Devine-Wright & Clayton 2010). Most notably, prior studies drawing on psychological perspectives have often suggested that the concept encompasses the sub-terms of place attachment, place dependence, place identity, and place meaning (Kudryavtsev et al. 2012). However, within this chapter, this term will take on a much broader meaning in the sense of an overarching umbrella term denoting an understanding of a setting based on the lens of place.

## LOCAL LAND KNOWLEDGE

Undoubtedly, farmlands are more than physical spaces for crop and plant cultivation (Quinn & Halfacre 2014). They are also meaningful places embedded with intricate webs of natural and agricultural histories (Quinn & Halfacre 2014; Wu 2010; Nakoinz & Knitter 2016). To be able to know what to do in different agricultural cycles and phases, farmers must thus inevitably have a deep sense of how various natural and agricultural processes commonly unfold and interconnect on their different farmlands (Lindblom & Lundström 2014; Nitsch 2009; Šūmane et al. 2018). In other words, they must have a deep 'sense of place'. They must know what their given place encompasses and how it continually becomes refined and recreated over time. However, from a theoretical standpoint, what the knowledge form of sense of place specifically encompasses is not immediately obvious, especially in the context of farmers' local knowledge and understanding of their different farmlands. Consequently, an in-depth exploration of the theoretical concept of place is thus highly needed and warranted.

The term place is arguably one of the most difficult and trickiest concepts to define in the whole English language (Nespor 2008). Nowadays, there exists simply no universally accepted definition of the term (Cresswell 2013; Lewicka 2011). Therefore, for the purpose of this study, the notion of place will be henceforth defined as 'storied space' following a constructivist conceptualization (Lewicka 2011).

The first part of the above-standing definition of place draws on the concept of space. Spaces are often perceived as physical locations without inherent meaning, as geographical locations in their most basic form, in the sense of material constellations (Tuan 1977). They are presumed to exist independently from the human mind, as empty locations in the objective, external reality, barren of value and meaning (Tuan 1977). However, despite they are presumed to lack inherent meaning and significance, spaces are, nonetheless, fundamental to the human worldview. As human beings, we always exist somewhere (Cresswell 2013; Larsen & Johnson 2012). We are constantly connected to the world through our different physical bodies (Malpas 2018; Seamon 2018; 2023) and our perception of ourselves and the

world inherently always postulates a perspective from somewhere<sup>16</sup> (Donohoe 2014; Greenwood 2013). Essentially, nothing we do, think, or experience is ever ‘unplaced’ (Greenwood 2013), implying that spaces simply could be perceived and viewed as the physical realms that we perceive and are perceiving from.

The second part of the applied definition of place builds upon the notion of story, and our storied understanding of space, in particular. Human beings are, by nature, storytellers, and the existential process of narration is arguably the most fundamental part of human sense-making (Gottschall 2012). Stories constitute not only representations and accounts of different historical events; they form also the process by which we humans continuously make sense of the world around us (Prins & Wattchow 2019). When we story our lives, we do it differently depending on the context, purpose, and audience (Goodson & Sikes 2001). The stories we tell about ourselves, our lives, and the world are thus never fixed but continuously developing and evolving (Freeman 2011). They are always subjective and biased since everyone views and interprets the world from different frames of reference (Goodson & Sikes 2001). Hence, stories could thus be understood to constitute the webs of meaning that we ascribe to the world as well as our different practices of comprehending and understanding it.

The basic idea behind the applied definition of place is thus that spaces become transformed into places when spaces encounter human storytelling (Cresswell 2013; Tuan 1977). When we experience, perceive, interpret, and manipulate different spaces, they naturally become endowed with numerous stories and intricate webs of meaning<sup>17</sup> (Cresswell 2013; Hung 2017; Larsen & Johnson 2012). Places become thus the array of physical locations perceived and understood by human beings (Vander Ark et al. 2020; Van Eijck & Roth 2010). Contrary to being an abstract phenomenon, places constitute, therefore, the existential preconditions for human life (Larsen & Johnson

---

<sup>16</sup> The spatial dimension of human life has also, for instance, been discussed by Altman and Low (1992), Langran and DeWitt (2020), Sack (1977), Schlottmann (2005), Geertz (1983), and Nagel (1986).

<sup>17</sup> This view that places emerge when spaces become endowed with meaning is notably common with geographical literature and can also be found in Stedman (2000) and Tuan (1977).

2012). In a constant state of being and becoming (Massey 2005; Cravey & Petit 2012; Sun et al. 2016), they continuously show us how the world presents itself throughout our different lives (Larsen & Johnson 2012). Consequently, as the immediate environment of life, places then subsequently materialize through the inescapable immersion of the behaviours and purposeful actions of people in the local physical environment (Seamon 2018).

However, the extent to which we humans transform spaces into places through the practice of storytelling is highly contested and debated within the academic community. Places and humans have a very peculiar, codependent relationship<sup>18</sup> (Ardoin 2006; Stedman 2003a, 2003b). Although human beings may shape places, places undoubtedly also shape human beings (Stedman 2003a; 2003b). To some degree, spaces are never truly 'blank' (Stedman 2000) since they always carry more than a human past (Leather & Thorsteinsson 2021). Spaces influence thus how different people, communities, and cultures perceive, interpret, and value different parts of the world (Aikenhead & Michell 2011) by providing the 'limits' of potential place constructions (Stedman 2000). In other words, spaces could essentially be perceived as the 'raw material' out of which different place meanings can be formed (Stedman 2000), or alternatively, as the anthropologist Tim Ingold (2000:198) once stressed; human beings do not "inscribe their life histories upon the surface of nature as do writers upon the page; rather, these histories are woven, along with the life cycles of plants and animals, into the texture of the surface itself". But it must, once again, be stressed that the extent to which this relationship continuously evolves and unfolds is not very well known scientifically and is still up for debate.

Accordingly, places constitute thus not only embodied and meaningful physical locations, but also ways of knowing, understanding, and learning about the world<sup>19</sup> (Johnson 2012; Malpas 2018). They

---

<sup>18</sup> The codependent relationship between places and humans is also discussed by Greenwood (2013) and Daniels et al. (2015).

<sup>19</sup> The theoretical idea that places constitute various kinds of ways of knowing, understanding, and learning about the world is also proposed by Tuan (1977) and Vander Ark et al. (2020).

are the assemblages of relations constituting the human worldview (Daniels et al. 2015; Greenwood 2013). When we look at the world through the lens of place, intricate webs of natural and cultural histories begin to emerge before our eyes, endowing the different spaces that we have in front of us with patterns of meanings (Cresswell 2013). It is this existential outlook that essentially constitutes our sense of place, which historically has been argued to build upon three different perceptual dimensions (Brandenburg & Carrol 1995; Relph 1976; Agnew 1987). The first dimension is the physical characteristics of space, encompassing our understanding of the tangible, physical patterns that compose the given place at hand. The second dimension is the transformation of a place, which refers to the different ways that a given place is changed and used over time. And the third and final dimension is the meanings of a place, referring to the many bodies of knowledge that are attached and connected to a given place. However, these three perceptual dimensions should not be regarded as separate components of place, but rather as deeply entangled and intertwined aspects of the same holistic, existential outlook and comprehension of the world (Sack 1973; Stedman 2000).

Consequently, when the farmers view and perceive their different farmlands through the lens of place, they thus emerge as material representations of intricate webs of natural and agricultural histories. This intimate place-based understanding of their different farmlands is what essentially constitutes their local land knowledge. Simply put, their local land knowledge is the cumulative body of knowledge of how nature and agriculture continuously interconnect and are reforming a particular plot of land. The concept of local land knowledge could thus, to some extent, be perceived to contain a similar 'core content' as the term local ecological knowledge. Both concepts encompass the farmers' natural and agricultural knowledge and understanding of their different farmlands, including the given farmlands' biological, geological, and agricultural character and development. But, more importantly, the concept of local land knowledge does not hold any preconceived notions or ideas about the redevelopment or use of farmers' local knowledge and understanding of their different farmlands. This makes it, arguably, a more theoretically valid, relevant,

and legitimate concept to employ within this study on the lifelong environmental learning of farmers in northern Sweden. It neatly outlines and demarcates the farmers' local knowledge and understanding of their different farmlands and only makes the basic ontological claim that humans perceive, know, and understand the world through various kinds of place-based conceptions. As theoretically presumed within the concept of sense of place, these conceptions are then presumed to build on the farmers' embodied interactions and encounters with the material world. Essentially, from a theoretical perspective, the concept of local land knowledge seeks thus to capture the holistic, place-based understanding that the farmers have of their various farmlands. The term simply refers to the farmers' local knowledge and understanding of what their different farmlands physically encompass and how they have and continue to evolve and transform.

#### FARMLANDS AS LANDSCAPES

By conceptualizing the farmers' local knowledge and understanding of their different farmlands in line with the concept of local land knowledge, the farmers' various farmlands will then, consequently, also be understood as different natural and agricultural landscapes. However, the concept of landscape is incredibly complex and highly contested (Talento et al. 2019; Jacobs 2006; Antrop 2015), which implies that a careful theoretical delineation of the term is necessary in order to enable and ensure conceptual clarity and rigor.

Farming is arguably the oldest form of human interaction with nature (Dale et al. 2012; Harari 2014; Tauger 2021; Crespo Castellanos et al. 2023). Since the dawn of time, humans have undoubtedly consistently tried to alter their local natural environments in order to enhance their various yields of different natural resources (Harari 2014; Tauger 2021; Crespo Castellanos et al. 2023). This practice has then transformed the outline of different natural environments, which subsequently have become what we today call landscapes through “the interactive process between a specific culture and in response to its natural environment” (Antrop & Van Eetvelde 2017:52).

Etymologically, the term 'landscape' originates from the Germanic language tree, and the oldest form of the word dates back to the Dutch thirteenth-century use of the term 'lantscap', which denotes a particular plot of land or environment (Olwig 2002; Antrop & Van Eetvelde 2017). Linguistically, the term landscape is therefore closely tied and connected to the notion of land, which refers to a particular territory (Olwig 2002; Antrop & Van Eetvelde 2017). But the suffix 'scape', which means that something is made or created, expands then the connotation of the word beyond the meaning of land to refer to a territory that is shaped, formed, and cultivated by people (Olwig 2002; Antrop & Van Eetvelde 2017).

Consequently, landscapes exist thus always in the inherent tension and relationship between the concepts of territory and environment (Talento et al. 2019). They could be understood as spaces "where a local community lives and where customary rights organize the relations between people and the assembled 'things' that form the landscape" (Antrop 2015:54). In other words, they could be perceived as lands "whose character is the result of the action and interaction of natural and/or human factors" (Council of Europe 2000:9), reflecting "the combined manifestation of the natural and cultural variety" inherent in local space (Antrop 2015:53). Theoretically, this means that since landscapes are "in constant motion, taking on new shapes and forms" (Lund & Benediktsson 2016:6), they could thus be apprehended and understood as ongoing processes whereby time is materializing (Bender 2002) through both past and present natural and cultural processes (Widgren 2004; Tappeiner et al. 2021; Hägerstrand 2009). All landscapes carry, therefore, always different local histories and legacies that tell something about their long-term trajectory and character (Tappeiner et al. 2021; Antrop & van Eetvelde 2017; Hägerstrand 2009). Metaphorically, landscapes are thus often compared to palimpsests, which are manuscripts on parchment that have been scraped off several times so that they can be reused, in the sense that they always carry subtle marks of older meanings and processes (Antrop & van Eetvelde 2017; Talento et al. 2019; Burlingame 2020). In other words, all landscapes are thus to be found at the intersection between "a physical system that forms the substrate of the

land and defines the natural settings, and a cultural system inhabited by people who use and organize the land and ultimately shape the landscape” (Antrop & van Eetvelde 2017:209). Simply put, they are the artificial result of a culture that perpetually redefines its relationship with nature (Talento et al. 2019; Hägerstrand 2009), emerging as both matterscapes, mindscapes, and powerscapes (Jacobs 2006).

Considering that agriculture is the major interface between humans and their surrounding natural environment, this means that, “at a general level, agriculture affects most rural landscapes, and when agriculture changes, landscapes change, often with great implications” (Primdahl et al. 2013:300). To understand why different farmlands look and behave as they do, one must thus seek to understand how they have been shaped and formed by various kinds of natural and agricultural processes that have unfolded over time within the location (Wu 2010; Rhemtulla & Mladenoff 2007). Theoretically, this means that farmlands can be read and perceived both as “a scene offering an experience; a natural, physical system that forms the substrate of the land; a cultural system with places and territories and land use; [and] a history that remains in successive, incomplete layers” (Antrop & van Eetvelde 2017:98).

The different farmlands that the farmers care for and manage will thus fundamentally be perceived and understood as different kinds of natural and agricultural landscapes that have been shaped and formed through the continuous interplay between the farmers and their local natural environment. They will be argued and presumed to encompass an inherent natural and agricultural history that is relevant for the farmers to know, comprehend, and embrace in order to be able to refine and redevelop their local land knowledge. Considering the local conception that agriculture encompasses both forestry, crop production, and grass cultivation, the term farmland will thus also not only refer to spaces in the natural environment where solely crop production is practiced. The term farmland will take a much broader meaning, essentially referring to all the different natural environments that the farmers use in their everyday life to grow various natural resources, regardless of whether it be trees, crops, or animal feeds. In this sense, farmlands are not merely physical spaces for

agricultural production, but also dynamic landscapes embedded with natural and agricultural histories. Understanding them as such allows for a more nuanced apperception of farmers' relationship with nature.

## RESEARCH FIELD

The academic study of farmers' lifelong environmental learning currently lacks a distinct disciplinary identity. In recent years, interest in farmers' lifelong learning has grown across several disciplinary boundaries, which has resulted in a diverse but also fragmented body of research on the subject. As a consequence, a coherent and unified research field dedicated specifically to farmers' lifelong environmental learning has yet to emerge. This section argues, however, that such a research field could be understood as an emerging area of academic inquiry, situated at the intersection of the educational domains of lifelong learning and environmental learning. To develop this argument, the section first briefly outlines these two domains of educational research and examines thereafter how they converge in the context of farmers' lifelong environmental learning. However, the aim is not to provide a comprehensive account of these educational subfields, but rather to conceptually illustrate their overlap as it relates to the subject of this doctoral thesis.

## LIFELONG LEARNING

The educational subfield of lifelong learning has, in many ways, an uncertain academic identity. Over the years, the concept of lifelong learning has been highly contested and surrounded by great controversy<sup>20</sup> (Boyadjieva & Ilieva-Trichkova 2018; Bjursell 2024). Currently, there exists no commonly accepted definition of what the unifying main term of lifelong learning actually means (Lee 2014).

Philosophically, the notion of lifelong learning can hardly be distinguished from the general phenomenon of human learning (Jarvis

---

<sup>20</sup> The ambiguous theoretical nature of the concept and phenomenon of lifelong learning has also been addressed by other scholars such as Borg and Mayo (2004, 2005) and Crowther (2004).

2010). Learning is, undoubtedly, an existential phenomenon, deeply ingrained in what it means to be human (Jarvis 2010). When we live and go through our lives, we are constantly changing our different worldviews and ways of acting in response to the many experiences that we have and acquire throughout our everyday lives (Jarvis 2010). Fundamentally, to live is to learn, and all learning must therefore always be lifelong by nature (Jarvis 2010; Bjursell 2021).

However, within the societal discourse, the educational concept of lifelong learning is rarely discussed from a philosophical standpoint. Currently, there exist two different theoretical paradigms of lifelong learning, which are commonly referred to as the humanistic and economic paradigms, that deeply encompass and define the modern use of the concept of lifelong learning as both an educational domain and a field of research (Rubenson 2009; Regmi 2015).

The humanistic paradigm has its roots in the United Nations Universal Declaration of Human Rights, which proclaims that all humans have the right to an education that could enable them to grow and develop into their fullest potential as individuals (Regmi 2015). Based on this philanthropic outlook, the United Nations Educational, Scientific, and Cultural Organization (UNESCO) then subsequently published two different reports in the late twentieth century (Faure et al. 1972; Delors et al. 1996) intended to 'kickstart' and promote the development of worldwide educational equity (Regmi 2015). In these reports, the authors suggested that the development of lifelong learning would "create a better world by alleviating social inequality, reducing social injustices, and ensuring human rights for all" (Regmi 2015:142) by facilitating the growth of human capital through cooperation, coordination, and collaboration between people (Regmi 2015; Tam 2018). Within the humanistic paradigm, lifelong learning is thus commonly understood as a meta-concept intended to guide and legitimize the implementation of the human rights to education.

However, the modern discourse surrounding the educational domain and concept of lifelong learning is almost exclusively driven by advocates of the economic paradigm, such as the Organisation for Economic Cooperation and Development (OECD) (1996), the World Bank (2003, 2011), and the European Union (EU) (European

Commission 2000), which conceptualizes lifelong learning as a fundamental mean to achieve economic competitiveness in the global market (Wain 2008; Rubenson 2009). Adherents of the economic paradigm argue that we currently live in a so-called knowledge economy (Regmi 2015; David & Foray 2002; Livingstone & Guile 2012) in which economic growth and wealth creation deeply orbit around the capacity to improve human capital so that further development and innovation may flourish and occur (Becker 2002; Brown & Lauder 2012; David & Foray 2005). From this viewpoint, economic actors are thought to always be in competition over new knowledge and innovations that could give them the edge in the race for monetary profits within the knowledge economy (Carlaw et al. 2012). This subsequently implies that modern workers continuously must engage in lifelong learning to fulfil the constantly shifting needs of human capital<sup>21</sup> (Lee 2014; Livingstone 2012; Livingstone & Guile 2012).

Within the economic paradigm, lifelong learning is, therefore, commonly perceived and understood as an economic necessity and a means through which human capital can be developed in order to enhance the economic growth of different nations and organizations in an ever-changing world and economy<sup>22</sup> (Regmi 2015; Billett 2014; Hager 2021). From the economic perspective, lifelong learning is thus often defined as “all learning activity undertaken throughout life, with the aim of improving knowledge, skills and competencies within a personal, civic, social and/or employment-related perspective” (European Commission 2001:9). In other words, the term lifelong learning is here conceptualized as a continuous process of personal development that is lifelong and life-wide<sup>23</sup> (Blossfeld & Rossbach 2019; Bjursell 2020, 2024; Tam 2018). It is lifelong in the sense that a person's learning is thought to occur throughout the individual's whole

---

<sup>21</sup> The economic value and significance of developing human capital within the knowledge economy have also been stressed and discussed by European Communities (2004), Kaplan (2016), and Nordin (2007).

<sup>22</sup> The concept of lifelong learning has also been outlined and discussed from the viewpoint of the economic paradigm by other scholars, such as Crowther (2004), Tam (2018), and Nordin (2007).

<sup>23</sup> The lifelong, life-wide, and life-deep aspects of the phenomena of lifelong learning have also been noted by Kaplan (2016), Laal (2012), Laal et al. (2014), and Nordin (2007).

lifetime, from 'the cradle to the grave' (Bjursell 2020, 2024; Nelson Power & MacLean 2013; Tuijnman & Boström 2002). Moreover, the learning is also life-wide in the sense that it occurs and transpires in all places and contexts of an individual's life, regardless of whether these contexts are of a formal, non-formal, or informal nature and character (Bjursell 2020, 2021, 2024; Nelson Power & Maclean 2013).

The concept of lifelong learning thus reaches beyond the seemingly interrelated notion of lifelong education. Contemporary, these two terms are often confused and used synonymously by various authors, but they theoretically imply and denote two very different things (Billett 2010, 2014; Wain 2008). Lifelong learning represents "the ongoing human process of learning and development" and lifelong education signifies "the provision of educational programs and experiences" (Billett 2014:19). Hence, lifelong learning is thus a personal process that people do, undergo, and engage in throughout their lives (Billett 2018; Jarvis 2010). By contrast, lifelong education is an institutional process that arises through the ongoing social or organizational provision of different kinds of formalized learning opportunities (Billett 2018; Jarvis 2010). Consequently, the term lifelong learning puts, therefore, much more focus and emphasis on the non-formal and informal processes of people's lifelong learning (Hager 2021). Moreover, it also encompasses a considerably broader scope than what is comprised in the interrelated concept of lifelong education, which primarily focuses on the ongoing provision of formal and institutionalized education (Hager 2021).

Naturally, due to this elusive and comprehensive scope of the concept, modern research within the educational research field of lifelong learning has thus taken many shapes and forms throughout the years. Studies have, for instance, focused on workplace learning (Steinert 2025; Lave & Wenger 1991), intergenerational learning (Bjursell et al. 2023), and lifelong learning policies (Rubenson 2013; Rubensson & Desjardins 2009). Furthermore, research has also sought to investigate the policy development of lifelong learning (Tuparevska et al. 2020a, 2020b), the different abilities that individual's need in order to be successful in lifelong learning (Nacaroglu et al. 2021; Sen & Durak 2022), and the different factors that influence and shape

various kinds of educational engagements within lifelong learning (Shin & Jun 2019; Grokholskyi et al. 2020; Bath & Smith 2009). Consequently, it is thus difficult, if not impossible, to currently demarcate lifelong learning as a distinct field of research within the academic domain of education, as the subject arguably lacks a unified thematic, theoretical, and empirical foundation. To achieve academic depth and nuance within different scientific pursuits, studies must thus, arguably, always engage with a particular subfield of lifelong learning.

To enable theoretical and conceptual rigor within this doctoral thesis, the term lifelong learning will thus be understood from the theoretical outlook of the economic paradigm as an umbrella concept encompassing all the diverse, lifelong, and life-wide learning activities that different individuals undergo and engage in throughout their lives for various professional reasons. Basically, the concept of lifelong learning will not only be presumed to include people's continuous formal education, but also all the informal and non-formal forms of professional development. In other words, the term lifelong learning will essentially be understood as an overarching 'goliath' term. This in the sense that it will refer to all the different types of continuous adult education and learning intended to enhance and develop people's professional competence and knowledge throughout their lives.

## ENVIRONMENTAL LEARNING

By focusing on the lifelong environmental learning of farmers in northern Sweden, this doctoral thesis naturally also connects to the educational subfield of environmental learning. However, this educational subfield also has vague and fluid disciplinary boundaries, and to truly understand how it relates and overlaps with the educational subfield of lifelong learning, a conceptual overview is necessary.

Although the practice of environmental learning arguably has been around since time immemorial, the formal educational subfield of environmental learning has only existed for a few decades (Fang et al. 2023). The subfield emerged within environmental education in the 1960s (Gough 2013; Kyburz-Graber 2013; Stevenson et al. 2013) and has since then mainly become associated with the discipline of

education for sustainable development (Gough 2013; Stevenson et al. 2013; Misiaszek 2020). This is because the educational practice of environmental learning offers and provides, at least to some degree, different kinds of educational means through which the various environmental issues currently facing humankind all over the world could be approached (Measham 2006; Ardoin & Bowers 2020).

Due to these diverse historical roots, there exists thus today no commonly accepted definition of environmental learning (Calonge et al. 2022; Rickinson et al. 2009), which, arguably, gives the discipline very murky and fuzzy boundaries (Gough 2013). However, from a historical perspective, environmental learning has often been defined as all the learning in, about, and for the environment (Lucas 1972). This essentially refers to the lifelong and life-wide learning (Ardoin & Heimlich 2021; Dierking et al. 2013) that individuals undergo through and about the environment over the extent of their lifetime (Scott & Gough 2003; Rickinson et al. 2009) for the purpose of becoming capable citizens to address various environmental issues and problems<sup>24</sup> (Ardoin & Bowers 2020; Wals & Benavot 2017; Rickinson et al. 2009). Notably, the concept of environmental learning extends thus far beyond the formal educational context and encompasses also learning about and through the environment within the non-formal and informal contexts of people's everyday lives (Ardoin & Heimlich 2021; Ardoin & Bowers 2020). Hence, the research field of environmental learning overlaps thus conceptually, at least partly, with the educational domain of lifelong learning. Although it is not yet formally recognized as a distinct subfield, environmental learning could, arguably, without much conceptual extension, be regarded as a subdivision of lifelong learning. This is particularly within the context of professionals who work within industries focused on the natural environment.

Furthermore, recognizing environmental learning as a subfield of lifelong learning undoubtedly also brings many interesting possibilities for further educational research. Although the educational subfield of environmental learning has been established for several

---

<sup>24</sup> The lifelong and life-wide aspects of environmental learning have also been raised and discussed by other scholars, such as Falk (2005), Leal Filho et al. (2018), Monroe et al. (2008), and Gould et al. (2019).

decades, there remains a notable lack of empirical research exploring the actual phenomenon of environmental learning (Rickinson et al. 2009). The question of how environmental learning unfolds in everyday life has rarely been examined (Rickinson et al. 2009). While many inquiries have focused on the outcomes of environmental learning, few studies have investigated how individuals develop competence and knowledge about and through the surrounding environment (Rickinson 2001; Rickinson et al. 2009). Moreover, the research field still also lacks a cohesive and robust learning theory (Rickinson et al. 2009), and environmental learning that takes place beyond the formal educational context has also yet to be thoroughly examined and theorized by various scholars (Ardoin & Heimlich 2021; Marsick & Watkins 2018). By positioning environmental learning as a subfield of lifelong learning, these issues could thus presumably be successfully solved and addressed. Within the educational domain of lifelong learning, scholars have, for a long time, investigated how people learn in their everyday lives, beyond the traditional boundaries of formal education, which in turn could offer valuable theoretical and empirical insights to the research field of environmental learning. Bridging these two fields of research thus has the potential to generate significant academic outcomes, as the integration of their distinct academic traditions may open new avenues for investigating, conceptualizing, and understanding how adults learn and redevelop their environmental knowledge and understanding throughout their everyday lives.

#### LIFELONG ENVIRONMENTAL LEARNING

Within this doctoral thesis, the applied term of lifelong environmental learning will draw upon the above-standing conceptualizations found within the educational subfields of lifelong learning and environmental learning. Fundamentally, it will denote the continuous lifelong and life-wide learning process that the farmers engage in and undergo throughout the extent of their lifetime in order to grow and develop their local land knowledge for the purpose of enhancing their professional competence and knowledge as agriculturalists in the far north of Sweden. This definition naturally draws on the subfield of lifelong

learning in the sense that it emphasizes the lifelong and life-wide aspects of the farmers' professional learning about their different farmlands. Likewise, it also clearly connects to the educational subfield of environmental learning, in the sense that the content and the context of the farmers' learning revolve around their different farmlands. Hence, the term lifelong environmental learning will thus simply seek to capture and denote the farmers' continuous environmental learning that they undergo and engage in with the intent of developing their professional competence and knowledge as agriculturalists.

Although the lifelong environmental learning process of farmers in northern Sweden could be conceptualized and understood as encompassing several different sub-practices and sub-processes, it will be treated and discussed in terms of a single, integrated learning process throughout this doctoral thesis. This is because it is used as an umbrella term to describe how the farmers continuously learn and re-develop their local land knowledge. Metaphorically, the term lifelong environmental learning could thus be envisioned as the main flow of a river, while their different learning practices and experiences that the farmers engage in could be seen as the various streams, currents, and tributaries that constantly interweave to form its overall flow.

## PREVIOUS RESEARCH

To situate the knowledge contribution of this study within a broader academic context, it is essential to establish a solid understanding of existing research related to farmers' lifelong environmental learning. However, as noted earlier, no specialized body of educational research currently exists on this subject. This section, therefore, synthesizes key empirical and theoretical insights and results from previous interdisciplinary studies on farmers' lifelong learning, as well as from educational research within the subfield of environmental learning. Particularly, this section highlights how farmers' lifelong learning, and environmental learning more broadly, often centers on the creation and exchange of different forms of environmental experiences. However, the aim is not to provide an exhaustive review of all existing literature, but rather to identify and present the most relevant academic

insights needed to contextualise the knowledge contribution. In other words, this section seeks to provide the necessary point of departure for situating the results of the study within existing scholarly discussions and the contemporary body of previous research on farmers' lifelong learning.

#### LEARNING BY MAKING EXPERIENCE

A key empirical insight emerging from previous research on farmers' lifelong learning is that their everyday environmental experiences tend to play a vital role in their lifelong learning. Former studies suggest that farmers' local knowledge and understanding of their different farmlands tend to develop through the process of doing (Burgess et al. 2000; Šūmane et al. 2018; Knapp & Fernandez-Gimenez 2008, 2009), experimenting (Milestad et al. 2010a; Ingram 2010), and problem-solving (Baars 2010). Previous research also indicates that the ongoing accumulation of different forms of environmental experiences tends to enable farmers to understand how their various farmlands usually change and respond to different kinds of agricultural interventions and varying environmental conditions (Leung & Darnhofer 2021; Ingram 2010; Knapp & Fernandez-Gimenez 2008, 2009). It is frequently claimed in different studies that through continuous interactions and observations of the local natural environment, farmers tend to be able to acquire knowledge about how their various farmlands normally change and react in response to different environmental circumstances and interventions (Leung & Darnhofer 2021; Milestad et al. 2010b; Knapp & Fernandez-Gimenez 2008, 2009). Through this practice, it is then argued that they subsequently can refine and make their local agricultural knowledge and practices more fine-tuned to the shifting environmental conditions of their different farmlands (Leung & Darnhofer 2021; Milestad et al. 2010b; Knapp & Fernandez-Gimenez 2008, 2009).

Particularly, previous research suggests that farmers' lifelong learning is deeply rooted in their embodied experience of their different farmlands (Leung & Darnhofer 2021). Several studies indicate that farmers' local knowledge emerges from their direct, experiential

engagement with their surrounding local natural environment<sup>25</sup> (Thomas et al. 2020; Krzywoszynska 2016). In these studies, it is commonly argued that through the variation of different visceral and sensory experiences, farmers tend to be able to cultivate and develop a deep attentiveness and understanding of their various farmlands (Krzywoszynska 2016; Leung & Darnhofer 2021). This is because their sensory engagements are thought to provide them with the fundamental content and stimuli underpinning their lifelong learning about their different farmlands (Krzywoszynska 2016; Burgess et al. 2000; Leung & Darnhofer 2021).

Building on this perspective, previous research has also emphasized the place-based nature of farmers' lifelong learning (Thomas et al. 2020; Sutherland et al. 2017). Assuming that "knowledge creation and circulation are invariably situated somewhere" (Agnew & Livingstone 2011:328), prior research commonly argue that farmers' lifelong learning cannot be understood apart from its spatial roots and foundations (Sutherland et al. 2017). This body of research contends that farmers tend to develop their local knowledge and understanding of their different farmlands in close relation to the ongoing environmental changes of their different farmlands, which thereby makes their lifelong learning inherently situated and place-based (Thomas et al. 2020; Wójcik et al. 2019; Garavito-Bermúdez 2019).

Comparable to the insights produced by former studies on farmers' lifelong learning, recent studies on people's environmental learning also suggest that the process of environmental learning fundamentally revolves around the creation, acquisition, and transformation of different forms of environmental experiences (Shutaleva 2023; Cincera et al. 2020). Former research commonly suggests that environmental learning "accrues from the engagement with the environment" (Scott & Gough 2003:14) and relies on the personal connections formed between the learner and the surrounding natural environment (Palmberg & Kuru 2000). Particularly, numerous studies

---

<sup>25</sup> The educational significance of direct sensory engagements with the local natural environment within the lifelong learning of farmers has also been stressed by Leung and Darnhofer (2021), Knapp and Fernandez-Gimenez (2008, 2009), Carolan (2008), Morris (2006), and Berkes (2017).

have shown that experiential, interactive, and participatory educational approaches<sup>26</sup> (Jose et al. 2017; Clover et al. 2013; Measham 2006), building on through hands-on activities (Kossack & Bogner 2012; Nedovic & Morrissey 2013), are especially effective in facilitating environmental learning among people. Moreover, outdoor experiences that allows learners to explore the local natural environment in situ and hands-on are also thought to provide excellent educational prerequisites and conditions for environmental learning<sup>27</sup> (Randall 2012; Ballantyne & Packer 2002, 2009).

Furthermore, comparable to the theoretical view held in previous studies on farmers' lifelong learning, educational scholars have also argued that the phenomenon of environmental learning is inherently situated and place-based (Brody 2005; Brandy 2013; Shannon 2017), which consequently implies that the environmental learning process is thought to not be able to effectively occur in isolation from its spatial roots and contexts (Falk 2005; Rickinson et al. 2009; Clover et al. 2013). Notably, prior research within the branch of land-based education have suggested that environmental learning inevitably must build upon multiple ways of knowing and exploring nature<sup>28</sup> (Styres 2011; Simpson 2014; McCoy et al. 2016). Educational approaches such as slow pedagogy (Payne & Wattchow 2009; Brandy 2013), which seek to foster reciprocal relationships with nature through physical, social, and spiritual engagements, are thus often viewed as especially effective means in order to facilitate and support environmental learning among people (Wildcat et al. 2014). Similarly, educational scholars have also suggested that the environmental learning process can be further enhanced by deliberately employing a focus on local issues (Duvall & Zint 2007) and comparing and examining different places at various stages and differing conditions (Measham

---

<sup>26</sup> The educational value of sensory experiences within the environmental learning process has also been stressed by Randall (2012), Duvall and Zint (2007), Dillon et al. (2006), Benavot (2014), and Wals and Benavot (2017).

<sup>27</sup> The educational value of outdoor experiences for the environmental learning process has also been discussed by Wilson (2018), Jose et al. (2017), and Liddicoat and Krasny (2013).

<sup>28</sup> Other notable papers within the research field of land-based education that make similar points are McKim et al. (2019a, 2019b), Angelstam et al. (2019), and Amundsen-Meyer et al. (2023).

2006). However, it should be stressed that the underlying educational mechanisms of environmental learning largely remain underexplored today and that educational research on how environmental learning is phenomenologically supported is still limited (Cisani et al. 2022). Further research on how environmental learning actually occurs and transpires in practice is thus undoubtedly needed.

#### LEARNING BY SHARING EXPERIENCE

Another key insight emanating from previous studies on farmers' life-long learning is that their local agricultural communities tend to play a crucial role in the ongoing production, validation, and sharing of local knowledge (Dooley 2021; Thomas et al. 2020; Skaalsveen et al. 2020). Access to strong and reliable agricultural networks is widely recognised and portrayed by former studies to be one of the most significant educational factors underpinning farmers' lifelong learning<sup>29</sup> (Colecraft Aidoo & Kudadjie Freeman 2015; Kamarudin et al. 2015). Numerous studies have shown that farmers' interpersonal networks profoundly shape and form their capacity to produce, share, and refine their local knowledge (Dolinska & d'Aquino 2016; Sligo et al. 2005; Sligo & Massey 2007). Many studies have also reported that farmers view their fellow farmers as their most trusted sources of information and advice<sup>30</sup> (Oreszczyn et al. 2010; Wood et al. 2014), largely because they often perceive them as credible experts with practical experiences in similar environmental and agricultural conditions as themselves (Šūmane et al. 2018; Skaalsveen, et al. 2020; Sligo & Massey 2007). A commonly held view within this body of research is that the experiential knowledge that farmers continuously gain and acquire throughout their everyday lives tends to only become regarded as legitimate and trustworthy when it becomes socially refined and validated by other local farmers holding similar environmental

---

<sup>29</sup> The educational value of agricultural networks has also been noted by Baumgart-Getz et al. (2012), Laforge (2017), Kilpatrick and Johns (2003), Brunori et al. (2013), and Rivera et al. (2018).

<sup>30</sup> This observation is common in previous studies and has also been reported by, for instance, Lwoga et al. (2010), Okwu and Daudu (2011), Knapp and Fernandez-Gimenez (2008, 2009), Ingram (2010), and Dooley (2021).

knowledge and experience as themselves (Ingram 2010; Skaalsveen et al. 2020; Knapp & Fernandez-Gimenez 2008).

Moreover, previous research has also suggested that farmers tend to be the most influenced by the practical proof of successful farming methods, shown and explained by other local farmers (Hamunen et al. 2015; Kilpatrick & Johns 2003; Schneider et al. 2009). This is probably because roadside farming, which is the practice of scrutinizing the fields and practices of other local farmers to evaluate their agricultural capabilities (Burton 2004; Strand et al. 2014), constitutes a traditional way of embracing the tacit knowledge that resides within various agricultural communities all over the world (Sutherland & Marchand 2021). Moreover, prior studies have also highlighted that diverse agricultural communities (Hermans et al. 2015; Leeuwis & Aarts 2011; Klerkx et al. 2012) that build upon collective meetings that revolve around hands-on activities tend to provide favourable educational conditions for farmers' learning (Millar & Curtis 1997). Furthermore, research has also previously highlighted that farmers' transition towards more ecologically friendly farming practices often transpires through social learning within different peer networks (Proost & Van Weperen 2006; Curry et al. 2012; Lucas et al. 2019). It is commonly thought that the farmers with the most robust and sound transitions toward sustainable agriculture are the ones that are deeply involved in various local agricultural communities (Slimi et al. 2021). This is because such community involvement is thought to enable their different environmental and agricultural experiences to be shared, discussed, and collectively interpreted among local farmers, thereby strengthening their lifelong learning (Slimi et al. 2021).

Comparable to the insights produced by former studies on farmers' lifelong learning, contemporary educational studies on environmental learning also indicate that the process of environmental learning can take place through various kinds of social exchanges and interplays between different people (Jose et al. 2017; Wheaton et al. 2024). However, previous research on this subject is notably limited within the educational literature on environmental learning. Particularly, former research on intergenerational environmental learning is

known to be notably scarce<sup>31</sup> (Ardoin & Bowers 2020; Spiteri 2020, 2023) despite it might be the oldest form of environmental learning (Gilleran Stephens et al. 2021; Spiteri 2020, 2023) in which knowledge of the environment is passed down and transferred from one generation to the next (Duvall & Zint 2007; Spiteri 2023). The theoretical notion that the process of environmental learning builds upon the social interplay between different people is thus a theoretical idea that is mainly supported by previous interdisciplinary studies on farmers' lifelong learning compared to the contemporary body of educational research on environmental learning.

#### OVERALL PICTURE FROM PREVIOUS RESEARCH

Previous research offers fundamentally two different complementary perspectives on farmers' lifelong learning, in the sense of highlighting the educational significance of making and sharing different kinds of environmental and agricultural experiences.

Firstly, farmers' lifelong learning is commonly understood as an experiential, embodied, and place-based learning process. This in the sense that they develop their local knowledge and understanding through their everyday practical and sensory engagements with their different farmlands. In practice, this has often been observed by previous studies to occur through different kinds of learning practices, such as observation, experimentation, and problem-solving.

Secondly, farmers' lifelong learning is also often understood as a socially situated learning process, in the sense that the farmers develop, test, and validate their local knowledge and understanding of their different farmlands through the acts of reflection and sharing of knowledge and experience. Previous studies have primarily indicated this by observing that farmers commonly share, discuss, and interpret their different environmental and agricultural experiences within their local agricultural communities.

---

<sup>31</sup> The lack of prior studies on intergenerational environmental learning has also been noted and discussed by a multitude of educational scholars, such as Gilleran Stephens et al. (2021), Oropilla and Ødegaard (2021), Mannion (2012), and Istead and Shapiro (2014).



## THEORETICAL FRAMEWORK

This third chapter presents the theoretical framework used to analyse, interpret, and discuss the empirical results of the narrative inquiry. Specifically, this chapter outlines the experiential learning theory coined by the American educational scholar and philosopher John Dewey (1859-1952). The chapter begins with a philosophical examination of Dewey's pragmatic orientation of his theoretical framework. Thereafter, his underlying philosophical understanding of human experience will be outlined, followed by an exploration of how he conceptualizes the process through which experiential learning occurs. Finally, the chapter discusses the theoretical limitations of Dewey's experiential learning theory and briefly examines why his theoretical framework remains the most relevant theory of human learning to employ within this research endeavour.

### PHILOSOPHICAL ORIENTATION OF EXPERIENTIAL LEARNING

John Dewey is widely recognized and regarded as one of the founding fathers of the philosophy of pragmatism, alongside different scholars such as Charles Sanders Peirce, William James, Richard Rorty, Hilary Putnam, and Robert Brandom (Egelandsdal & Ness 2021). And philosophically, his experiential learning theory is deeply shaped and formed by the philosophical tenets of pragmatism, and without a basic understanding of his pragmatic outlook, the richness and complexity of his experiential learning theory are thus at risk of being massively overlooked. Hence, to grasp and understand the pragmatic heritage

inherent within Dewey's experiential learning theory is, therefore, vital to fully understand his theoretical framework.

The first aspect in need of consideration is the basic ontological and epistemological outlook of pragmatism. The term pragmatism comes from the Greek word 'pragma', which means action or practice, and the thing that characterizes pragmatism is precisely the ontological emphasis on humans as acting beings (Egelandsdal & Ness 2021). The fundamental epistemological claim of pragmatism is that human knowledge is best understood and reevaluated according to its practical usefulness and functionality (Egelandsdal & Ness 2021; Johnson & Onwuegbuzie 2004). This is because pragmatism presupposes that it is only through the practical consequences of various actions that we can determine whether or not an idea or action is acceptable or must be rejected or revised (Egelandsdal & Ness 2021; Johnson & Onwuegbuzie 2004). Accordingly, truths about the world are thus defined within pragmatism according to 'what seems to work' since the validity of different knowledge claims only rests upon 'warranted assertions' (Egelandsdal & Ness 2021). The rationale behind this view rests on the underlying notion that we can always make new experiences that challenge what we already think we know about the world (Egelandsdal & Ness 2021). Hence, the nature of pragmatism is thus that it is a philosophy of action. It is not concerned with the theoretical fallibility of different knowledge claims, but rather the practical application, functionality, and usefulness of different forms of knowledge.

Consequently, from the epistemological perspective of pragmatism, "the object of knowledge is thus eventual" in the sense that "it is the outcome of directed experimental operations, instead of something in sufficient existence before the act of knowing" (Dewey 1984:136–137). In other words, from the pragmatic perspective, human knowledge is conceptualized as a verb rather than a noun (Riga 2020) in the meaning of "a process that is continuous, and contingent upon experience" (Riga 2020:237). Rather than being viewed as a cognitive object that can be "acquired, transmitted, and maintained" (Breault 2014:190), knowledge is here understood as "knowing in doing" (Mishra et al. 2001). Dewey himself conceptualised knowledge as an act that brings "our dispositions to consciousness with a view to

straightening out a perplexity, by conceiving the connection between ourselves and the world” (Dewey 1938:353). Accordingly, from the perspective of pragmatism, knowledge “exists primarily in its active, working form, and we put it to work to draw new connections between ourselves and the world that will resolve the perplexities we face. It only exists secondarily as a stockpile of ideas” (Waddington & Weeth Feinstein 2016:115). Hence, the farmers’ local land knowledge could thus be conceptualised as “the outcome of practical engagement with problems, it never becomes fixed but continues to be part of a person’s experience and reflection” (Holdo 2023:16).

The second pragmatic heritage that profoundly shapes and forms Dewey’s theoretical outlook undoubtedly concerns his idea about the meaning and purpose of education and learning. He claimed that all genuine education grows through experience, and at the beginning of the 20th century, he subsequently proposed a 'unified theory of experience' intended to guide all kinds of educational practices (Simmons 2006). He argued that “education is a constant reorganising or reconstructing of experience” (Dewey 1916:59), partly implying that “the aim of education is to enable individuals to continue their education” and that “the object and reward of learning is continued capacity for growth” (Dewey 1916:107) since “education is nothing other than the creation of human beings in the fullness of their capacities” (Dewey 1930:289). Hence, Dewey’s fundamental outlook and understanding of the meaning of education align thus neatly with the notion of life-long learning, which states that people should continue to learn throughout their lives and across its varying contexts.

Furthermore, Dewey was also a great promoter and advocate of the idea that theory and education should be grounded and connected to various kinds of real and authentic experiences and contexts<sup>32</sup> (Dewey 1916, 1933, 1938). Hence, as a theoretical homage to this philosophical perspective, it might thus be relevant to know that Dewey’s personal roots also extend deep into the rural parts of the American state of Vermont (Dykhuisen 1959). This makes him probably one of

---

<sup>32</sup> This notion and perspective are notably common within the works of John Dewey, and the outlook can be found in an array of different publications over the decades (Dewey 1897, 1902, 1929, 1930, 1934).

the few prominent educational scholars with direct or indirect personal experience of farming and forestry (Dykhuizen 1959), which arguably should be acknowledged in connection with this research endeavour concerned with the lifelong environmental learning of farmers in northern Sweden. However, it is unclear if, and to what extent, Dewey's rural background can be connected to the growth and development of his experiential learning theory. But as shown in the upcoming chapter, his experiential learning theory is undoubtedly an intriguing and powerful analytical lens that thoroughly uncovers and elucidates the farmers' lifelong environmental learning process. This is particularly due to the fact that the theoretical framework conceptualizes human experiences to derive and emanate from different forms of interaction and praxis (Roberts 2011; Ord & Leather 2011).

## THEORY AND PHILOSOPHY OF EXPERIENCE

The term 'experience' is undoubtedly the most significant philosophical concept in Dewey's experiential learning theory (Seaman 2019). Dewey held that human experience neither can be reduced to its material or intellectual aspects (Maddalena 2004; Hodkinson et al. 2008; Bleazby 2007). He firmly rejected philosophical dualisms and argued that there should not be any distinction between different dichotomies such as facts and values, thinking and action, and most importantly, theory and practice (Egelandsdal & Ness 2021; Maddalena 2004; Hodkinson et al. 2008; Bleazby 2007). For Dewey, theory and practice were two sides of the same coin since thoughts and ideas inevitably always guide the emergence of human actions, and similarly, the consequences of different actions subsequently also reshape and refine different cognitive views and notions (Egelandsdal & Ness 2021). Human thoughts, he suggested, are essentially only 'actions' that we use to solve different problems (Egelandsdal & Ness 2021; Bleazby 2007). Consequently, from Dewey's perspective, the phenomenon of human experience becomes thus a double-barrelled fact, simultaneously encompassing both the experienced and the experiencing in a never-endingly recurring cycle (Seaman 2019).

Theoretically, Dewey argued that "experience is always what it is because of a transaction taking place between an individual and what, at the time, constitutes his environment" (Dewey 1938:43). According to him, all experiences are thus based upon the continuous interplay between two different philosophical principles. The first principle is the principle of continuity, which entails that human experiences are always connected to both the past and the present since past experiences always tend to affect how future experiences transpire and become (Egelandsdal & Ness 2021). The second principle is the principle of interaction, which suggests that new experiences arise through the interaction and interplay between human beings' internal and external conditions (Egelandsdal & Ness 2021). To put it simply, an experience is, in other words, the function of the interaction between human beings past experiences and their present situation (Seaman 2019; Shyman 2011). Essentially, we use our previous experiences when we are interpreting new situations, while at the same time, the experiences we get of new situations also change our current understanding and shape how we will interpret forthcoming occurrences (Dewey 1934; Egelandsdal & Ness 2021). The principles of continuity and interaction are, thus, inextricably connected (Egelandsdal & Ness 2021). The human condition could thus, to some degree, be perceived to be found in the continuous interaction and interplay that transpires between people's biographies and their local surroundings.

Hence, the experiences we have emerge thus through our constant interaction and adaptation to the environment (Seaman 2019). Fundamentally, this means that the nature of human experiences, therefore, could be conceptualized and understood as an 'active-passive affair' encompassing both active and passive elements (Dewey 1930:164). They are active in the sense that they involve 'trying', meaning that people manifest themselves and their intentions upon the environment through their deliberate and purposeful engagements with the world (Dewey 1916, 1930; Ord & Leather 2011). However, they are also passive in the sense that they also include 'undergoing', which refers to the fact that various experiences always bring certain consequences to the people who are experiencing them (Dewey 1916, 1930; Ord & Leather 2011). Simply put, "when we

experience something, we act upon it, we do something with it; then we suffer or undergo the consequences. We do something to the thing, and then it does something to us in return" (Dewey 1930:163). And this inherent tension and relationship between the experiential processes of accommodation and assimilation could thus essentially be perceived to be at the heart of the phenomenon of human experience (Kolb 2014; Ord & Leather 2011:18).

Moreover, Dewey (1981:31-32) also theorized that our different experiences are also inherent conditioned by our various habits, which "refer to the wide variety of responses, patterns, and ways we engage in our worlds, from physical ones to mental ones" (Nelsen 2015:88). Simply put, habits constitute "our predisposition to draw upon modes of response to situations and problems that arise within specific contexts" (Nelsen 2015:86) in the sense that they metaphorically could be thought of as 'grooves' that guide and steer "the very styles, patterns, and ways in which we engage our world" (Sullivan 2001:26). Basically, habits are the systematic forms of thinking, perceiving, and acting that shape our different worldviews and intelligent actions that we take for granted throughout our everyday lives. This in the sense of "limiting tendencies that filter and control perception, thinking, feeling, action" (Jaitner 2018:12). Consequently, this means that experiential learning then first occurs when our different habits become critically questioned and reorganized into new structures of thought and action (Lamons 2012).

However, this way of conceptualizing the dimensions found within the phenomena of experience is not entirely unique to Dewey (Egelandstal & Ness 2021). It also strongly resembles the thinking that resides within philosophical hermeneutics (Egelandstal & Ness 2021). According to Hans-Georg Gadamer (2012:347), there are two different forms of experiences: experiences that correspond with our expectations and confirm them, and experiences that thwart and disprove our expectations. Gadamer (2012) regards the later as 'real' experiences since they have the ability to liberate us from wrongful assumptions and provide us with new insights and a renewed horizon of understanding. Consequently, experiences are thus not only the consequences of pure sensory information (Gadamer 2012; Egelandstal

& Ness 2021). They are also the result of the dialectical interaction between different questions and answers between the interpreter and the interpreted (Gadamer 2012; Egelandstad & Ness 2021). Basically, when we interpret something, we use our preconceptions as an interpretive framework, which means that the questions we can ask are limited and also made possible by our current horizon of understanding (Gadamer 2012; Egelandstad & Ness 2021). Our previous experiences represent thus the opportunities for the 'dialogues' we can have with the world, making certain 'conversations' possible but also impossible (Egelandstad & Ness 2021).

Hence, according to both Gadamer and Dewey, educative learning experiences are thus the experiences that breach our expectations and allow us to see and understand ourselves and the world from a new horizon (Dewey 1938; Beard 2018; Seaman 2019). They are the experiences that "lead the learner on to new experiences" (Dewey 1938:28) by providing 'dramatic events' that make us remake ourselves and our understanding of the world (Wong et al. 2001). Hence, the meaning and significance of present experiences are thus always necessarily in the light of past and future ones, implying that "every experience is a moving force" since "its value can be judged only on the grounds of what it moves towards and into" (Dewey 1938:38). "Educative experience is, therefore, as much about how we understand the world, as it is with acting in it. It is as much about meaning making as it is with a concern with the solutions to practical problems" (Ord & Leather 2011:18). Essentially, they form "a search for meaning, trying to make sense of the world and our place within it" (Ord & Leather 2011:18).

## PROCESS OF EXPERIENTIAL LEARNING

The most fundamental notion and idea underpinning Dewey's experiential learning theory is that we humans learn through the process of acquiring, processing, and transforming different kinds of experiences. And roughly speaking, his theoretical conceptualization of the experiential learning process could be outlined in the following way.

When we humans roam the world, we are constantly emplaced in it through our different physical bodies (Jarvis 2012a, 2012b). Through this emplacement, we get a continuous flow of episodic experiences that continuously unfold as our lives transpire (Jarvis 2012a, 2012b). When we get these different episodic experiences, we uniquely interpret them based on our different frames of reference, and for the most part, these experiences transpire unnoticed and unconsciously throughout our lives (Jarvis 2006, 2009, 2012a, 2012b). Dewey called this form of unconscious and pre-reflective experience as 'aesthetic experience' (Dewey 1929, 1930, 1934), which could be perceived and understood as the "pre-reflective grasp of complex situations" (Hanks 1991:20) or the intuitive awareness of what is going on around us in an immediate sense (Quay & Seaman 2013). Here, it is important to clarify that the term 'aesthetics' does not denote any 'artistic' aspect of human experience but rather refers to the process by which humans perceive the world through their various senses (Uhrmacher 2009). Etymologically, the term aesthetics was originally coined by the German philosopher Alexander Gottlieb Baumgarten (1714–1762), who derived it from the Greek word 'aiestheta', which simply means 'things perceived' or 'sensory perception' (Uhrmacher 2009). Dewey later adopted and integrated this concept into his theoretical framework of experiential learning to signify his theoretical idea that the constant human experience of the surrounding environment is based upon various kinds of sensory engagements.

Normally, we take our aesthetic experiences for granted until something unexpected happens in our lives, and we begin to experience something called disjuncture (Jarvis 2006, 2009, 2012a, 2012b). Disjuncture is "the gap between what we expect to perceive when we have an experience of the world as a result of our previous learning" and "that with which we are actually confronted" (Jarvis 2009:29). Dewey (1929:189) argued that all "reflective inquiry starts from a problematic situation" and that the origin of situations on which we begin to reflect is found in the "perplexity, confusion, doubt, due to the fact that one is implicated in an incomplete situation whose full character is not yet determined" (Dewey 1916:176). The desire to overcome the feeling of disjuncture is then what fundamentally is

perceived to drive and propel the process of learning (Jarvis 2006, 2009, 2012a, 2012b) since the “demand for the solution of a perplexity is the steady regulation and guiding factor in the entire process of reflection” (Dewey 1933:11). Hence, when we are confronted with a problematic situation, Dewey (1926, 1930) then reasoned that human learning would transpire through two different forms of so-called 'reflective experience' since the act of “thinking [first] occurs when things are uncertain or doubtful or problematic” (Dewey 1930:173).

The first form of reflective experience is 'trial and error', whereby “we simply do something and when it fails, we do something else and keep on trying until we hit upon something which works” (Dewey 1916:169–170). It is the incidental reflection that naturally occurs during this iterative process that enables us to see “that a certain way of acting and a certain consequence are connected, but we do not [necessarily] see how they are” (Dewey 1916:170). Dewey (1933:72) suggested that this form of reflective experience would occur and transpire in five different stages (Egelandsdal & Ness 2021). Firstly, we have a perceived problem. Secondly, we evaluate the problem and try to understand what is essential in order to solve it. Thirdly, we try to imagine different possible solutions to the problem. Fourthly, we start developing hypotheses through the practice of reasoning and experimentation. Fifth and finally, we then observe and test our hypothesis, which either results in the acceptance or rejection of our theory (Egelandsdal & Ness 2021; Dewey 1933). It is also worth noting that Dewey does not consider this form of reflective experience as solely an individual endeavour (Egelandsdal & Ness 2021). He consistently argued that trial and error in many ways is a social process in which people jointly try to solve different problems by creating and testing new hypotheses and ideas based on their collective repertoire of previous experiences (Egelandsdal & Ness 2021). Hence, to learn from experience “is to make a backward and forward connection between what we do to things and what we enjoy or suffer from things in consequence. Under such conditions, doing becomes a trying; an experiment with the world to find out what it is like; the undergoing becomes instruction - discovery of the connection of things” (Dewey 1930:164).

The second form of reflective experience is analytical thinking, which refers to the practice of structured and deliberate reflection (Dewey 1916). For Dewey, 'analytical thinking' is the intellectual method of "turning a subject over in the mind and giving it serious and consecutive consideration" (Dewey 1933:3). It is a particular type of thinking that is focused, careful, and methodological, seeking to carefully produce valid justifications for various beliefs based on observable evidence and proof, similar to the process of 'the scientific method' (Hebert 2015). In this process, Dewey stressed the importance of the human imagination. He regarded imagination as a natural part of human learning since it serves as the basis for thinking and reflection and enables us to grasp what lies beyond what we immediately can see and observe (Egelandstal & Ness 2021). Our ability and capacity to solve various problems, he argued, then fundamentally rests upon our ability to systematically imagine and render the consequences of the interplay between different thoughts, actions, and conditions (Egelandstal & Ness 2021). From Dewey's perspective, reflection can thus be understood as a meaning-making practice underpinned by rigors and methodological ways of thinking and reflecting. It is "the intentional endeavour to discover specific connections between something which we do and the consequences which result, so that the two become continuous" (Dewey 1930:170). Simply put, it "involves not simply a sequence of ideas, but a consequence a consecutive ordering" (Dewey 1933:2), meaning that it seeks "to bridge a gap in experience, to bind together facts or deeds otherwise isolated" (Dewey 1933:80).

However, these two different forms of reflective experience should not be perceived to be something that unquestionably occurs after the emergence of aesthetic experience (Quay & Seaman 2013). Dewey thought that reflective experience is a natural form of human experience itself, and a practical activity in its own right (Quay & Seaman 2013). For Dewey, there is nothing that could be called 'merely doing' or 'purely thinking' since aesthetic and reflective experience are dialectally related since one necessarily involves and transforms the other (Quay & Seaman 2013). Hence, according to Dewey, when we learn, we have thus simultaneously both aesthetic and reflective

experiences since our aesthetic experiences metaphorically are ‘the soil’ from which our reflective experience grows and continues to be rooted (Quay & Seaman 2013). They are in a constant rhythm “that marks the interaction of the live creature with his surroundings” (Dewey 1934:15). Hence, from this perspective, human learning could thus be considered as both a state of being, as well as a process of becoming, since knowing could be contextualized within doing, which in turn could be contextualized within being (Quay 2020). The process of experiential learning thus becomes subsequently a matter of ‘learning by doing’ since it always simultaneously encompasses the practices of feeling, testing, and thinking. Alternatively, as Dewey himself and his colleague McLellan (1889) once put it, we must “learn to do by doing and learn to do by knowing. The principles when rightly interpreted include rather than exclude each other. Unless we do, we cannot understand the ideas involved in action, much less act. And unless we know, we cannot act in a significant way, in a way which is really expressive of ideas” (McLellan & Dewey 1889:129-130).

Consequently, by employing Dewey’s theory of experiential learning within this doctoral thesis, the farmers’ local land knowledge will thus essentially be presumed to grow from different forms of aesthetic and reflective experiences. Moreover, learning will also fundamentally be understood as an active and deliberate process of doing and undergoing profoundly shaped and formed by the learner’s ongoing interaction and engagement with the surrounding environment.

## LIMITATIONS OF EXPERIENTIAL LEARNING

Although Dewey’s experiential learning theory is regarded as one of the most robust theories of human learning, the framework has several notable theoretical limitations that one must acknowledge and bear in mind with regard to this research endeavour.

Firstly, the theory presumes that human learning begins with “a shock or an interruption needing to be accounted for, identified, or placed” (Dewey 1933:12). This notion is somewhat problematic since it implies that human learning can only occur in situations and instances when the learner is confronted with something that he or she

is uncertain about (Hebert 2015). The learning that does not create doubt or make the learner pause in the midst of the everyday routine is thus strikingly silent and not accounted for within the theory (Herbert 2015). Dewey's experiential learning theory diverges thus from the modern theoretical outlooks on human learning, which commonly presumes that human learning also can occur unreflectively in everyday life (Jarvis 2006, 2009, 2012a, 2012b). Hence, one must thus bear in mind that the unspoken and unreflective norms, values, and processes surrounding the phenomenon of human learning are not necessarily accounted for within Dewey's theoretical framework.

Secondly, the theory also suggests that human learning, and particularly reflective experience, has a conclusive end, in the sense that reflective experience fundamentally is presumed to be intended to solve various issues arising from different problematic situations (Hebert 2015). This notion is also somewhat problematic from a theoretical standpoint, since it, at least to some degree, creates an ambiguous understanding of the nature of human knowledge and learning (Herbert 2015). As Dewey (1933:114) himself noted, "verification does not always follow" the development of different warranted assertions, consequently implying that human knowledge, in terms of its theoretical infallibility, cannot be purely conclusive. Hence, one must thus critically acknowledge that it remains theoretically unclear what exactly drives and propels human learning within Dewey's experiential learning theory and how human learning, and different forms of human knowledge, precisely should be conceptualized and understood.

Thirdly, the theory could also, to some degree, be perceived to favour rational knowledge over practical knowledge (Herbert 2015). It has been argued that Dewey's theory has an inherent technical-rational ambience in the sense that different forms of practical, intuitive, and tacit knowledge might not be theoretically visible and accounted for within the theoretical framework (Herbert 2015; Schön 1983, 1987). This is because human knowledge is presumed to build upon various warranted assertions that have been developed and justified through various kinds of intellectual reasoning (Herbert 2015; Schön 1983, 1987). However, this is only partly true since Dewey also argued that the reflective experience of trial and error might enable

us to see “that a certain way of acting and a certain consequence are connected, but we do not [necessarily] see how they are” (Dewey 1916:170). This then arguably addresses and encompasses the domain of practical, intuitive, and tacit knowledge since the results of experiential learning inherently must emerge as ‘knowing in doing’ with the intention of guiding the learner towards further action by providing solutions to different problematic situations.

Taken together, these limitations suggest that while Dewey’s experiential learning theory offers a valuable lens for analysing education and learning, it must also be applied with careful consideration of its conceptual boundaries and theoretical blind spots.

## RELEVANCE OF EXPERIENTIAL LEARNING

Dewey’s experiential learning theory is, however, not the only theoretical conceptualization of experiential learning that could have been valid and relevant to employ within this research endeavour. In contemporary times, experience is widely regarded as the sole foundation of human learning<sup>33</sup> (Roth & Jornet 2014; Kuk & Holst 2018; Roberts 2011). Over the years, several theoretical currents and models have thus subsequently emerged (Roberts 2011), spanning from progressive (Priest 1990) to cyclical ways (Kolb 2014) of conceptualizing human learning as an experiential process of human growth and transformation. However, most theories have been united by the constructivist notion that human learning transpires through the construction of meaning emanating from different kinds of social and embodied experiences (Beard 2018; Kolb 2014; Seaman 2008).

Therefore, it is possible that another experiential learning theory could have been relevant to employ within this doctoral thesis. Particularly, Kolb’s (2014) experiential learning cycle, Schön’s (1983) theoretical framework of reflective practice, and Lave and Wenger’s (1991) community of practice theory could be argued to hold especially strong relevance, considering that these theories have often been

---

<sup>33</sup> The theoretical and philosophical presumption that experience might be the foundation that underpins the phenomenon of human learning can also be found in Morris (2020), Kolb (2014), and Jarvis (2009).

applied within prior research. However, as discussed below, these theories could be argued to provide a less suitable theoretical foundation compared to Dewey's broader and holistic framework of experiential learning. To make it clear why Dewey's theoretical framework of experiential learning is applied within this doctoral thesis, the following sections will thus briefly outline each of the other experiential learning theories and then highlight how they arguably fall short compared to Dewey's theoretical framework within the scope of this study.

The first learning theory that could have been relevant to employ is the experiential learning cycle coined by the American scholar David Kolb (2014). Based on his readings of primarily John Dewey and Kurt Lewin, he proposed a "dynamic view of learning based on a learning cycle driven by the resolution of the dual dialectics of action/reflection and experience/abstraction" (Kolb & Kolb 2021:8). Theoretically, he defined human learning as "the process whereby knowledge is created through the transformation of experience" (Kolb 2014:41). He suggested that all human learning occurs through the resolution of the inherent tension between the different modes of grasping and transforming experience, commonly referred to as concrete experience, abstract conceptualization, reflective observation, and active experimentation (Kolb & Kolb 2021; Lehane 2020; Egan et al. 2023). Conceptually, he then portrayed this dynamic interplay as an idealized learning cycle where the learner stepwise experiences, reflects, thinks, and acts in an ever-recursive process (Kolb & Kolb 2021:8; Lehane 2020; Egan et al. 2023). In a nutshell, the immediate and concrete experiences are the basis for different observations and reflections, which are then assimilated and distilled into abstract concepts from which new implications for practice and action can be drawn (Kolb & Kolb 2021; Lehane 2020; Egan et al. 2023). In other words, Kolb's experiential learning cycle encompasses thus the following four never-endingly recurring steps: "you do something, you reflect upon that action, and based on that reflection, you conclude and modify your understanding before doing that activity or related activities again to see if you have improved" which then subsequently is followed by a new cycle of reflection (Chan 2023:21).

At first glance, Kolb's experiential learning cycle appears to be a highly relevant analytical means in order to decipher and understand the farmers' lifelong environmental learning process. This is because the theoretical framework distinctly integrates both reflection and embodied experience in a forthright manner. However, the theory has at least three different conceptual shortcomings that profoundly limit its use within this research endeavour<sup>34</sup> (Bergsteiner et al. 2010; Bergsteiner & Avery 2014). Firstly, the conceptualization of human learning as a stepwise cycle is believed to be too simplistic to be able to truly capture the complex reality of human experience and learning (Ord & Leather 2011; Seaman 2008). This is because it partly gives the impression that all stages of the learning cycle occur linearly and are of equal value, which may not be empirically correct (Bergsteiner et al. 2010; Chan 2023). Secondly, the theory also emphasizes the retrospective reflection of individuals, which tends to decontextualize human learning to a cognitive process detached from people's ongoing interactions with their immediate social and physical environment (Holman et al. 1997). Thirdly, the theory does not also deal with different forms of motives and intentions, which undoubtedly raises questions about what exactly drives and propels the process of experiential learning within the theory (Fenwick 2000; Chan 2023). Dewey's experiential learning theory, on the other hand, offers a richer, more fluid conceptualization of human learning as a profoundly active, situated, and interactional learning process. It allows for a non-linear conception of human learning that begins in highly contextualized problematic situations, which emerges through the active practice of reflection and experimentation based upon various kinds of purposeful interactions with the surrounding environment. As later shown, this theoretical outlook profoundly echoes the empirical data much closer than Kolb's rigid stepwise learning cycle.

The second learning theory that has been considered in connection to this research endeavour is the theoretical framework considering the reflective practice of practitioners, originally coined and

---

<sup>34</sup> Further theoretical critique of Kolb's experiential learning cycle can also be found in Fenwick (2000), Jarvis (2012a, 2012b), Miettinen (2000), Holman et al. (1997), and Schenck and Cruickshank (2015).

developed by the American scholar Donald Schön (1983, 1987). He developed his theoretical framework as a critique of John Dewey's experiential learning theory, which he thought separated and detached the act of reflection from people's direct and immediate experiences (Schön 1983, 1987). His interpretation of Dewey's work was that the "reflective inquirer must suspend action once confronted with a puzzling conundrum and return to action only once the reflective model has reached its final phase" (Hebert 2015:365). He argued that this theoretical outlook was insufficient to understand the tacit, implicit, and intuitive knowledge of practitioners that emerges continuously throughout the process of their professional practice (Schön 1983, 1987). He asserted that practitioners often are confronted with unique and uncertain situations, which consequently force them to think and act spontaneously on the fly while practicing (Schön 1983:49-51). This then, Schön contended, implies that their knowing-in-action cannot be derived from a rational thought process based on "prior intellectual operation" (Schön 1983:51). Schön (1983) then theorized that all practitioners engage in something called reflection-in-action, compared to reflection-on-action. This means that practitioners observe, think, reflect, and make decisions while they are actively working, rather than looking back on what they have done and accomplished in order to improve their future practice and understanding.

Schön's theoretical framework undoubtedly offers a unique analytical toolbox through which the tacit and unspoken aspects of the farmers' lifelong environmental learning process could have been understood and elucidated. However, based on the empirical data, Schön's theoretical framework could be considered to have three major theoretical limitations compared to Dewey's experiential learning theory. Firstly, Schön's theoretical framework does not offer a unique outlook on the practice of reflection compared to Dewey's theoretical conceptualisation. Dewey's experiential learning theory does not, as Schön claims, suggest that reflection happens after or detached from experience. On the contrary, Dewey consistently argued that aesthetic and reflective experiences occur simultaneously, not necessarily disconnected from the situation of interest. Secondly, Schön offers only an analytical framework to understand practitioners' reflective

practice. He does not provide a theoretical conception of how human learning, in general, transpires and occurs like Dewey. Thirdly, Schön's theoretical framework could also be regarded as highly cognitivist compared to Dewey's experiential learning theory. Schön places the practice of reflection in the foreground of his framework but does not, like Dewey, also incorporate and deal with the embodied aspects of human learning, which later in this doctoral thesis will be shown to be an important and influential dimension of the farmers' lifelong environmental learning.

The third learning theory that could have been applied in this research endeavour is the educational theory of communities of practice, which originally have been developed by the scholars Jean Lave and Etienne Wenger (1991) in connection to their research on professional apprenticeships. They primarily suggested that human learning is a social phenomenon that occurs through co-participation and reification within a given group of people joined together by a mutual engagement, a joint enterprise, and a shared repertoire of communal resources (Lave & Wenger 1991; Wenger 1998, 2000). They argued that a key part of human learning is something called legitimate peripheral participation, which refers to how newcomers in a community start at the edges, observing and learning from others, before they gradually become more involved in the practice and the living body of collective knowledge (Lave & Wenger 1991; Wenger 1998, 2000). Over time, these newcomers then gradually transform into more experienced members of the community through acts of engagement, imagination, and alignment, which subsequently makes them more actively involved and embedded in the practices of the community (Lave & Wenger 1991; Wenger 1998, 2000). From their perspective, learning becomes not just about acquiring knowledge and competence but also about developing an identity as a member of a community (Wenger 1998, 2000).

The communities of practice theory have, undoubtedly, theoretical merits when it comes to the study of farmers' lifelong environmental learning. This is because previous research has shown that farmers' lifelong learning tends to orbit around the practice of sharing knowledge and experience within different local agricultural

communities. However, the theory falls short in two different ways compared to Dewey's experiential learning theory. Firstly, because the framework places the social context heavily at the forefront, the individual and embodied aspects of human learning become thus naturally underplayed and neglected. Compared to Dewey's experiential learning theory, the framework lacks thus undoubtedly a developed understanding of the role of the body and the individual within the human learning process. Secondly, Dewey clearly also explores how novelty, disruption, and curiosity spark learning, while Lave and Wenger only tend to focus on how individuals become incorporated and integrated into the already established body of knowledge that transpires within different communities of practice. Hence, the community of practice framework offers thus no unique theoretical insights into how people may develop knowledge and understanding individually through various kinds of novel discoveries or inquiries, which later will be shown to be a vital aspect of the farmers' learning.

To conclude, Dewey's experiential learning theory provides, arguably, an unmatched theoretical framework considering the social, cognitive, and embodied complexity of human learning. This is because the theory neatly integrates the role of inquiry and reflection with the function of social and embodied experiences. Although Kolb, Schön, Lave, and Wenger may provide meaningful theoretical lenses through which to decipher and understand farmers' lifelong environmental learning, Dewey's broad and holistic conceptualisation of experiential learning arguably provides a stronger and more comprehensive theoretical foundation for interpreting and understanding the complexity and wider picture given by the empirical data underpinning this doctoral thesis. Simply put, "there is nothing as practical as a good theory" (Bedeian 2016:1), and Dewey's theoretical framework of experiential learning arguably seems to be the most suitable and analytically useful one for this study.

## METHODOLOGY

This fourth chapter aims to outline and describe how the empirical results of this doctoral thesis have been systematically produced. The chapter begins by describing the philosophical positioning of the research endeavour, the applied narrative research design, and the nature of narratives as empirical data. Thereafter, it introduces the group of research participants and explains how the processes of data production, transcription, analysis, and representation systemically have been carried out in practice. Finally, the chapter addresses ethical considerations relevant to the research endeavour and critically discusses researcher bias.

### RESEARCH PHILOSOPHY

Research philosophy always plays a pivotal role in all kinds of scientific studies, as it arguably provides the guiding framework for understanding how scientific knowledge becomes constructed and what consequently constitutes valid evidence within a particular inquiry (Crotty 2015). Specifically, this research endeavour is philosophically grounded in the interpretivist paradigm, which understands scientific knowledge as a product emerging from the interaction between the researcher and the researched. Consistent with this philosophical stance, this research endeavour also builds upon an inductivist approach to theorizing empirical data, which philosophically allows scientific knowledge to emerge ‘organically’ by putting the empirical data emanating from the data production at the forefront of the analysis process. However, this philosophical positioning is far from straightforward, and an elaboration on this orientation is, undoubtedly, needed in order to provide a clear understanding of the research philosophy underpinning this doctoral thesis.

## INTERPRETIVIST PHILOSOPHICAL ORIENTATION

This doctoral thesis is firmly rooted in the philosophical tradition of interpretivism, which fundamentally builds upon a subjectivist epistemology. Theoretically, this means that interpretivists do not deny the existence of an external reality, although they strongly proclaim and assert that there is no completely shared knowable reality among human beings (Denicolo et al. 2016; Wills 2007). The fundamental philosophical claim of interpretivism is that there cannot be any completely shared knowable reality since we cannot objectively access the external reality because our perceptions of it are inherently limited by our different physical bodies and mental frames of reference (Crotty 2015; Denicolo et al. 2016; Wills 2007). Accordingly, from an interpretivist perspective, our understanding of the world must thus always be, at least to some degree, constructed. This is because we can only perceive the external reality through the different subjective interpretations that we make from our different sensory inputs, which consequently means that our various worldviews and understandings of the world must always be somewhat biased, selective, and multiple by nature (Crotty 2015; Denicolo et al. 2016; Wills 2007). In other words, from the interpretivist viewpoint, we are always situated on different 'horizons of understanding', based upon our personal combination of social, cultural, and personal presuppositions, entailing that scientific knowledge can never be truly objective due to our inescapable historicity (Wills 2007). Hence, since we all view and experience the world differently, this consequently means that the knowable external reality must always be limited and restricted by our inherent subjectivity, entailing that any form of scientific knowledge must be viewed as diverging and pluralistic by nature.

According to the Polish philosopher Ludwik Fleck, this philosophical outlook of interpretivism consequently implies that the development of scientific facts inevitably must transpire through the ongoing interplay between different active and passive elements (Liljequist 2013; Fleck 1979; Pena 2011; Sady 2021). He argued that, at the beginning of the scientific process, the researcher always experience a phase of chaos and confusion, during which the researcher conducts a messy and unstructured observation, characterized by

"amazement, searching for similarities, trial by experiment, retraction, as well as hope and disappointment" (Fleck 1979:94). During this initial bewilderment, the researcher then embraces a particular frame of reference, a so-called thought style, to be able to cognitively anchor and interpret his sensory experiences while attempting to "distinguish that which obeys his will from that which arises spontaneously and opposes it" (Fleck 1979:95). The researcher's sensory experiences and his applied frame of reference are then alternately interpreted and reevaluated in the light of each other until an empirical representation is formed and subsequently also accepted by the given academic community, known as a thought collective (Fleck 1979). The frame of reference that the researcher (un)consciously chooses to embrace constitutes the active elements, the lens for analysis and inquiry based on the "collectively constructed preconditions of cognition" (Pena 2011:908). And the things that arise spontaneously and oppose the researcher's frame of reference during the observation then constitute the passive elements, namely the prevailing and enduring 'empirical reality' that all scientists continuously seek to uncover through their various academic endeavours (Fleck 1979:95). Epistemologically speaking, this consequently entails that scientific knowledge cannot be universally objective (Heise 2018). This is because the systematic production of the empirical representations is inevitably always shaped by the underlying philosophy, theory, and methodology employed and validated by the given thought styles inherent within different thought collectives (Heise 2018).

Consequently, by adhering to and embracing this interpretivist orientation, it will thus be presumed that scientific knowledge fundamentally cannot be truly objective since it is inherently shaped and formed by the different methodologies and frames of reference that prevail within different thought collectives. Accordingly, it will thus also be argued that this research endeavour produces rather than collects empirical data and constructs rather than discovers scientific knowledge. Moreover, this philosophical position also implies that the empirical results will simultaneously be perceived both as limited and reliable. On the one hand, the empirical results will be argued to only provide a selective and limited way of perceiving and understanding

the lifelong environmental learning of farmers in northern Sweden, since the applied theoretical and methodological framework only enables certain kinds of avenues of inquiry. But at the same time, it will also be argued that the empirical results simultaneously have a strong scientific validity. This is because they have been produced by different theoretical and methodological means widely accepted within the thought collective of social and educational science, and also build upon an external reality that, at least to some degree, 'resists the will' of the empirical research(er).

### INDUCTIVIST APPROACH TO THEORIZING

Building on the philosophical outlook of interpretivism, this doctoral thesis is, thereafter, also positioned within the scientific tradition of inductivism for theorizing empirical data. Philosophically, there are two different contexts in which various scientific inquiries can take place and occur (Longino 1990). The first one is the context of discovery, which refers to the scientific phase of producing various kinds of ideas, theories, and hypotheses about the world (Longino 1990). And the second one is the context of justification, which encompasses the scientific phase of testing, proving, and validating different theories by controlled and rigorous experiments (Longino 1990). Since the research aim is to explore, describe, and understand how farmers in northern Sweden learn their local land knowledge in their everyday lives, this scientific inquiry then naturally falls under the context of discovery. This is because the primary objective of the research is to produce new insights and understandings about farmers' lifelong environmental learning process since prior educational research on the subject is notably scarce and limited. Seeking to accomplish this goal, this research endeavour thus builds upon an inductivist methodological approach to theorizing empirical data, which historically has been deeply associated with qualitative research (Kumar 2024; Abrar & Hasibuan 2025; Barrett & Younas 2024).

Fundamentally, the inductivist approach to theorizing empirical data builds upon the epistemological presumption that different forms of direct observations of the world can effectively provide a

strong foundation for the development of new theoretical constructs (Chalmers 2013; Abrar & Hasibuan 2025; Okoli 2023). Academic inquiries adhering to the inductivist approach to theorizing empirical data thus fundamentally seek to construct new theories about the world by gathering, compiling, and reviewing different kinds of empirical data sets (Haque 2022; Kumar 2024; Thomas 2006). In other words, “the primary purpose of the inductive approach is to allow research findings to emerge from the frequent, dominant, or significant themes inherent in raw data” (Thomas 2006:238). This is by “(a) condense raw textual data into a brief, summary format; (b) establish clear links between the evaluation or research objectives and the summary findings derived from the raw data; and (c) develop a framework of the underlying structure of experiences or processes that are evident in the raw data” (Thomas 2006:237).

This means that inductivist studies adopt a ‘bottom-up approach’, in which the research process begins with particular empirical observations about the world and uses these as the basis for developing broader explanatory accounts. In this sense, the inquiry “starts with particular data, which are then used to build (induce) a common narration (a theory) to estimate the data” (Haque 2022:61). Inductivist studies thus proceeds from “the specific to the general” (Abrar & Hasibuan 2025:128) by moving from “specific observations to broad generalizations” (Kumar 2024:59). Consequently, inductivist theory development encompass thus always a leap from the visible to the invisible in the sense that general statements of the world are created by the creative and imaginative aggregation of singular facts and observations (Bendassolli 2013; Okoli 2023; Barrett & Younas 2024). However, the ontological status of this mode of theorizing remains contested within the academic community (Barrett & Younas 2024). The creative leap through which empirical observations are transformed into theoretical constructs can hardly be understood as any kind of pure form of inductive reasoning (Barrett & Younas 2024; Bergdahl & Berterö 2015). If one accepts that all kinds of scientific inquiries are always shaped by some degree of preunderstanding, then the transition from data to theory necessarily always also involves some elements of abduction. This is because the process of theorization always

entails, at least in part, an inference to the best explanation, where emerging interpretations are informed by the researchers' previous knowledge and theoretical outlook (Okoli 2023). From this perspective, the inductivist approach to theorizing empirical data is more appropriately conceived not as a self-sufficient form of inductive reasoning, but as a methodological orientation that places empirical data in the foreground of the inquiry and analysis. It represents a structured and systematic way of engaging with empirical data sets in which the empirical observations are given analytical priority and serve as the primary point of departure for theory development. Rather than eliminating the influence of prior theory, the inductivist approach to theorizing empirical data seeks to discipline and delay its role, allowing the development of theoretical constructs to be guided and constrained by the empirical data. In this way, the bottom-up orientation of the inductivist approach lies less in the absence of theory and more in the commitment to letting the empirical data steer, justify, and refine the development of new theoretical constructs.

Consequently, the results emanating from studies based on an inductivist approach to theorizing empirical data should thus only be presumed to provide provisional and probable truths, insofar as they have not yet been subject to deductive falsification (Chalmers 2013). They rely on a non-deductive logic grounded in the presumption that the past patterns will persist into the future, which leaves open the possibility that conclusions may be false even if their premises appear sound. As a result, such studies always "produce knowledge that is uncertain" (Abrar & Hasibuan 2025:129). This is because the produced insights and results have not yet been thoroughly and rigorously tested, proven, and validated by inquiries rooted in the context of justification. Hence, perceive therefore the empirical results of this doctoral thesis as scientifically limited. They undoubtedly also need to be deductively proven and tested by further quantitative and experimental research to have a truth claim of high legitimacy and value within the context of justification. This doctoral thesis constitutes only a structured and limited attempt to produce data-driven theoretical constructs about farmers' lifelong environmental learning process in the far north of Sweden.

## RESEARCH DESIGN

All academic research endeavours also build upon different research designs, which is a coherent framework for conducting research that includes a set of procedures that aim to produce valid and reliable empirical insights (Creswell & Creswell 2023). To be able to successfully address and fulfil the research objective of this doctoral thesis, the following sections will, therefore, briefly outline and discuss the applied narrative research design and how the empirical data underpinning the produced results epistemologically will be understood.

### NARRATIVE RESEARCH DESIGN

The empirical inquiry underpinning this doctoral thesis builds upon a narrative research design. Simply put, narrative research is "the study of experience as story" (Connelly & Clandinin 2006:375), and it virtually refers to the scholarly pursuit of understanding various phenomena through the collection, interpretation, and representation of different kinds of narratives (Creswell & Creswell 2023; Parks 2023; Kim 2015). By carefully and systematically examining and analysing different stories, narrative research fundamentally intends to capture and portray how different people understand and experience their pasts, navigate their presents, and envision their futures (Goodson 2013; Miller 2000; Lopez-Montero et al. 2022). Hence, narrative research encompasses thus a diverse group of methodological traditions (Squire et al. 2014; Kim 2015). To ensure methodological rigor and transparency, it is, therefore, arguably essential to clarify which strand of narrative inquiry that this study intends to adhere to.

First and foremost, the applied narrative research design is based and grounded in the naturalistic approach to narrative inquiry. From the naturalistic perspective, narratives are understood primarily as empirical resources for research, in the sense of different accounts and representations of the external reality (Squire et al. 2014; Kim 2015). This perspective presumes that the external world, and people's verbal account of it, possess a significant degree of stability and independence detached from its external observer (Squire et al. 2014; Kim 2015). Simply put, the naturalistic perspective rests on the

philosophical presumption that there is an external reality that exists outside the mind, waiting to be explored, described, and understood by various scientific pursuits and explorations (Elliott 2005). By adopting a naturalistic orientation to narrative inquiry, the different narratives that the farmers tell about their lifelong environmental learning will thus be treated as meaningful, experience-based accounts that provide descriptions and insights into how their lifelong environmental learning process has transpired and taken place throughout the years on their different farmsteads. In other words, the naturalistic orientation enables the research endeavour to approach the farmers narratives, not only as individual stories, but also as empirical resources regarding their lifelong environmental learning through which broader patterns and processes can be identified.

Secondly, building on the naturalistic orientation, the narrative research design is also grounded in the analytical tradition known as analysis of narrative (Creswell & Poth 2016; Polkinghorne 1995). Within this analytical tradition, the farmers' narratives are primarily also thought to constitute different forms of empirical data, from which various types of typologies, themes, and paradigmatic categories can be drawn and derived (Creswell & Poth 2016; Polkinghorne 1995). In other words, the analysis of narrative approach seeks to examine a given cohort of narratives in order to identify various empirical patterns, trends, and structures. Simply put, the analytical aim of this approach is to generate conceptual categories that could illuminate and describe different phenomena. It is less about understanding the structure of individual stories and more about understanding the content and underlying meaning of different cohorts of narratives.

Conceptually, the applied narrative research design will thus primarily treat the farmers' narratives as empirical representations of their lifelong environmental learning process. The narrative research design seeks thus to move from the empirical particularities of the farmers' stories to a more overarching theoretical understanding of their lifelong environmental learning process. This is by identifying cross-cutting themes and patterns within the empirical data set that reveal how they have continuously learned and redeveloped their local land knowledge over the years on their different farmsteads.

## NARRATIVES AS EMPIRICAL DATA

Epistemologically, narratives could be perceived as an exceptionally unique and rich form of empirical data, considering the research aim of this doctoral thesis. From a naturalistic standpoint, narratives could be thought of as “portals through which a person enters the world and by which their experience of the world is interpreted and made personally meaningful” (Connelly & Clandinin 2006:375). As such, the empirical focus on narratives allows, therefore, “for the intimate and in-depth study of individuals' experiences over time and in context” (Clandinin & Caine 2013). This then subsequently enables the research endeavour to approach and capture both the lifelong and life-wide aspects of the farmers' lifelong environmental learning.

Practically, within this doctoral thesis, there are two different types of narratives that will be examined in order to explore, describe, and understand how farmers in northern Sweden learn their local land knowledge in their everyday lives. The first type of narrative is so-called small stories, which could be defined as short and fragmented narratives, conveying specific aspects of people’s various life experiences (Georgakopoulou 2007). These types of narratives illustrate how people make sense of the world in a more detailed and situated manner and are not necessarily connected to a larger meta-narrative (Georgakopoulou 2007). The second type of narrative that is used is so-called big stories, which are extended, retrospective accounts of people’s entire life trajectory (Georgakopoulou 2007). These narratives could be understood as ‘paintings of reality’ (Rosenwald & Ochberg 1992) spanning from birth to the present (Lewis-Beck et al. 2004), encompassing the many events, experiences, and feelings that are important to an individual throughout the extent of their lifetime (Lewis-Beck et al. 2004). They could be thought of as “a fairly complete narrating of one’s entire experience of life as a whole, highlighting the most important aspects” (Atkinson 1998:8), that may reveal and unravel the threads that connect one part of life to another, all the way from childhood and adolescence to adulthood and the last few years of one’s life (Lewis-Beck et al. 2004). Consequently, big stories can thus take many shapes and forms, and they normally build upon an array of different sub-stories, that collectively form a holistic and

coherent life narrative (Lewis-Beck et al. 2004). This means that big stories and small stories constantly exist in a never-ending, codependent relationship. To truly understand experiences as stories, it is thus theoretically necessary to engage with both the overall life story of an individual and the various sub-events that constitute them.

However, although narratives, from a naturalistic standpoint, can be argued to provide intriguing and reliable empirical representations of the external reality, they constitute, at the same time, also not any 'pure' empirical data waiting to be discovered and collected 'out there' in the world. As many narrative researchers have emphasized, "it is clear we do not find stories; we make stories" (Mishler 1999:117). From an interpretivist perspective, narratives can, epistemologically, thus be regarded as socially situated actions and creations (Bold 2013), produced retrospectively in different contexts for various audiences (Elliott 2005). To some degree, narratives are thus "not an objective reconstruction of life" but much rather "a rendition of how life is perceived" by various people and communities at different times and places (Webster & Mertova 2007:3). Accordingly, the various narratives that the farmers tell about their lifelong environmental learning process can thus be understood as a rich reflection and depiction of their different life experiences, produced by the practice of narration at the 'inter-views' between them and me.

#### RATIONALE OF THE RESEARCH DESIGN APPLICATION

The reason for applying the above-mentioned narrative research design within this doctoral thesis is thus twofold. Firstly, narrative research may capture the lifelong and life-wide aspects of the farmers' lifelong environmental learning without the need to conduct time-consuming longitudinal research. Secondly, narrative research may also be able to capture the common, everyday aspects of the farmers' lifelong environmental learning without the need to employ time-consuming ethnographic research. No other form of established qualitative research design is arguably as theoretically effective and resource-efficient in capturing the lifelong and life-wide aspects of farmers' lifelong environmental learning process as the narrative methodology.

## RESEARCH POPULATION

All kinds of narrative studies undoubtedly rely on a defined sample of research participants. To properly assess the empirical foundation of this doctoral thesis, it is therefore essential to describe the research population and the procedures used to sample and recruit the given participants. Without a clear understanding of who the narratives emanate from, any knowledge claim regarding the lifelong environmental learning process of farmers in northern Sweden arguably risks becoming questionable, as the data may stem from an unrepresentative sample. In this sense, the research population constitutes the external context of inquiry and must therefore be adequately understood.

### PARTICIPATING FARMERS

The empirical results build upon the life stories of 14 different farmers, who all stem from 10 different farmsteads located deep inside the subarctic region of Norrbotten in northern Sweden. On their different farmsteads, the farmers claim that they are between the 3rd and 11th generation of farmers, and they have all, at least at some point during their lives, been practicing animal husbandry, forestry, and crop production. Most of the participating farmers are men (10 male and 4 female) between the ages of 32 and 75 (average 52) with between 10 and 55 years of farming experience (average 30) with the highest completed level of education at the upper secondary school (Primary School N=2; Upper Secondary School N=9; Undergraduate School N=3). Statistically, their different agricultural businesses could also be regarded as small-scale, in the sense that their different agricultural companies only employ between 3 and 8 people, including themselves and their different family members.

However, to ensure the confidentiality and anonymity of all the participating farmers, they will not be presented in further detail within this doctoral thesis. Furthermore, they will also collectively be assigned the generic pseudonym 'the farmer' in the forthcoming empirical excerpts. This approach is motivated by the small and close-knit nature of the local agricultural communities of Norrbotten, which implies that there is a significant risk that the participating farmers

could be identified by different readers. To safeguard the participants' anonymity, 'identifying markers' have therefore been deliberately minimized. Moreover, as the study focuses on the broader, overarching patterns of the farmers' lifelong environmental learning, there are thus also limited analytical grounds for emphasizing individual identities in the data analysis and results presentation. This is because the farmers' narratives are collectively treated as a cohort of empirical data and not as individual case studies, meaning that the results can arguably be effectively communicated without distinguishing between different participants. The use of the collective pseudonym 'the farmer' should thus not be interpreted as suggesting that all participants share identical perspectives or experiences. Rather, it reflects only an effort to present the results as clearly and effectively as possible by putting an emphasis on the content of the empirical excerpts and the analytical narratives while avoiding ethical concerns considering anonymity. Hence, using the collective pseudonym 'the farmer' prioritizes the farmers' anonymity over the seemingly limited analytical value of specifying different individuals.

#### SAMPLING AND RECRUITMENT PROCESS

All the participating farmers have been acquired according to the techniques of purposive, snowball, and convenience sampling (Oppong 2013; Cohen & Arieli 2011; Goodson & Sikes 2001). To qualify for the study, the research participants had simply to be active farmers in the subarctic region of Norrbotten in northern Sweden and willing to participate in the research project. Since this research project does not seek to make any universal or generalizable knowledge claims about farmers' lifelong environmental learning, further sampling criteria were thus not deemed theoretically necessary.

Originally, my access to the different farmers was first established and enabled through a local personal contact, who was able to function as a gatekeeper (Agar 1980; Alm 2018) to the local agricultural communities of Norrbotten. My local personal contact provided me with phone numbers to several farmers, whom I then reached out to and pitched my research project, and asked if they were interested in

participating. Thereafter, the farmers were asked to recommend additional farmers whom they thought might also be interested in participating in the study. The main benefit of this sampling strategy was that I got quick and convenient access to different farmers who lived and worked in the subarctic region of Norrbotten. The disadvantage was, however, that the sampling strategy did not give me any balanced or homogeneous sample group. Theoretically, this could be argued to decrease the study's transferability, but for the purpose of this study, it was not deemed problematic due to the limited number of potential informants that could be found within the geographical context of the research endeavour. In other words, recruiting informants according to the basic sampling criteria was considered a higher priority than achieving a more balanced distribution of other social categories, such as, for instance, age, ethnicity, or gender.

However, not long after the first days of interviewing, the word spread of my research, and farmers all over Norrbotten began to contact me and show interest in my research. Opportunistically, I then seized the chance to recruit additional farmers for my research. However, it did not take long until I got an overwhelming number of requests from farmers, which forced me to decide not to recruit more than 14 different farmers. The reason for this was mainly a practical one since I only had limited time and money for the data production, and I did not want to end up with too large of a data set that I could not analyse, comprehend, and represent properly (Braun & Clarke 2016). Furthermore, 14 different study participants are also commonly perceived to generally constitute a sufficient sample size for qualitative studies since it is perceived to contain enough 'voices' for empirical studies to be able to reach data saturation (Ando et al. 2014; Beitin 2012). Moreover, smaller populations may also be preferred within narrative studies since larger randomized populations might often tend to lack a shared understanding of different phenomena (Goldman et al. 2012; Kim 2015).

The inclusion of farmers who voluntarily reached out to me wanting to participate in the study was also, at the time, not deemed problematic from an ethical standpoint. This is because the research focus and their study participation did not present any apparent economic

or political benefits for them. They were not offered any monetary compensation for their study participation, and the research focus did not enable them to drive any kind of social agenda, which potentially could have skewed the empirical results. My personal experience was that these farmers just wanted to contribute and be part of the research endeavour. Methodologically, it could also be argued to be beneficial for narrative studies to have highly motivated informants within the data production process. However, this self-selection may also introduce a degree of bias, as those who chose to participate could hold perspectives and experiences that are not fully representative of the broader farming population. Consequently, the limitation regarding the study's generalizability must thus also be acknowledged.

## DATA PRODUCTION

After having contacted and recruited all the different farmers to the research project, I then visited them at their different farmsteads during 2022 and 2023 to generate the empirical data. During this phase in the research process, I employed two different data production methods commonly employed within narrative research, known as life story interviews and walking interviews.

### LIFE STORY INTERVIEWS

The first method used during the data production process was life story interviews, which is a methodological approach commonly used within narrative research that seeks to capture the 'big' and 'overarching' stories about people's lives (Goodson 2001, 2013; Goodson & Sikes 2001; Miller 2000). The reason for utilizing life story interviews as a technique during the data production process derives from the fact that life story interviews often are perceived to be able to thoroughly capture the overarching patterns within people's lives (Ison et al. 2014; Goodson 2013; Clandinin & Connelly 2004). Presuming that the farmers' lifelong environmental learning is a lifelong and life-wide phenomenon, life story interviews were thus deemed as methodologically valid and legitimate. This is because this particular form of data

production technique arguably can unveil and 'tap into' the big stories of the farmers' lifelong environmental learning.

Practically, all the different life story interviews were conducted at the farmers' kitchen tables and followed the traditional two-phase structure commonly applied in life story research (Kim 2015). During the first phase, commonly called the narration phase, the farmers were given the space to narrate and outline their whole life journey from start to finish without any interruptions (Kim 2015). During this phase, I deliberately took the traditional 'vow of silence' (Goodson 2013; Goodson & Gill 2011:39; Kim 2015) and attempted to 'listen beyond' what the farmers said and made notes about different topics that I thought might be worthy of further inquiry and exploration (Goodson 2013; Goodson & Gill 2011:39; Kim 2015). Each narration phase also always began with the encouraging, prompting statement: "Please tell me your life journey about how you have learned to know and understand your different farmlands."

When the farmers were finished narrating their different life journeys, the life story interviews then shifted to the second phase, commonly called the conversation phase (Kim 2015). During this phase, I became much more involved in the storytelling, and I began to converse with the farmers about their different life experiences (Kim 2015). What then emerged was a grounded conversation (Goodson 2001), in which the farmers and I attempted to decipher and make sense of the different life experiences that they previously had narrated and portrayed (Goodson & Sikes 2001). Essentially, we embarked on a shared venture together, seeking to create further meaning and understanding (Goodson 2001; Goodson & Sikes 2001) about their lifelong environmental learning. During these conversations, I attempted to shift the attention from the farmers themselves to the contents of their stories, thereby adopting a decentred perspective to take some pressure off the farmers as the storytellers (Germeten 2013). Furthermore, I mainly tried to 'corral' (Berosik 2019; Atkinson 2012) the conversations to help the farmers produce different thick descriptions (Geertz 1973) about their lifelong environmental learning process. To some degree, the life story interviews can thus be perceived as a form of art (Lewis-Beck et al. 2004) in which the creative,

narrative space between the farmers and I have created and produced the empirical data (Merrill & West 2011).

As customary in qualitative research, all the life story interviews were then also audio recorded to enable meticulous transcription (Rutakumwa et al. 2020). In addition, I also used the practice of respondent validation during the life story interviews, meaning that I shared my interpretations of what had been said during the conversations so that the farmers would have the chance to correct me if I had understood something incorrectly (Goodson & Sikes 2001; Tierney & Landford 2019). After all, a key test for assessing whether qualitative research is representational of real life or not is the extent to which it achieves what is commonly called verisimilitude (Bruner 1985), which is the extent to which representations seem to be true and plausible (Goodson & Sikes 2001). Although respondent validation is not a perfect reassurance of empirical 'truth', it encouraged the life story interviews to be deeply grounded in the farmers' personal life journeys and learning experiences. Accordingly, the main empirical results, namely that the farmers' lifelong environmental learning process seems to build upon the learning practices of sensing, storying, and shaping the land, were, at some point during the data production process, also confirmed by the farmers as central means and components of their lifelong environmental learning.

Furthermore, in conjunction with the different life story interviews, I also systematically documented the key contextual and interactional features inherent within the different research situations that could not be captured by the different audio recordings. These notations included, for example, non-verbal communication, such as gestures used by the farmers in order to emphasise particular points in their speech, as well as situational and relational factors framing the given research encounters. The purpose of this written documentation was methodological rather than analytical. The primary purpose of the notes that were made during the life story interviews was only to support the subsequent textualization of the empirical narratives in the final publication, not to provide any additional form of empirical data intended for the data analysis. In other words, the notations that were written in conjunction with the life story interviews have not

been viewed and treated as any kind of empirical data and have therefore not been subject to any form of data analysis. They have only been used to facilitate the development of the interpretive and literary presentation of the empirical data.

In total, 20 life story interviews were conducted with the different farmers. 8 of these farmers were interviewed once, while the remaining 6 participated were interviewed in two separate sessions. This was due to the fact that some of the farmers expressed a desire to delve deeper into how their various life experiences had shaped their knowledge and understanding of their different farmlands. Additionally, some of the farmers also felt fatigued during the first interview sessions and preferred to continue our conversation at a later time. Recognizing that life stories can be mentally demanding and exhausting, I then reasoned that it was important to create space for the farmers to further elaborate on their different life stories at another time. A second interview session would then allow for a deeper exploration of their lifelong environmental learning process, and in practice, these follow-up interviews picked up more or less seamlessly from where our previous conversations had left off. On average, the life story interviews lasted about 1 hour, spanning between 40 minutes and almost 2 hours. During the life story interviews, the farmers also consistently talked the most, averaging about 90 percent of all the spoken words. However, this amount is difficult to precisely quantify since it depends on the applied transcription level of the recorded speech.

#### WALKING INTERVIEWS

The second way narratives were produced during the data production process was through so-called walking interviews. This data production technique could basically be perceived and understood as a combination of narrative interviewing and participant observation, whereby the informant walks the researcher through a given place and talks about their understanding, experience, and relationship to it (Kinney 2017; Fathi 2023; Pranka 2020; O'Neill & Roberts 2020).

The reason for applying walking interviews during the data production process emanates from the quickly emerging need to locate

the farmers' narratives even closer to their different farmlands. During the life story interviews, the farmers recurrently expressed that they wished to bring me to the different places that they were talking about so that they could 'show me' what they meant and tried to convey to me. From a methodological standpoint, this occurrence was not surprising. Former research on farmers' lifelong learning has reported that it is very difficult to methodologically capture farmers' lifelong learning 'offline' and detached from their everyday lives and their different farmlands (Berosik 2019; Mellegård & Boonstra 2020; Garavito-Bermudez & Boonstra 2023). It is, therefore, commonly claimed in prior studies that it is methodologically vital and necessary for researchers to utilize 'online' research methods that could capture farmers' lifelong learning in situ<sup>35</sup> (Dooley 2021; Nicholas-Davies et al. 2021). This is because farmers' local knowledge and understanding of their different farmlands commonly are thought to 'come to life' during their daily practice of farming (Dooley 2021; Nicholas-Davies et al. 2021). Walking interviews were thus deemed to be a necessary and complementary methodological technique to the life story interviews. This is because the method is renowned for its ability to reach beyond the traditional confines of conventional narrative interviewing (Fathi 2023) by further immersing the interview situation in the local environment (Kinney 2017). It essentially provided a means to capture the 'small' and local stories about the farmers' lifelong environmental learning process, and could thus, to some extent, also be perceived as an extension of the different grounded conversations that took place during the conversation phase of the life story interviews.

Practically, all the different walking interviews were conducted outdoors on the farmers' various farmlands. At the beginning of each walking interview, I asked the farmers to bring me to different places where they thought that they had learned much about their different farmlands. What followed during these short hikes and visits were then grounded conversations (Goodson 2001) in which the different farmers told me short place-based narratives about their lifelong

---

<sup>35</sup> This methodological need to employ 'online' research methods the while researching the experiences of farmers has also been noted by Garavito-Bermudez and Boonstra (2023) and Lauer and Aswani (2009).

environmental learning, which we then collectively tried to interpret and make sense of in connection to their previously outlined 'big' life story. In other words, thanks to our immersion in the local environment, we were able to jointly explore the 'quiet' narratives of their lifelong environmental learning. This is because the various places we visited naturally evoked stories and perspectives that presumably otherwise would have been absent and silent in a more conventional interview setting<sup>36</sup> (O'Neill & Roberts, 2020; Pranka 2020). Moreover, during the walking interviews, I also applied a decentred perspective to the farmers' storytelling (Germeten 2013), and I tried to 'corral' (Berosik 2019; Atkinson 2012) the conversations, so that the farmers would provide me with many thick descriptions (Geertz 1973) about their lifelong environmental learning. And, as will become evident in the upcoming presentation of the empirical results, the walking interviews were, in fact, very successful in producing many captivating, thought-provoking, and analytically interesting narratives about the farmers' lifelong environmental learning.

To produce methodological trustworthiness, the walking interviews were also audio-recorded to enable precise and meticulous transcription, and respondent validation was also practiced so that the farmers' different narratives could be well represented later in the writing process (Goodson & Sikes 2001; Tierney & Landford 2019). Moreover, I also systematically documented various key aspects of the walking interviews, such as the farmers' non-verbal communication, their engagement with their immediate surroundings, and other situational or relational conditions that were shaping the research encounters that would not show in the audio recordings. These notes were aimed at assisting in the subsequent textualization and representation of the empirical data in the final publication. Simply put, these notations have not been treated as any form of empirical data, nor have they been incorporated in any form of formal data analysis. Instead, these notes have only functioned as an auxiliary resource guiding and informing the presentation of the empirical data.

---

<sup>36</sup> The methodological benefits of walking interviews have also been noted by Clark and Emmel (2010), Emmel and Clark (2009), and Ingold (2011).

In total, 10 different walking interviews were conducted among the farmers on their different farmsteads. 10 of the farmers were interviewed once, while the remaining 4 participants were not interviewed. The reason for this was that some of the farmers did not have the time for walking interviews during one of their most labour-intensive periods of the year. On average, the walking interviews lasted for about 1 hour, spanning between roughly 30 minutes and 2 hours, and were primarily driven and led by the farmers themselves. During the walking interviews, the farmers also talked the most, averaging about 75 percent of all the spoken words, although this number is difficult to accurately quantify as it depends on the applied transcription level.

#### LIMITATIONS WITH THE INTERVIEWS

Although the narrative methodology has many advantages, there are also several methodological limitations that must be acknowledged while reviewing the epistemological trustworthiness of this study.

Firstly, it is immensely crucial to acknowledge that narratives are not any objective historical account of people's life experiences (Goodson & Sikes 2001). From a naturalistic perspective, what makes life stories valid as empirical data is the degree to which they convey a convincing account of the past (Merrill & West 2011). Therefore, it is thus important to stress that life stories only constitute a selective recollection of what has happened based on the individuals' personally storied memories of the past (Goodson & Sikes 2001; Nicholas-Davies et al. 2021). Arguably, our memories are a flighty phenomenon (Goodson & Sikes 2001). Why we remember some things in our lives and forget others fundamentally depends on how our different memories fit into our storied understanding of ourselves and the world according to what we, at the time, consider to be valuable and important information (Goodson & Sikes 2001). One of the most notable findings within memory research is the so-called 'memory bump', which refers to the phenomenon that individuals that are above the age of 40 have an increased frequency of recalling memories from where they were between the ages of 10 to 30 (Rubin & Schilkind 1997; Rubin et al. 1998). Furthermore, people from all age groups also tend to recall

fewer memories from the earliest parts of their childhood, commonly called childhood amnesia, and conversely, also more memories from recent years, often referred to as the recency effect (Rubin & Schilkind 1997; Rubin, et al. 1998). Consequently, this means that narratives, in the sense of historical representations, have major limitations, since they only provide selective accounts from different time periods. However, this ‘memory loss’ or recency bias might not necessarily be a negative thing, presuming that people only tend to remember things of value. The farmers' various narratives about how their lifelong environmental learning process has taken place might, therefore, not be comprehensive, ‘true’, and accurate accounts of what has happened throughout their whole lives. But they could, however, be seen as relevant and selective representations of different life experiences that might be worth considering on the subject.

Secondly, the narratives that the farmers tell might also be inherently limited by their different language capabilities (Polkinghorne 2007). The farmers' ability to describe and ‘put words’ onto their different life experiences might not always be sufficient to deliberately capture the full complexity and depth of their different life experiences. The world can, arguably, be described in countless ways, and our language always shapes and delimits our capacity to portray the world as we comprehend it. To some degree, all kinds of language representations could thus arguably be perceived to always be selective, limited, and detached from reality. However, despite these epistemological limitations, narratives are still often considered to be one of the best ways in which we can capture, understand, and comprehend the human lifeworld (Tierney 1998). From an epistemological point of view, it could thus be argued that stories basically “help to open up the world, not to cloak it” (Ingold 1993:75).

Thirdly, the various narratives that have been produced throughout the extent of this research endeavour should also not be perceived to be any kind of objective or unvarnished empirical data. All kinds of interviews are fundamentally social performances, profoundly shaped and defined by the inherent relationship and interplay that transpires

during the given research situation<sup>37</sup> (Goodson & Gill 2011; Kim 2015; Horsdal 2011). The various narratives presented in this doctoral thesis should thus, at least partly, be regarded as shared creations, profoundly shaped by the intrinsic interplay between the farmers and me (Goodson 2013; Kim 2015; Lewis 2008). This in the sense that we actively and collaboratively attempted to create new knowledge about their lifelong environmental learning process at the ‘inter-views’ of our different worldviews (Kvale 1996). Hence, considering that all life stories are profoundly context-dependent, it is thus also reasonable to presume that another set of researchers and research participants might would have yielded a slightly different empirical set of narratives (Lewis-Beck et al. 2004). However, it is probably unlikely that this would have produced vastly different empirical results since the farmers’ various life experiences would have remained the same even in the hypothetical situation and case of a new researcher.

#### TRANSCRIPTION PROCESS

After all the different walking and life story interviews had been carried out, the various audio recordings were then transcribed, meaning that the farmers' oral narratives were documented and transformed into written texts (Duranti 2006; McMullin 2023). This is, however, an intricate and complicated practice that is far from straightforward. Within this research project, I have thus relied on the commonly applied transcription approach called intelligent verbatim.

Fundamentally, transcription is a creative art encompassing numerous decisions about how and why to include various verbal utterances and whether to correct different oral mistakes and edit the spoken conversations according to written grammatical rules (McMullin 2023). Consequently, transcription is thus inherently a selective and political process that depends on the researcher’s ability to make fair and appropriate decisions about what is relevant to disclose or not at the intersection between spoken and written language (McMullin

---

<sup>37</sup> These epistemological limitations of narrative data sets have also been raised by Haydon et al. (2018), Nasheeda et al. (2019), Nicholas-Davies et al. (2021), Polkinghorne (2007), and Lewis-Beck et al. (2004).

2023). In practice, this means that two different transcribers may comprehend and understand various audio recordings differently, subsequently entailing that they might represent the recorded spoken words differently in text. This consequently implies that it is crucial for researchers to deliberately employ a relevant transcription strategy to enable scientific rigor and trustworthiness within their different academic pursuits (Stelma & Cameron 2007; McMullin 2023).

During the transcription process, I have thus, as already indicated, deliberately tried to transcribe the farmer's words in a 'naturalized' manner, commonly referred to as intelligent verbatim, which means that I have adapted and corrected the farmers' orally spoken words according to written grammatical norms (Bucholtz 2000; McMullin 2023). This form of transcription is advantageous since it allows me to omit occasions when, for instance, the farmers misspeak and correct themselves, thereby allowing the transcripts to be made closer to what was intended and how the farmers might have wished to have been portrayed textually (McMullin 2023).

Moreover, spoken language is also undoubtedly structured completely differently from written text, so when human speech is represented as written text, it is crucial to make corrections so that the transcripts can be 'readable' and 'researchable' (Lapadat 2000). Naturalized transcription is thus a logical transcription strategy within this research project since the focus of the study is not on how the farmers say something, but rather on what they say. Although it is important to acknowledge that this makes the transcribed narratives appear more 'clean' and 'polished' than they really were in the original recordings. But as previously argued, this is not perceived to be any major methodological or epistemological problem within this study.

However, it needs to be stressed that I have not deliberately tried to change the meaning and essence of the farmers' words in any way. The purpose of transcription is only to be able to store, comprehend, and communicate the farmers' various life stories in an effective and efficient way. Moreover, the farmers' various life stories were also not transcribed in their entirety. Throughout the transcription process, I only transcribed parts of the interviews that I thought were central to the research focus. The reason for this methodological approach was

primarily to save time and space during the research process since large parts of the farmers' narratives arguably were irrelevant to the research focus. Researchers have the ethical duty to safeguard their economic resources (Mustajoki & Mustajoki 2017; Shamoo & Resnik 2009; Swedish Research Council 2024) and being selective while transcribing has thus been one of my ways to address this ethical responsibility in research. However, I have not deliberately tried to withhold any relevant empirical data from the data analysis.

## DATA ANALYSIS

After all the different narratives had been produced and transcribed, they were then analysed according to the strategy of reflective thematic analysis (Braun & Clarke 2006, 2016, 2021a). The reason for applying this data analysis technique emanates from the approach's commonly perceived ability to produce and construct various patterns of meaning within different data sets<sup>38</sup> (Braun & Clarke 2006, 2016, 2019, 2021a). Hence, this analysis technique was thus deemed relevant as it provides an inductive analytical means through which the essence and characteristics of the farmers' lifelong environmental learning process could be portrayed, identified, and understood. However, it must also be firmly stressed and acknowledged from the outset, that there is no single way to conduct reflective thematic analysis since it can be applied very differently depending on the given research objective and context, and where the particular researcher philosophically stands on the epistemological continuum (Braun & Clarke 2006; 2019; Finlay 2021; Byrne 2021). To achieve academic trustworthiness and rigor, it is thus critical to delineate and describe how the applied six-phase data analysis process has transpired in practice<sup>39</sup> (Braun & Clarke 2006, 2016, 2021a).

---

<sup>38</sup> This analytical strength of the reflective thematic analysis approach has also been identified and discussed by Finlay (2021), Elliott (2018), Thomas (2006), and Naeem et al. (2023).

<sup>39</sup> A conceptual illustration of the reflective thematic analysis process, including the integration of empirical excerpts, coding, subthemes, and themes, can be found at the end of the doctoral thesis in the appendix.

## PROCESS OF REFLECTIVE THEMATIC ANALYSIS

Firstly, the empirical data have been analysed through the analytical practice of data familiarisation (Braun & Clarke 2006, 2016, 2021a). This initial phase and practice mark the shift from data production to data analysis in the research process and aims fundamentally to 'immerse' and 'familiarize' the researcher with the empirical data (Braun et al. 2019). In practice, I began the data familiarisation phase already during the transcription process, when I actively listened through all the different audio recordings before I meticulously typed them down. On occasions when the empirical data made me reflect upon its essence and meaning, I then also made casual notes alongside the transcriptions to 'digest' its character. This practical approach was advantageous early on in the research process since it enabled me to thoroughly and systematically familiarize myself with the empirical data, which later on would aid me in the data analysis process. And from the outset, I noticed that the farmers overwhelmingly were describing how they were cultivating different relationships with their various farmlands through embodied interactions.

Secondly, after I had familiarized myself with the empirical data, I then began generating initial codes (Braun & Clarke 2006, 2016, 2021a). This phase constitutes a shift to a more attentive and deliberate form of data analysis (Braun et al. 2019), whereby I began to organize the data in a meaningful and systematic way by inductively ascribing succinct codes to different 'chunks' of the data set (Braun & Clarke 2006, 2012; 2016, 2021a; Finlay 2021). Simply put, codes are short phrases or words that I interpretively think descriptively grasp and encompass the essence of different short segments of the empirical data (Naeem et al. 2023; Byrne 2021). The coding goes thus beyond purely summarising the data since it also captures the research aim and my 'analytical vision' (Braun & Clarke 2022). Essentially, it is a way of systematically cataloguing (Naeem et al. 2023), indexing (Richards 2015), and breaking down the empirical data (Attride-Stirling 2001) so that it further on can be analysed in line with the different research questions (Byrne 2021; Maguire & Delahunt 2017). In practice, the coding was conducted on both a semantic and latent level, meaning that I looked at both what the farmers explicitly talked

about and what the underlying meanings of their different narratives were (Braun et al. 2019; Maguire et al. 2017). By doing this, I would systematically catalogue both the content, context, and meaning of their different narratives. However, codes are never truly fixed and static within reflective thematic analysis (Braun et al. 2019). They constantly evolve, expand, contract, become renamed, split apart, collapse, and become abandoned (Braun et al. 2019) as my "reflective and thoughtful engagement with the data" transpires and continues (Braun & Clarke 2019:594). Hence, to determine whether or not a code was legitimate and relevant, I considered thus whether the code was: robust, in the sense that it conveys a 'true' essence of the empirical data in a theoretical sense (Nowell et al. 2017; Naeem et al. 2023); reflective, in the way that it symbolizes a relationship between the empirical data and different theories about its meaning (Savage 2000; Naeem et al. 2023); resplendent, in terms of that it paints a vivid imagery of the empirical data and its context (Rogers 2018; Naeem et al. 2023); relevant, in the sense that it symbolizes and describes essential parts of the empirical data (Corbin & Strauss 2015; Sandelowski & Barroso 2003; Naeem et al. 2023); radical, in the way that it should not overlap with other codes and offer unique insights (Braun & Clarke 2006; Creswell 2015; Naeem et al. 2023); and righteous, in terms of that it should fit logically together with the larger coding framework and align with the research focus (Attride-Stirling 2001; Nowell et al. 2017; Richards 2015; Naeem et al. 2023). And as the coding process progressed, I also noticed that my coding increasingly became more focused on the content of the different learning practices and experiences that the farmers tried to convey. The codes included, for instance, sensory understanding through touch, intergenerational knowledge transfer and reflection, and practical experimentation.

Thirdly, after the initial coding was conducted, I then began to inductively generate different candidate themes (Braun & Clarke 2006, 2016, 2021a; Braun et al. 2019). This marks a shift from the analytical focus on the meaning of different segments of the empirical data to the meaning of the entire data set (Byrne 2021; Naeem 2020; Naeem et al. 2023). Simply put, themes are stories about particular patterns of shared meaning across a dataset (Braun & Clarke 2021b).

They are 'chapters' in a broader story that can be told by the data (Braun & Clarke 2019b; Kerr et al. 2010), determined by their ability to capture a coherent and lucid picture of the data set in relation to the different research questions (Braun & Clarke 2006; Byrne 2021; Maguire & Delahunt 2017). In practice, I immersed myself thus further in the empirical data, reading, reflecting, questioning, imagining, wondering, and writing various candidate themes (Braun & Clarke 2021b). I organized, grouped, and clustered the various codes in different categories, seeking to find common denominators that could address the research questions (Braun & Clarke 2021c, 2022; Finlay 2021). Hence, I thus attempted to move beyond the concrete categories derived from the initial coding to uncover abstract patterns, trends, and relationships within the empirical data (Naeem 2020). And during this thematizing process, I noticed that many of the initial codes either concerned the farmers' interaction, thinking, or experimenting with their different farmlands.

Fourthly, when the different candidate themes had been constructed, I then started to review them (Braun & Clarke 2006, 2016, 2021a), seeking to 'pressure test' their reliability and validity (Braun et al. 2019). It is during this analysis phase that the different candidate themes become 'true' themes, as they were checked and reviewed for internal homogeneity and external heterogeneity (Patton 1999). In practice, I compiled all the coded data for each candidate theme and reviewed them to ensure that the data relates and corresponds to each given theme (Braun et al. 2019). This was done to ensure that each theme is internally coherent and can make a logical argument that can contribute to the overall picture and narrative of the empirical data (Byrne 2021). Secondly, I also checked the different candidate themes against each other and the whole data set so that they did not overlap and actually were connected (Braun et al. 2019). The reason for this was to confirm that the different themes collectively could form different chapters in a broader story about the data (Byrne 2021). To aid my review and interpretation, I also considered whether the themes were: reciprocal, in the sense that they were constructed based on mutual connections among different codes (Braun & Clarke 2006; Denzin & Salvo 2020; Naeem et al. 2023); recognizable, in terms of that

they could provide pathways to developing a theoretical or conceptual understanding closely aligned with the empirical data (Braun & Clarke 2006; Naeem et al. 2023); responsive, in the way that they correspond to the given research objective (Merriam & Tisdell 2015; Braun & Clarke 2006; Thomas 2006; Naeem et al. 2023); and resourceful in the sense that they can tell a coherent story of the data and explain how the different clusters of codes can provide useful insights for the research problem (Elliott 2018; Harding 2013; Lichtman 2023; Naeem et al. 2023). And as expected, this critical and iterative reviewing process subsequently made some of the candidate themes collapse, split, join, and become renamed (Breslin 2023). What emerged through this iterative process was the development of the overarching themes sensing, storying, and shaping the land and their subsequent subthemes.

Fifthly, after the different themes had been refurnished and reviewed, I then began the artistic and theoretical process of naming and defining them (Braun & Clarke 2006, 2016, 2021a). Fundamentally, themes should be “concise, punchy, and immediately give the reader a sense of what the theme is about” (Braun & Clarke 2006:18) to “bring the analysis to life” (Freeman & Sullivan 2019:180). And to accomplish this, I then examined the theoretical validity of the different themes by comparing them to the results, theories, and concepts found in previous research on farmers’ lifelong learning (Braun & Clarke 2021b; 2019; 2006). It is during this stage that the reflective thematic analysis process shifts from being primarily inductive to mainly abductive in its analytical approach, in the sense that the analysis tries to iteratively position and understand the empirical data in relation to larger theoretical frameworks and bodies of knowledge. Undoubtedly, it is common practice to review the work of other scholars to get a better understanding of how a notion has been defined and discussed before proceeding to contextualize any empirical results within a given research field (Naeem et al 2023). In practice, I then crafted a theoretical picture based on the themes and connected it to theories in previous research (Braun & Clark 2006). It was through this creative and theoretical work, trying to position my themes in a wider theoretical context, that I discovered and recognized John

Dewey's experiential learning theory. I found it to offer an excellent conceptual toolbox for interpreting, elucidating, and discussing the themes and the 'bigger story' that I wanted to tell about the data. Moreover, during this analytical phase, I also found that my results, in large part, support already established theoretical notions and insights within previous interdisciplinary research on farmers' lifelong learning and the educational subfield of environmental learning. The analytical connections between previous research, John Dewey's theoretical framework of experiential learning, and the themes sensing, storying, and shaping the land are therefore a product of the more iterative and abductive analysis process that proceeded after the inductive coding and thematizing of the empirical data.

Sixth and finally, after all the themes had been named and defined, I then also began the tedious practice of writing the doctoral thesis and linguistically presenting the empirical data by weaving the themes into an analytic narrative and persuasive story that uses informative and vivid data extracts as evidence (Braun & Clarke 2006, 2016, 2021a; Finlay 2021). However, this step is difficult to separate from the previous one (Byrne 2021; Braun & Clarke 2012). Any write-up building on reflective thematic analysis is very much interwoven into the entire process of the analysis (Braun & Clarke 2012). Hence, in other words, in practice, I have thus constantly and iteratively tested and pondered how the different empirical themes 'fit' and 'work' in relation to preexisting theory. This has undoubtedly forced me to continuously go back and forth between the academic literature and the empirical data, slowly and gradually forming the analytical narrative encompassing the empirical results of this study.

#### THEORETICAL SUFFICIENCY IN THE DATA ANALYSIS

A major practical and theoretical issue permeating the practice of reflective thematic data analysis is undoubtedly when to determine whether an analysis of empirical data is epistemologically sufficient. Traditionally, prior research, therefore, often uses the concept of data saturation to determine when their empirical and analytical endeavours should be regarded as adequate and satisfactory (Constantinou

et al. 2017:585). Data saturation could, broadly speaking, be defined as information redundancy (Lincoln & Guba 1985), which is the point at which no new information, codes, or themes can be yielded from the data set (Braun & Clarke 2021c). However, this is an “unfortunate metaphor” (Dey 1999:257) since it implies that there might be a determinable, fixed point for stopping data collection and analysis. Data saturation, as defined as no new information can be yielded, “is a logical fallacy, as there are always new theoretical insights to be made as long as data continues to be collected and analyzed” (Low 2019:131). Hence, presuming that coding and theming do not inevitably reach a fixed endpoint (Braun & Clarke 2021c), all data analysis can thus never truly be ‘saturated’ in an absolute sense (Low 2019).

Practically, this means that I, the researcher, must make situated, interpretative judgments about when it is adequate to stop the data production and the data analysis. With regard to this issue, Dey (1999) has suggested the concept of theoretical sufficiency as an alternative concept to data saturation, which refers to the point when the researcher has reached a sufficient and adequate depth of understanding of an empirical data set to be able to build theory. Within this academic pursuit, this is the concept that I have used to determine when to stop and end the data analysis. When I found that the themes of sensing, storying, and shaping the land overwhelmingly permeated the empirical data and that they appeared to be internally and externally valid and could be supported by Dewey's experiential learning theory, I simply ‘stopped’ the data analysis and began to focus on the data presentation instead. This arguably constitutes a somewhat pragmatic approach to the methodological limits underpinning reflective thematic data analysis. Although I acknowledge that there probably are more themes and patterns that can be found in the empirical data, I do think that the empirical results generally capture and convey the overarching essence of what farmers' lifelong environmental learning in northern Sweden is all about, based on the empirical data set at hand. In this sense, the decision to conclude the analysis process rests on a reasoned judgment that the identified themes provide a sufficiently rich and coherent account to address the research aim.

## LIMITATIONS OF THE DATA ANALYSIS

Epistemologically speaking, the practice of reflective thematic analysis is deeply embedded within the interpretivist paradigm (Braun & Clarke 2006, 2016, 2021a), which entails that the different themes that emanate from the data analysis process are presumed to not simply ‘emerge’ or passively be ‘in’ the empirical data, waiting to be ‘discovered’ and ‘excavated’ by the researcher (Braun & Clarke 2016; Finlay 2021). On the contrary, the produced codes and themes are seen as the results of the “painstaking process of gradually pulling the data together as themes are iteratively evolved, shaped, polished, and systematically evidenced” (Finlay 2021:108). The practice of reflective thematic analysis could thus be considered as both an art, craft, and graft (Finlay 2021), reflecting the researchers’ “reflective and thoughtful engagement with their data” (Braun & Clarke 2019:594). In other words, it could be perceived as an art of telling an interpretive story about a particular empirical data set. This then consequently implies that the researcher both becomes the storyteller and the prime analytical instrument throughout the data analysis process, continuously and actively engaged with interpreting and deciphering the meaning and structure of the empirical data (Braun et al. 2019).

Therefore, it is thus vital to note and acknowledge that reflexive thematic analysis is not an objective and value-free analysis procedure (Braun & Clarke 2006). Subjectivity undoubtedly accompanies all kinds of data analyses and interpretations (Greene & McClintock 1985; Jick 1979), already as soon as the collection and aggregation of empirical data (Jonsen & Jehn 2009), and coding and theme development inevitably require considerable interpretative work from the researcher to be able to take form and emerge (Braun & Clarke 2020). Hence, the different themes presented in this doctoral thesis should thus not be perceived to exist separately from me, the researcher, since they essentially are produced and generated through my deliberate data engagement (Braun & Clarke 2020). However, this researcher bias is not necessarily a limitation. The interpretative depth and quality of inductivist qualitative research lie, arguably, in the skill of the analyst, not necessarily in the methodological procedure (Braun & Clarke 2021b). And to some degree, all researchers edit and evoke

participant 'voices' and ultimately tell their story about the data. The value of this scientific inquiry is thus essentially found within its produced empirical results and insights, and arguably not in its lack of epistemological limitations. Consequently, considering the nature of the intellectual practice of reflective thematic analysis, "we do not reach a point where we have nothing more to learn. We are journeying, not arriving!" (Braun & Clarke 2019:592).

## RESULTS PRESENTATION

After the empirical data had been generated and analysed, I then undertook the creative task of presenting the empirical results as an analytical narrative that uses informative and vivid data extracts as evidence. In practice, I have then used a confessional writing approach to the data presentation and framed the empirical results through Dewey's theoretical framework of experiential learning. This approach aims fundamentally to promote and facilitate a deeper reflective engagement with the research process and its results.

### CONFESSIONAL WRITING APPROACH

Within narrative research, empirical data is commonly presented as 'raw' textual transcripts, typically with very little attention to the context in which they are generated. Considering the quality criteria of research resonance within qualitative research, this writing practice is thus arguably problematic, since narrative data may be more effectively presented as various kinds of situated and context-dependent stories (Tomai & Forbus 2007; Shuman 2015). To enable research resonance, I have thus adopted a confessional writing approach to the results presentation (Van Maanen 2011). This means that I have, practically, sought to present the empirical data as a series of dialogues and events, personally interpreted and experienced by me, the researcher. The rationale behind this strategy of academic writing is that the confessional approach may enable you, the reader, to 'meet' and 'encounter' the different farmers and, in a sense, 'participate' in

the research process, rather than remain positioned at the margins of the data production (Van Maanen 2011).

While employing the confessional approach, I have viewed myself as a writer and author in three different ways (Glesne 2011). Firstly, I have considered myself as an artist, in the sense that I have sought to portray all the different research encounters in such a stylistically rich and evocative manner, so that the farmers' various narratives could resonate with a broad, non-academic audience. Secondly, I have also considered myself as a translator, in that I have sought to present the farmers' narratives in such a way that is both understandable and meaningful to different readers outside the world of agriculture. Finally, I have also embraced the role of a transformer, in the sense that I have deliberately crafted the empirical transcripts so that they might inspire and invite critical reflections regarding the study subject.

Methodologically, the confessional writing builds on the systematic notation that was made during the data production process. Practically, these notes initially emerged as handwritten, longhand jottings, which could effectively be seen as brief notes composed of mnemonic words and phrases recorded during the actual research observations, intended to serve as memory aids for the later development of more detailed and comprehensive notes (Emerson et al. 2011; Lönngren 2021). After each farmstead visit, these jottings were then systematically rewritten in full upon returning home, in close temporal proximity to the research encounter, to ensure that they could serve their purpose afterwards (Schindler & Schäfer 2021). Epistemologically, these notations occupy thus a space "betwixt and between a personal diary and a scientific document" (Jackson 1990:32). Rather than offering a complete and objective account of what has happened during the research encounters, they instead reflect a 'subtle reality'. This in the sense of a partial, interpretive rendering of the events, interactions, and environments that formed the backdrop of empirical accounts (Hammersley & Atkinson 2019; Jeffery 2018). In other words, every observation underpinning the notations has thus inevitably been filtered through my own frame of reference (Jeffery 2018), meaning that they are inescapably encoded with my "conscience,

understandings, and interpretation”, consequently making me both “an actor, author, teller, and writer” (Coffey 1996:66).

Although the confessional writing offers significant strengths within this research endeavour, it is also essential to emphasize that this applied form of academic writing does not constitute any kind of objective or neutral writing practice that transmits the empirical data without any difficulty. The empirical stories presented in this doctoral thesis are, in many respects, my own subjective and selective literary constructions, designed to convey the different empirical narratives and portray the various research encounters as I have personally experienced and interpreted them. Acknowledging that the world can be described in countless ways and that any single event is open to multiple interpretations, it is thus logical to conclude that the empirical stories presented in this doctoral thesis are inherently shaped and formed by my personal outlook and positionality as a researcher. That said, I wish to stress that I have not intentionally omitted any aspects of the research encounters, nor sought to misrepresent them in any way. The aim of the confessional writing has only been to enable an honest and transparent depiction of the research encounters in such a way that would enable extensive research resonance.

#### INTEGRATION OF THE THEORETICAL FRAMEWORK

The empirical results have also been deliberately framed through the conceptual toolbox found within Dewey’s theoretical framework of experiential learning. This writing strategy is not merely a stylistic preference, but rather an analytically necessary approach for telegraphing and rendering the overarching themes of sensing, storying, and shaping the land both empirically meaningful and theoretically grounded. Without an intimate integration of the theoretical framework, these themes arguably risk not being perceived as analytically productive.

By placing Dewey’s theoretical framework at the forefront of the results presentation, the main themes of sensing, storying, and shaping the land can thus effectively be interpreted as part of broader theoretical patterns, rather than simply isolated empirical examples. For instance, the integration of the theoretical notions of aesthetic and

reflective experience enables, arguably, the results presentation to move beyond surface-level descriptions and dive deep into the meanings and implications of the empirical results. In this way, the empirical data and the theoretical framework are brought into a productive dialogue in which each part informs and deepens the other.

Framing the empirical results through Dewey's theoretical framework thus strengthens the explanatory power of the empirical inquiry. The presentation does not simply report the results, but rather actively frames and interprets them, contributing to a more nuanced and theoretically informed understanding of farmers' lifelong environmental learning in northern Sweden. Essentially, this writing approach seeks to convey the overall picture of the empirical results, rather than merely illustrating the research process itself. In other words, it fundamentally aims to coherently and concentratedly depict the produced theoretical understanding emanating from the empirical inquiry underpinning this doctoral thesis.

## ETHICAL CONSIDERATIONS

Ethics are also an inseparable part of doing scientific research, and all kinds of academic inquiries always hold an array of different ethical issues that must be considered and managed throughout the research process<sup>40</sup> (Mustajoki & Mustajoki 2017; Shamoo & Resnik 2009), and this doctoral thesis is no exception. Narrative research undoubtedly dives deep into the personal stories and experiences of people (Smythe & Murray 2000; Bold 2013; Josselson 2007), and as a researcher, you are thus morally and legally given the ethical duty to protect the privacy and dignity of your research participants (Bold 2013; Merrill & West 2011). However, there exists no simple process or procedure that one can follow in order to determine how to manage all kinds of ethical situations that may occur throughout the research process, and the researcher must thus continuously make situated ethical decisions (Bold 2013; Mustajoki & Mustajoki 2017; Shamoo &

---

<sup>40</sup> The ethical challenges with narrative research have especially been addressed by Laryeafio and Ogbewe (2023), Smythe and Murray (2000), Bold (2013), Russell and Barley (2020), and Josselson (2007).

Resnik 2009). In practice, I have mainly dealt with six different ethical issues throughout the research process.

First and foremost, I have made sure that the farmers were given the opportunity to provide free and informed consent concerning their research participation. When the farmers were contacted, I gave them all the necessary information required by the Swedish Ethical Standards for Research so that they were able to make free, informed, and conscious decisions regarding their participation in the research (Swedish Research Council 2024). Practically, they were informed about what the research concerned, what was required of them as study participants, what rights they had as study participants, how the research process would proceed, and how the produced empirical data would be managed, processed, and published. Furthermore, the farmers also got the opportunity to ask questions and were informed that they could withdraw their consent at any time during the research process. This last thing is something that I consider to be especially important in qualitative research since I view the concept of free and informed consent as an ongoing process throughout the research process (Smythe & Murray 2000; Bold 2013). In practice, before each new research encounter, I have thus systematically asked the farmers if they still were interested in participating in the research project and if they had any questions about the process. However, no farmers had any objections, and no one withdrew their consent throughout the extent of the research process.

Secondly, I have also considered the significant ethical question of data ownership in narrative research (Russell & Barley 2020; Bold 2013; Smythe & Murray 2000). This issue revolves around the uncertainty around who owns the farmers' narratives, in the sense of who wields the final control and authority over their presentation and interpretation (Bold 2013; Smythe & Murray 2000). Both the farmers and I, the researcher, have, arguably, valid claims to the ownership of the produced narratives features within this doctoral thesis (Bold 2013). Originally, the narratives emanate from the farmers in the sense that they build on their various life experiences, journeys, and narrations, but the narratives have also become my own creations throughout the research process since I have systematically edited

them for different analytical and stylistic purposes. However, the core question concerning data ownership is one of accountability (Russell & Barley 2020). Legally, the farmers and I cannot mutually 'own' the life stories (Russell & Barley 2020), and to be able to bear full responsibility for this research endeavour, I will thus, henceforth, regard them as my 'property', although I firmly and humbly acknowledge their roots and origins among the farmers.

Thirdly, I have also considered how to ensure the farmers' right to privacy and anonymity in the research project (Merrill & West 2011). The 'raw' narratives created during the data production process are undoubtedly permeated with numerous personal aspects (Russell & Barley 2020) and 'identifying markers' that may make the identities of the study participants difficult to hide and disguise (Smythe & Murray 2000). Since the agricultural communities in the far north of Sweden are very small and intimate, this has been a significant issue within this research endeavour. Therefore, to enable anonymity, privacy, and confidentiality within this doctoral thesis, I have thus translated all the different narratives into English, used the collective and generic pseudonym 'the farmer' for all the study participants, removed the names of their farmsteads and their nearby villages, and presented the empirical data through a confessional writing approach. The ethical benefit of these approaches is that by slightly altering the farmers' narratives, it becomes increasingly difficult to connect them to the individual farmers.

Fourthly, I have also pondered the question of 'voice space' by asking myself the questions of who speaks for whom and how the different voices presented in this doctoral thesis have been represented. Within narrative research, this is a very common ethical issue since the methodology is typically used to provide 'space' for people to be heard and where they can express their various life experiences (Bold 2013). Narrative research carries thus always potential risks connected with the subtle and often unforeseeable consequences of writing about people's lives and experiences (Smythe & Murray 2000). Perhaps the most pervasive risk in connection to this research project has thus to do with the emotional impact that the different farmers may experience when their different narratives become reinterpreted

and filtered through the lenses of academic prose and theory (Smythe & Murray 2000). A common reaction of participants in narrative studies is that the researcher's data analysis fails to fully capture their personal experience, uniqueness, and individuality (Smythe & Murray 2000), which subsequently creates a subtle sense of 'betrayal' since their own understanding of their experiences becomes compromised by an 'interpretative authority' (Smythe & Murray 2000). These reactions may, however, be inevitable in narrative research since the researcher approaches the phenomena of life stories radically differently from the research participants (Bold 2013). This in the sense that it is incumbent on the researcher to relate the meanings of the collected narratives to larger, theoretically significant categories within different bodies of research (Smythe & Murray 2000). Consequently, within this doctoral thesis, I have thus carefully strived to ensure that the farmers' voices and experiences have been well represented, along with my own. Most notably, I have deliberately tried to make space for their different narratives in the data presentation, including as many different voices as possible in the final publication, and remained humble about my interpretation and analysis. Moreover, I have also used the collective generic pseudonym 'the farmer' in the data presentation. As previously argued, this is mainly due to ethical concerns regarding anonymity and the observation that there are weak analytical needs to present the participating farmers individually. Although this may downplay the individuality and uniqueness of the participating farmers, it is arguably a more valid approach to the data presentation. Hence, my sincerest wish is thus that all the farmers who graciously have contributed with their different narratives will feel respected and not neglected by my creative representation, analysis, and interpretation of the empirical data. However, I also acknowledge that this publication is primarily written for an academic audience, which undoubtedly means that the empirical narratives are fundamentally presented and discussed from an academic perspective through various kinds of scientific prose and theory.

Fifthly, I have also critically engaged with the concept of objectivity in research. The belief that scientific inquiries should be completely value-free have, for a long time, been the most dominant

methodological and ethical assumptions among scholars worldwide (Miller 1983). Accordingly, by adopting an interpretivist philosophical stance in this research endeavour, I must thus explicitly define how the term objectivity is understood and managed to be able to uphold the modern ethical ideals of scientific research. Theoretically, I align thus my understanding of the concept of objectivity with the outlooks of Miller (1983) and Longino (1991), who argues that all kinds of human research are inherently value laden. In their view, values inevitably shape the focus, assumptions, interpretations, methodologies, and conclusions of any given academic study. Rather than attempting to purge all values from the research process, they instead advocate for the practice of recognizing, understanding, and managing various values through transparency and critical reflection. Practically, following Miller's (1983) guidance, I have thus embraced reflexivity throughout the research process and attempted to be explicitly transparent about my personal background and preunderstanding, as well as the theoretical and methodological choices that have informed this doctoral thesis. Furthermore, in line with Longino's (1991) recommendation, I have also subjected my work to ongoing critical scrutiny by consistently sharing it with other educational scholars and seeking constructive feedback. Through these strategies, I have thus sought to make my positionality and potential researcher bias visible and accountable. My hope is that this transparency will enable you, the reader, to critically assess the validity, credibility, and trustworthiness of this doctoral thesis in a forthright manner.

Sixth and finally, the doctoral thesis has also not been subject to any formal ethical review. All kinds of academic research in Sweden must follow the ethical standards for good research practice (Swedish Research Council 2024), but a formal ethical review is only required by the Swedish Ethical Review Act (SFS 2003:460) when the research deals with sensitive information or may involve physical or psychological risks for the different research participants. Since this narrative study focuses on the lifelong environmental learning of adult farmers in northern Sweden, the evaluation was thus, after an extensive dialogue and discussion with my supervisors, that there was no need to put the research design under a formal ethical review. This is

because the study does not deal with any kind of sensitive information, it does not pose any apparent physical or psychological risks onto the research participants except the very minor risk of unforeseen emotional distress connected to the issues of voice space and data ownership. Fundamentally, it aims to be conducted according to the ethical standards for qualitative educational research in line with the foundational ethical principles of reliability, honesty, respect, and accountability (Swedish Research Council 2024). In other words, I have deliberately sought to conduct this study in such a way that it would yield reliable results without compromising the respect for the participating farmers and the public trust of the scientific community.

## RESEARCHER REFLEXIVITY

Researcher reflexivity refers to the ongoing, critical examination of how a researcher's own assumptions, values, and identity shape and form the applied research process (Chan 2017; Suarez-Ortega 2013). In narrative research, engaging in this evaluative practice is vital because the empirical data of narrative research undoubtedly is created through interaction between the researcher and the study participants (Chan 2017; Suarez-Ortega 2013). The stories that are shared, the questions that are asked, and the interpretations that are produced are inevitably all influenced by the researcher's own perspective and social positionality (Chan 2017; Jackson & Mazzei 2012; Suarez-Ortega 2013). Researcher reflexivity enables, therefore, the researcher to make these influences visible rather than allowing them to operate unrecognized and unnoticed (Chan 2017; Cortazzi & Jin 2006). Simply put, researcher reflexivity enables researchers to interrogate their interpretive choices, remain attentive to power dynamics, and recognize how their presence has shaped the narratives that they share and produce, thereby ultimately enriching the depth and ethical integrity of the research endeavour (Chan 2017; Jackson & Mazzei 2012). Practically, there are thus two different aspects of my personal background that are relevant for you, the reader, to know about.

Most notably, farming and agricultural communities were not new to me when I began this research endeavour. When I look back at

my life and my childhood, the enjoyment and management of nature have always been a natural part of my life. My grandparents and parents have been small-scale farmers, and for as long as I can remember, we have always spent time together while we were working outdoors on the land. Being raised on a homestead situated in the middle of the great plains of Östergötland in the southeastern parts of Sweden has also naturally brought me access to many different farming communities from a young age. Throughout my upbringing, I knew many different farming families, and when I was old enough to begin to work, I started labouring part-time as a farmhand on a nearby farm. Although I have never worked full-time as a farmer, I have, however, to some extent, gotten a glimpse of what it means to live and work as a farmer from a young age. In many ways, my personal background has thus given me a unique social position that has enabled me to successfully explore the lifelong environmental learning of farmers in the subarctic region of Norrbotten in northern Sweden.

Particularly, my rural background has been advantageous regarding research access to the different agricultural communities in the subarctic region of Norrbotten in the far north of Sweden. The social and cultural capital that I have gained and acquired throughout my upbringing has essentially enabled me to smoothly interact and communicate with the farmers within the cultural parameters of their life-world, which many of the farmers expressed was a pleasant surprise during my many visits. For instance, I was, from the start, familiar with basic farming knowledge and terminology, and I knew the unspoken rules of how you should conduct yourself on a farm. However, not being raised as a 'true farm boy' has also had some theoretical advantages. During the research process, I experienced that I could easily distance myself from the research context and critically examine various notions that otherwise might have remained unseen and taken for granted within the research context. In other words, I firmly believe that my personal background has enabled me to take an intellectual position at the edge of the local farming community, allowing me to systematically switch back and forth between different emic and etic perspectives on the lifelong environmental learning of farmers.

Furthermore, I also want to mention that my interest in the academic field of environmental learning and the research practice of narrative inquiry runs deep within my former academic background and training. I hold a master's degree in both anthropology and outdoor and environmental education, and it would be dishonest of me to claim that the methodological and theoretical choices that permeate this doctoral thesis do not, at least partially, reflect my previous academic training. The benefits of, for instance, the applied narrative methodology caught my interest all the way back at my anthropology studies, and I also became deeply acquainted with John Dewey's theoretical framework during my training in the field and practice of outdoor and environmental education. To some degree, the overall structure of this doctoral thesis reflects thus both my personal interests and my academic background.

However, I want to firmly stress that although my personal background has been beneficial and influential at times during the research process, this does not give me any interpretive prerogative regarding farmers' lifelong environmental learning. The value of this doctoral thesis is only found in the scientific rigor that underpins its research endeavour, not in my unique personal background or outlook. But it would, at the same time, also be foolish of me to claim that I have not cautiously and deliberately been forming and shaping the outlook and the content of this doctoral thesis. All doctoral theses are inevitably written from different perspectives and provide only narrow philosophical and empirical messages. This is also true for this book, which I have tried to keep as short, concise, and accessible as possible. And to some degree, this doctoral thesis constitutes only a selected story about the lifelong environmental learning of farmers in northern Sweden. Therefore, I firmly believe that the general practice of learning from the land is way more complex and nuanced than this doctoral thesis will argue and depict. To me, the farmers continuously speak of something more profound than what they can communicate and express narratively in their different life stories. Essentially, at least to me, it seems to be more than what immediately catches the eye that speaks something about the farmers' inherent relationship and interconnectedness with nature.

## RESULTS

This fifth chapter aims to present and analyse the empirical results of the narrative inquiry. The primary objective of this chapter is to portray what learning practices and experiences the participating farmers describe as educationally meaningful and significant within their life-long environmental learning process. In other words, to show which streams, currents, and tributaries seem to integrate and interweave into the river, known as farmers' lifelong environmental learning.

Fundamentally, the empirical results show that the farmers' life-long environmental learning process builds upon the three interrelated learning practices of sensing, storying, and shaping the land. Conceptually, these three learning practices could be thought of as echoing Dewey's theoretical notions of aesthetic and reflective experience. The first section presents the learning practice of sensing the land and argues that it mirrors Dewey's concept of aesthetic experience. The second section illustrates the learning practice of storying the land and suggests that it could be understood in line with Dewey's reflective experience of analytical thinking. The third and final section then depicts the learning practice of shaping the land and proposes that it echoes Dewey's reflective experience of trial and error.

### SENSING THE LAND

From a theoretical point of view, the process of experiential learning rests upon various kinds of aesthetic experiences (Dewey 1929, 1930, 1934). These experiences are metaphorically the soil from which different reflective experiences grow and continue to be rooted in people's everyday lives, and they also serve as the external stimulus that initiates different kinds of problematic situations within the experiential learning process (Quay & Seaman 2013).

Dewey argued that the external world primarily consists of so-called 'brute facts' and 'that's' that foremost must be felt and perceived through our different senses before they subsequently can be experienced, interpreted, and understood (Dewey 1984:249). He reasoned that “the senses are the organs through which the live creature participates directly in the on-goings of the world about him” (Dewey 1934:22), which subsequently implies that our different “aesthetic experiences are sensory experiences” (Uhrmacher 2009:623) since our “experience is always what it is because of a transaction taking place between an individual and his environment” (Dewey 1938:25). Consequently, this practically means that the development of different forms of aesthetic experiences essentially requires different modes of intentional and deliberate sensory engagements with the world (Uhrmacher 2009:623), as our aesthetic connection to our physical surroundings is built upon our active interactions with, and responses to, objects, places, and environments (Mastandrea et al. 2021).

Based on the empirical data, the educational significance of producing various kinds of aesthetic experiences through different forms of sensory engagements with the local natural environment cannot be overlooked. Throughout the empirical data, the farmers consistently emphasised how their continuous sensory engagement with their different farmlands has enabled them to know, understand, and learn about them. Hence, the farmers' learning practice of sensing the land could thus be defined as their deliberate production of aesthetic experiences through their ongoing multisensory interactions and engagements with their surrounding local natural environment. However, as outlined below, the empirical data also suggest that this learning practice primarily takes the form of systematic, slow, and attentive multisensory engagements with the land. To fully capture the meaning of these dimensions, further exploration of these aspects is thus undoubtedly needed and necessary.

#### SENSING SYSTEMATICALLY

The first way that the farmers' learning practice of sensing the land could be conceptualized and understood, based on the empirical data,

is as a systematic mode of learning. This is in the sense that the farmers seek to methodologically survey their different farmlands with their various senses over long periods of time in order to pick up 'raw' sensory data that they can 'digest' and subsequently learn from. This systematic and methodological dimension of the learning practice of sensing the land is, for instance, displayed in the following empirical excerpt, whereby the understanding of the physical character and transformation of the surrounding landscape is argued to grow from repeated sensory interactions and experiences.

"This land, that you see over there, is one of the oldest fields that we have here on our farmstead. It has been in the family for many generations, and I have learned to know what it needs just by feeling it with my hands", the farmer exclaimed, while pointing into the distance.

"What do you mean?", I responded.

The farmer continued, "A couple of years back, this field was not producing the way it should. The yields were low, and the crops were not growing uniformly, as they should. One day, I then naturally went out on the field and sensed how the soil felt in my hands. And the acidity did not feel right. The soil was too sandy. And I thus decided to give it some additional lime powder. And after two years, when the lime powder had made effect, it finally happened. One day, on an early autumn morning, when I was passing through, after I had harrowed on another field nearby, I sensed that the soil had changed. I jumped out of my tractor and walked out on the field. And it was so fantastic! I saw how the soil had formed aggregates, and the field was covered in several layers of smaller and larger lumps of soil. The larger lumps were on top of the smaller ones, shielding them from losing their moisture. It was so beautiful! I just stood there and felt mesmerized. And when I walked around and felt the soil in my hands, I got the chills. I sank down just the right amount in the mud, just beneath my toes. And when I touched the lumps, they just vanished. They were not sticky. They felt exactly right! And later that day, I went harrowing on another

field, and that was not the same. The aggregates were hard and sticky, and it felt like I was driving my tractor through a large block of rubber. And when I went out to sense the soil, it did not have the same feeling at all. The acidity was different. It was out of place. And I would not have been able to pick that up from the tractor! You see, you learn your lands through your hands. You must make time to sense the different farmlands that you work with.”

“What do you mean by learning your lands through your hands?”, I asked.

The farmer thought for a moment and said, “Without your hands, you cannot digest your learning. You may be able to measure things with your computer, but you get something more if you touch and experience your lands with your body. You learn them more intimately. They take root in you. You simply get a sense of who they are and how they are doing. It is about being consistently attentive to what is, so that you may see when it shifts and changes. Sometimes, it may take years before you notice something, but when you do, you want to know. You must be persistent!”

In this empirical excerpt, the farmer illustrates how the lifelong environmental learning process emerges through systematic and repeated sensory engagements with the local natural environment. Rather than relying on a single observation, it is described how the farmer’s local land knowledge develops over time by the practice of returning to the same field, sensing it through touch and sight, and comparing how it feels across different times and moments. What first appears as a vague sense of 'something being off' with the land becomes, over time, then distilled into a more precise understanding through repeated sensory engagements. By handling the soil, the farmer first identifies that it feels too sandy and acidic, which suggests that additional lime powder should be applied to the field. Years later, the farmer then returns to the same field and senses the soil structure and notices that it has formed aggregates, which confirms that the soil has changed in the desired way. This sequence shows that the learning practice of

sensing the land is not incidental but rather methodological. This is because it involves the act of consistently sensorily attending to the land, building a memory of how it feels, and using that sensory knowledge to detect subtle environmental shifts and changes. In this way, the lifelong environmental learning process is thus grounded in the long-term accumulation and comparison of sensory experiences. The farmer's statement that "you learn your land through your hands" thus reflects not only the importance of sensory engagements with the land, but also the disciplined, long-term practice of collecting, revisiting, and gradually refining the 'memory bank' of different sensory impressions of the local natural environment.

Throughout the empirical data, the farmers consistently conveyed how their embodied sensing of the land is key to their lifelong environmental learning process. Although touch and sight are emphasized as the primary senses, the farmers also suggest that the senses of smell and sound help them discern different soil textures and vegetation patterns within the local natural environment. For instance, some farmers argue that the smell of the forest and the sound of the soil underfoot can indicate specific land conditions, such as the presence of microorganisms or the lack of water. Another example of this systematic dimension of the farmers' learning practice of sensing the land is also the following empirical excerpt, in which one of the farmers describes how a sustained and methodological sensory comprehension of the local natural environment is key for the lifelong environmental learning process.

"Tell me more about how you have learned about your different farmlands", I asked.

The farmer went silent for a moment and then thoughtfully responded, "You can either send your crops for analysis or do a visual inspection before you harvest them. And I usually do the latter. That is something that I have learned through experience, especially when it comes to the cultivation of grass. You know, the objective is to get as high energy levels as you can in the feed, which means that you must begin harvesting the grass before the plants start producing too much seed. If you feel the

blade of the grass with your hands and feel that seeds have begun to form inside, then I have learned that the grass is perfectly ripe for harvest. But if you can instead visually spot the seeds inside the blade, then it might be almost too late. At that moment, the plants have begun to put all their energy into producing seeds, which then reduces their nutritional value. Then the feed just passes straight through the bodies of the animals without providing them with any energy, since it is the cellulose that the animals break down. Therefore, it is also important to keep an eye on the grass composition of your meadows. For example, if you have a lot of clover, you can expect a protein-rich feed from the fields”.

“But how have you learned all this?”, I asked.

The farmer continued, “You see, I have learned a lot from my father. Over the years, we have always been outside together. We have looked at the crops, felt them, and compared and discussed what we notice together. That gives you knowledge that you cannot learn from a book. It is something that must be rooted in your hands. You must go out into your fields and observe, try things, fail, and then try again. That is how you learn. Here on the farmstead, we have also kept a diary of what we see and do with the land. For example, we know that the first snow always falls around the middle of October. In our notes, we have seen that, year after year. And those kinds of insights help us then plan what and when we should do different things around here on the farmstead.”

In this empirical excerpt, the farmer further demonstrates how the lifelong environmental learning process is grounded in sustained and systematic sensory engagements with the local natural environment. The account shows that the local land knowledge develops through repeated, sensory interactions rather than through isolated observations. Firstly, the farmer explains how the timing of grass harvesting can be determined by physically feeling the grass blades to detect the early formation of seeds. This tactile judgment is then contrasted with the practice of visual inspection, which, according to the farmer, may

fail to inform the judgment at the right time within the agricultural process. In this way, the farmer's senses are thus described to be iteratively combined in order to be able to provide a nuanced sensory understanding of the local natural environment. Secondly, the empirical excerpt also highlights how the learning practice of sensing the land could be understood as cumulative and methodological. The farmer describes how different sensory impressions, such as the arrival of snow every year, have been documented in a diary that is stored on the farmstead. This cumulative documentation of sensory impressions is then argued by the farmer to aid the development of local land knowledge in relation to the planning of agricultural work. Fundamentally, the farmers' learning practice of sensing the land could thus be conceptualized and understood as a systematic form of doing, trying, and undergoing that they purposefully embrace and engage in to be able to perceive and comprehend the physical and material composition and transformation of their different farmlands.

The empirical observation that the farmers' lifelong environmental learning process seems to rest upon multisensory engagements with the local natural environment is a plausible insight considering the theoretical framework. Dewey argued that the "esthetic effect is found directly in sense-perception" (Dewey 1934:115) and "to understand the esthetic in its ultimate and approved forms, one must begin with it in the raw" (Dewey 1934:4-5) since "physical things somehow stamp themselves upon the mind or convey themselves into consciousness by means of the sense organs" (Dewey 1930:390). Prior research has, therefore, for a long time, argued that the human understanding of landscapes emerges from different forms of perceptual experiences (Antrop 2015; Burlingame 2020; Tuan 1977), whereby people sense the surrounding environment holistically by using all their different senses simultaneously (Antrop & van Eetvelde 2017).

Given that the farmers' aesthetic experiences are "the result, the sign, and the reward of that interaction of organism and environment" (Dewey 1934:28), the empirical observation that the farmers seem to rely on a systematic and methodological approach to sensing the land has thus arguably theoretical support. To be able to perceive and comprehend the surrounding local natural environment aesthetically,

Dewey (1934:54) argued that "a beholder must create his own experience" by leaving the act of recognition for the practice of perceptivity (Uhrmacher 2009). Simply put, "recognition is perception arrested before it has a chance to develop freely" (Dewey 1934:52), in the sense that it is an unconscious outlook upon the world based upon "a stereotype, upon some previously formed scheme" that does not stimulate further reflection or inquiry (Dewey 1934:52). Perception, on the other hand, "involves an active experience of re-seeing something" in the sense that objects and events are perceived and reinterpreted "in new ways and with new meanings" (Pugh et al. 2020:544). It involves the "act of reconstructive doing" (Dewey 1934:52), whereby sensory impressions are consciously brought to attention to enable further inquiries and insights. In other words, compared to the act of recognition, the practice of "perceptivity allows for the building up of one's own experience" (Uhrmacher 2009:624). By systematically sensing the land, the farmers are thus embracing the practice of perceptivity in their everyday sensory interactions with their different farmlands. Over time, this then enables them to deliberately produce various kinds of aesthetic experiences that subsequently form the foundational stimuli underpinning their lifelong environmental learning.

Fundamentally, these empirical insights are well in line with previous research. Prior studies have strongly indicated that the different embodied interactions that farmers have with their various farmlands profoundly tend to shape and form how they subsequently perceive and understand them (Krzywoszynska 2016; Leung & Darnhofer 2021; Knapp & Fernandez-Gimenez 2008, 2009). Moreover, prior research within the educational subfield of environmental learning has also previously argued that nature exposure (Liddicoat & Krasny 2013; Wilson 2018) and nature experiences that allow people to experience and comprehend their local natural environment in situ tend also to provide excellent conditions for the environmental learning process (Jose et al. 2017; Ballantyne & Packer 2002, 2009). Likewise, former studies have also suggested that methodologically comparing and observing places under varying stages and conditions can also be beneficial and advantageous for the environmental learning process (Measham 2006). The empirical observation that the farmers' lifelong

environmental learning process appears to build upon systematic forms of multisensory engagements with their different farmlands is thus arguably well in line with previous research.

#### SENSING SLOWLY AND ATTENTIVELY

The second way that the farmers' learning practice of sensing the land could be characterized and understood, based on the empirical data, is as a slow and attentive mode of learning. This in the meaning of that the farmers slowly and carefully produce, embrace, and digest their multisensory impressions from the local natural environment in order to be able to comprehend the physical composition and transformation of their different farmlands. This slow and attentive dimension of the learning practice of sensing the land is, for instance, evident in the following empirical excerpt.

“Tell me more about what has been important for your learning about your different farmlands”, I asked.

The farmer responded, “If you work with them, you absorb the knowledge more deeply. Just seeing something from a distance does not give you the same understanding as when you do something practically over time. The knowledge sinks more deeply when you get to feel it for yourself. It takes root in you in a different way when you learn with your hands. But you also need to know why you are learning. Knowing how much moisture there is in the ground or in the grain has no real value if you do not understand what it says about something else. And that takes time to realize. You must be diligent over time to be able to know. If you are not attentive, you might overlook important things. There is no need to rush.”

In this empirical excerpt, the farmer emphasizes that the learning practice of sensing the land revolves around the act of slowly and attentively sensing the surrounding landscape. Rather than emerging automatically from various kinds of sensory experiences, the local land knowledge is portrayed as something that must be slowly and

carefully cultivated through a sustained sensory attentiveness to the local natural environment. This is evident in the above standing narrative when the farmer stresses that one must "be diligent over time" and remain attentive "when you learn with your hands" in order to not "overlook important things". Fundamentally, this points to the fact that the farmers' production of aesthetic experiences appears to depend on their persistent effort to slowly produce sensory experiences that may enable the physical composition and transformation of the local farmlands to emerge in a new light. In other words, the development of meaningful sensory experiences appears thus to fundamentally rest upon their attentive orientation towards what can be physically apprehended from the local natural environment.

Throughout the empirical data, the farmers recurrently described how a slow and attentive approach to sensing the land is key to their lifelong environmental learning process. Although slow and sustained sensory engagements with the land are highlighted the most, the farmers also suggest that a deliberate openness to problematic situations that naturally arise throughout the everyday process of farming also constitutes a foundational part of their sensory attentiveness to their different farmlands. For instance, some of the farmers argued that it is important to continuously "read" and "listen" to the land by consciously attending to what is continuously materially disclosed in the local natural environment. This slow and attentive dimension of the farmers' learning practice of sensing the land is, for example, also observable in the following empirical excerpt.

"Tell me more about what you mean by feeling your different lands with your hands", I asked.

The farmer thought for a moment and said, "When I drive over my fields with the tractor, I first do a visual inspection of them and think about why they look as they do. Then I go out and sense the ground. I notice how the soil moves and feels. One time, I remember that I noticed that the tractor was floating over a particular spot on one of my fields, and it turned out that there was water lying underneath the surface, since a blockage had built up in the French drain a few meters away. And that is

an awareness that you must acquire as a farmer. You must constantly gather information when you are out on the land. You cannot simply sit in the tractor and just ride along. Another example is also when I was harrowing a couple of years ago. Suddenly, it felt very heavy to push through the soil with the tractor, and I could not keep going at the same depth and speed. And that observation told me that the timing of my work was wrong. The soil was too cold and simply not ready to be worked yet. And you could know that through the colour and temperature of the topsoil. If the temperature of the topsoil is below eight degrees Celsius, it is too early to be harrowed. Then the soil compaction effects set right away, which will show for the rest of the year. My dad always used to say that you should be able to see a bit of green weeds before you harrow, and I have experienced that to be correct. I have tried harrowing too early sometimes, and that has turned out badly, since I had not inspected the lands properly before. I have learned that you must give it time to look for the right thing.”

In this empirical excerpt, the farmer illustrates the learning practice of sensing the land as a slow and attentive learning process that integrates both a sustained sensory search or surveying of the local natural environment as well as a responsive openness to problematic situations and moments of disjuncture. Rather than passively acquiring sensory impressions, the farmer describes the learning practice of sensing the land in terms of "constantly gathering information" about the land by slowing down the flow of sensory impressions and "looking for the right thing." This highlights that the farmers' lifelong environmental learning process involves the act of purposefully directing one's sensory attention toward the land and persistently reflecting on why it appears and behaves as it does. This pattern is in line with an understanding of the learning practice of sensing the land as a slow and sustained sensory search or surveying of the local natural environment. However, at the same time, the account also shows that the learning practice of slowly and attentively sensing the land also entails the act of embracing a responsive openness to problematic situations

and moments of disjuncture. For instance, when the farmer describes how it suddenly felt like the tractor was "floating" or struggling to push through the topsoil while harrowing, the disjunctures in the everyday flow of environmental and agricultural experience are not ignored but rather treated as meaningful learning opportunities. In this way, the sensory attentiveness is not expressed in terms of a deliberate sensory surveying of the land, but rather through a cultivated sensitivity towards the sensory anomalies that may arise throughout the course of everyday practice. Taken together, this suggests that the learning practice of sensing the land consists of both a slow and sustained sensory search or surveying of the local natural environment as well as an openness to problematic situations and disjuncture.

The empirical observation that the farmers are slowly and attentively sensing their different farmlands for the purpose of grasping and comprehending their inherent physical transformation and composition is theoretically warranted. Dewey was very "aware of the need to slow down the interval between thought and action" (Rodgers 2002:852), as he argued that "slowness and depth of response are intimately connected" since "time is required in order to digest mind impressions and translate them into substantial ideas" because "the depth to which a sense of the problem, of the difficulty, sinks, determines the quality of the thinking that follows" (Dewey 1933:38). Conceptually, this means that in order "to perceive, one must really look, take in the qualities" (Uhrmacher 2009:624) in the sense of "spending enough time with the data of an experience, with the texture and density and grain of it, so that it can emerge in all its complexity" (Rodgers 2002:854). Consequently, it is then first in the slowing down that we can begin to discover what it is that we already know or do not know by experiencing the "rhythm and regularity" in the "sense of things as belonging or not belonging of relevancy" (Dewey 1933:198). Educationally meaningful aesthetic experiences encompass thus "enhanced sensuous experience of the environment by relating to it" (Østergaard 2017:569) by letting the sensory "impressions sink and accumulate" so that the subsequent thinking might be "done at a deeper level of value than with a slighter load" (Dewey 1933:37-38). Accordingly, by slowing down their flow of sensory impressions and attentively

directing their sensory attention to different aspects in the surrounding local natural environment, the farmers appear thus to be able to cultivate and develop various kinds of educationally meaningful aesthetic experiences by giving “careful and exact attention to all the qualities inherent in [their] sense experience” (Dahlin 2001:454). Presuming that “the most fundamental injunction for learning is to pay attention” (Hart 2014:10), the farmers must undoubtedly be receptive and “viscerally, cognitively, imaginatively, and emotionally attentive” to their different farmlands (White 2013:100). To be able to cultivate their local land knowledge, they must thus arguably “attend simultaneously to both the minute details and [the] wholeness” (Byrnes 2012:24) to be able to capture the “nuanced details and complex relationships” embedded within their farmlands (Bresler 2013:25).

These empirical insights fundamentally echo previous research within the educational subfield of environmental learning. Prior studies have argued that the slowing down of the flow of embodied interactions and attentively directing attention to different aspects of the local natural environment are key means in order to simulate the environmental learning process (Payne & Wattchow 2009). Simply put, “if being in the world means being through our senses and bodies, then there is a need for an awareness of how we are in the world with our bodily senses and how the world discloses itself to us through the senses” (Østergaard 2017:574). These empirical results align thus well with previous research within the educational subfield of environmental learning. However, to my knowledge, this educational dimension has not previously been empirically observed in connection with farmers’ lifelong learning.

## STORYING THE LAND

Although aesthetic experiences are an essential part of the experiential learning process, they do not solely constitute the particular pathway through which experiential learning ontologically transpires and occurs. Theoretically, Dewey (1938:79) argued that “observation alone is not enough” when it comes to experiential learning since “mere activity does not constitute experience” (Dewey 1930:163)

because “no experience having a meaning is possible without having some element of thought” to it (Dewey 1916:107). Dewey then reasoned that the experiential learning process transpires through two different forms of reflective experience, whereby the learner actively processes the content of their different aesthetic experiences by engaging in different forms of reflective practices (Dewey 1933, 1938).

The first form of reflective experience that Dewey theoretically suggests is analytical thinking, which could be perceived and understood as the “systematic, rigorous, disciplined way of thinking” that “moves a learner from one experience into the next with a deeper understanding of its relationships with and connections to other experiences and ideas” (Rodgers 2002:844). Simply put, analytical thinking constitutes thus the “active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends” (Dewey 1938:9). It refers fundamentally to the systematic form of thinking that moves the learner from a state of perplexity and disequilibrium to a harmonious state of settledness and equilibrium (Dewey 1916). This is by transforming “a situation in which there is experienced obscurity, doubt, conflict, disturbance of some sort, into a situation that is clear, coherent, settled, harmonious” (Dewey 1933:195).

Based on the empirical data, the educational significance of analytical thinking cannot be dismissed with respect to the lifelong environmental learning process of farmers in northern Sweden. Throughout the empirical data, the farmers consistently emphasised how their analytical reflection and experience sharing within their different local agricultural communities have been key to their continuous redevelopment of local land knowledge. Hence, the farmers' learning practice of storying the land could thus be defined as their collective analytical thinking about how nature and agriculture continuously interconnect and are reforming a particular plot of farmland. In other words, the learning practice of storying the land constitutes the farmers' deliberate analytical practice of making sense of the continuous transformation of their different farmlands by collectively analysing and reflecting upon various kinds of environmental and agricultural experiences within their different local agricultural communities.

However, as outlined below, the empirical data also suggest that the farmers' learning practice of storying the land primarily takes the form of intergenerational and intercommunal modes of analytical thinking. To fully capture this variation inherent within the learning practice of storying the land, further exploration of these intergenerational and intercommunal dimensions is thus undoubtedly required.

### STORYING ACROSS GENERATIONS

The first way that the learning practice of storying the land can be characterized and understood, based on the empirical data, is as an intergenerational mode of learning, whereby the farmers collectively analyse their different farmlands across multiple generations of agriculturalists who live and work within the same local agricultural context. This intergenerational dimension of the farmers' learning practice of storying the land is, for instance, vividly illustrated in the following empirical excerpt, whereby one of the farmers conveys the educational significance of engaging in intergenerational reflection and experience sharing.

“When the farmstead was modernized many years ago, I remember how my grandfather felt that he was no longer practically needed in the daily operations here on the farmstead. So, my parents then gave him the important role as a mentor and advisor for us, the younger ones, here on the farmstead. He could explain why things were done, and not just how. He could often solve problems that we faced thanks to his knowledge of these lands. For example, I remember when we took over a new field from the nearby farmstead. At first glance, it looked to be in very good condition. But my grandfather immediately said that there was a wet patch in the middle of the field, and if we were to drive there, we would get stuck, since it was a cold spring underneath. And he was right, as we experienced the hard way that that was true. That kind of local knowledge is something that you learn from experience and must be passed down. And the same also goes for crop cultivation. He knew

which fields handled drought better than others, and which needed rain. That comes from living with these lands, understanding the soil, and knowing how the landscape varies. That is not something that you simply can read your way into. That comes from the experiences that you share and acquire over time. As a farmer, you must remember what you have done and seen, and think about why some fields yield well, while others do not. And that is something I feel very blessed to have learned from my grandfather. He was always there for us when we had questions, and it was always rewarding to discuss with him and hear his point of view on the daily operation. For me, that has been important. Without our conversations, I would not have known these lands in the same way.”

In this empirical excerpt, the farmer emphasizes the educational significance of sharing and reflecting upon different kinds of environmental and agricultural experiences across multiple generations of agriculturalists. It is argued that by deliberately analysing the character and transformation of the local natural environment across different generations of farmers, the locally held knowledge and understanding of the surrounding farmlands can thus gradually grow and redevelop over time. This intergenerational dimension of the learning practice of storying the land is particularly evident in the above standing empirical excerpt in that the farmer's local land knowledge is described as having been actively co-produced through the reflective and analytical conversations with the grandfather. He is portrayed as someone who could "explain why things were done, and not just how," and solve different questions and problems thanks to his intimate knowledge and experience of the local farmlands. When the farmer notes that "without our conversations, I would not have known these lands in the same way", it fundamentally underscores that the farmer's local land knowledge is not only shaped and formed by individual analytical thinking, but also the social reasoning and reflection based upon previous generations' horizons of understanding. The grandfather's knowledge and experience of "which fields handled drought better than others, and which needed rain" is then described

to provide a long-term temporal understanding of the intimately intertwined natural and agricultural histories of the local farmlands. By "knowing how the landscape varies," the farmer suggests that the grandfather's knowledge and experiences provide a template for knowing "why some fields yield well, while others do not." Hence, the learning practice of storying the land emerges thus as a relational and historically situated learning process, whereby environmental and agricultural experiences continuously become embedded within longer temporal horizons and bodies of knowledge through the practice of intergenerational reflection and experience sharing.

Throughout the empirical data, the farmers consistently described how their collective reflection and experience sharing across different generations of agriculturalists have provided them with meaningful learning opportunities. This is because they argue that these conversations tend to help them perceive and understand their different farmlands as spaces filled with deeply intertwined and interconnected natural and agricultural histories. Although the farmers primarily emphasize their everyday conversations with their parents as particularly educationally meaningful, other family members, such as grandparents, children, aunts and uncles, are also stressed as influential figures. This is in the sense that they also have a long-term temporal understanding of the local natural environment, which enables critical reflections regarding the long-term composition and transformation of the local farmlands. This intergenerational aspect of the farmers' learning practice of storying the land is, for instance, also evident in the following empirical excerpt, in which one of the farmers describes how their foundational understanding of the local woodlands has been inherited from their parents.

"You know, the forest requires you to always look at the bigger picture. On the fields, the time horizon might be a couple of months, but with the forests, it is rather one hundred years. This means that you must think about the long-term sustainability of your woodlands all the time and try to understand the decisions from previous generations. In one sense, you then inherit your forest plan. What previous generations did, or did not

do, has a major impact on what you can do yourself. And on top of that, you then also have new regulations that arrive and change the preconditions for forestry. In this sense, you must both have experience and the ability to look far ahead in time. You cannot see the different parts of the farmstead as separate from each other. How I manage the forests then affects the fields and so forth. Each part depends on the other.”

“But how have you learned to see that?”, I asked.

The farmer replied, “That has come with experience, but also by talking with my parents. You know, each farm is unique, and you then need to understand its own farming windows and how the different parts of your land connect. When your lands do not behave as you expect them to do, the experience of those who have gone before you are very important. Their knowledge is the basis of your understanding, so you must listen to them. But you must also try to reevaluate what you think you know and have been taught when you run into problems. The knowledge that you have inherited is often sufficient, but when you encounter problems, you sometimes also need to be critical and try to figure things out yourself. You must make it your own. Today, it is not the same farm it was a hundred years ago.”

What the farmer here brings our attention to is the educational value of analytical thinking across multiple generations of agriculturalists in order to be able to develop local land knowledge. This aspect is telegraphed in the above standing empirical excerpt in the sense that the farmer's local land knowledge is described as “inherited” and profoundly shaped and formed by the analytical conversations and dialogues with the parents. When the farmer says that “the experience of those who have gone before you is very important” and that “their knowledge is the basis of your understanding” since you need to understand “the farming windows and how the different parts of your land connect,” it highlights the significance of cultivating an understanding of the many intertwined and interconnected natural and agricultural histories of the local farmlands. But, as expressed above, the learning practice of storying the land across generations is not just a

matter of intergenerational knowledge and experience exchange. When the farmer says that you must be "critical" and "try to reevaluate what you think you know and have been taught when you run into problems," it conveys how the learning practice is much more than a passive transmission of knowledge. It arguably also points to an active and analytical process of sharing, comparing, revising, and reassessing past and present environmental and agricultural experience in light of each other in an iterative sense. In other words, the learning practice of storying the land could thus be understood as a collective mode of analytical thinking about how nature and agriculture continuously interconnect and are reforming a particular farmland across long-term temporally unfolding natural and agricultural phases. The main point raised in this section is thus that the learning practice of storying the land partly takes the form of intergenerational analytical thinking, whereby the farmers collectively reflect and share different environmental and agricultural experiences across multiple generations of agriculturists belonging to the same agricultural context.

The empirical observation that the farmers collectively share and reflect upon various kinds of environmental and agricultural experiences across multiple generations of farmers has arguably strong theoretical merits. "As a collective, people gain the deepest understanding of problems by exploring how explanations resonate and hold true for a multitude of experiences" (Holdo 2023:16). Dewey (1916, 1930) argued that thinking without having to express what one thinks is an incomplete act of reflective experience (Rodgers 2002:856). He consistently claimed that "when individuals communicate with one another, all natural events are subject to reconsideration and revision" (Dewey 1929:166) because "having to express oneself to others, so that others truly understand one's ideas, reveals both the strengths and the gaps in one's thinking" (Rodgers 2002:856). This is because to "formulate requires getting outside of the experience, seeing it as another would see it, considering what points of contact it has with the life of another so that it may be got into such form that he can appreciate its meaning" (Dewey 1930:6). The practice of analytical thinking builds thus upon the act of formulating "the relationships and continuities among the different elements of an experience, between that

experience and other experiences, between that experience and the knowledge that one carries, and between that knowledge and the knowledge produced by thinkers other than oneself" (Rodgers 2002:848). Hence, through analytical thinking the horizon of understanding becomes thus slowly expanded (Rodgers 2002) since it consists of a "conscious and voluntary effort to establish belief upon a firm basis of reasons" (Dewey 1933:6), and "in so far as we are partners in common undertakings, the things which others communicate to us as the consequences of their particular share in the enterprise blend at once into the experience resulting from our own special doing" (Dewey 1916:186). Theoretically, collective reflection could thus be regarded as a crucial component of the experiential learning process (Loughran 2010:407) since "it enlarges and enlightens experience; it stimulates and enriches imagination; [and] it creates responsibility for accuracy and vividness of statement and thought" (Dewey 1930:7). Accordingly, by collectively sharing and reflecting upon various kinds of agricultural and environmental experiences across multiple generations of agriculturalists, the farmers appear thus to be able to cultivate and redevelop an intimate understanding of how the many natural and agricultural histories that continuously transpire and unfold on their different farmlands are connected over time.

These empirical results notably resonate with previous research. Prior studies have indicated that the lifelong learning of farmers often builds on the practice of sharing and discussing different kinds of environmental and agricultural experiences with other farmers belonging to the same local agricultural community (Dooley 2021; Wood et al. 2014; Knapp & Fernandez-Gimenez 2008, 2009). Consequently, farmers' networks are, therefore, often perceived by former research to be one of the most vital educational factors and resources underpinning farmers' lifelong learning (Morgan 2011; Isaac et al. 2007; Dolinska & d'Aquino 2016). This is mainly because prior studies have shown that farmers commonly tend to view other local farmers as their main source of information and advice (Oreszczyn et al. 2010; Wood et al. 2014; Lwoga et al. 2010; Okwu & Daudu 2011) due to their perceived practical experience under similar and comparable environmental and agricultural conditions as themselves (Šūmane et al.

2018; Skaalsveen et al. 2020; Ingram 2010; Dooley 2021). Hence, the empirical observation that the farmers' lifelong environmental learning process partly takes the form of intergenerational analytical thinking aligns thus well with previous research.

### STORYING ACROSS COMMUNITIES

The first way that the learning practice of storying the land can be characterized and understood, based on the empirical data, is as an intercommunal mode of learning, whereby the farmers collectively analyse their different farmlands together with other local farmers belonging to neighbouring local agricultural communities. This intercommunal dimension of the farmers' learning practice of storying the land is, for instance, illustrated in the following empirical excerpt.

"Tell me more about some experiences that have been particularly meaningful for your learning as a farmer", I asked.

The farmer then responded, "I have realized that you cannot rely only on your formal education. You must also learn by listening, feeling, and trying out things for yourself. But when I began to work as a farmer, I especially gained a lot of knowledge from all the other, older farmers around here. My parents were, of course, a big part of that, but the other farmers who lived here in the village were also of great help. They had received their knowledge from previous generations and then, by themselves, advanced it further. And they then passed it on to me, which early on helped me see how my farmlands are connected and how I should take care of them. It is important to know how your fields have been worked previously, and how their timings differ, and by thinking and talking with the old timers, I learned to know what to look for."

In this empirical excerpt, the farmer emphasizes the educational significance of shared analytical thinking with other farmers belonging to nearby local agricultural communities. The farmer argues that by deliberately discussing and analysing the local farmlands together

with more experienced agriculturalists belonging to nearby local agricultural communities, the local knowledge and understanding of how nature and agriculture continuously interconnect and are reforming a particular plot of farmland could thereby be further developed and enhanced. This intercommunal dimension of the learning practice of storying the land is particularly evident in the above standing empirical excerpt in the sense that the local land knowledge is described as not being produced in isolation, but through the acts of listening, comparing, and integrating various kinds of insights and experiences from other local farmers. When the farmer says that the older farmers "helped me see how my farmlands are connected and how I should take care of them," it highlights the fact that farmlands in many respects are parts of larger natural and agricultural systems. By "thinking and talking with the old timers", these broader natural and agricultural systems could then be conceptualized by the farmer through the collective analytical practice of collecting, comparing, and reflecting upon various kinds of environmental and agricultural experiences with neighbouring farmers. In other words, the learning practice of storying the land across communities becomes thus a way for the farmers to situate their environmental and agricultural experiences within a wider field of accumulated knowledge about the inherent dynamics of their surrounding natural and agricultural landscape.

Throughout the empirical data, the farmers recurrently stressed that their collective reflection and experience sharing with other local farmers belonging to nearby local agricultural communities have been key to their lifelong environmental learning process. This is because they argue that these conversations commonly tend to enable them to perceive their different farmlands as places deeply connected to the surrounding natural and agricultural landscape. One of the farmers, for instance, argued that by comparing different drainage strategies with his neighbouring farmers, it became possible to visualise the relationship between tree species and soil structure across his different farmlands. Another example of this intercommunal aspect of the farmers' learning practice of storying the land can also be found in the following empirical excerpt, in which one of the farmers describes

how the ongoing discussions with neighbouring farmers are key to their lifelong environmental learning process.

“Previously, there lived many more farmers around the village. That was very valuable because you could get help from others, and you know that they also cared for these lands. You could compare what the others had done and experienced and then learn from it. As you know, we are now very close to the Arctic Circle, which makes this place one of the most northernmost farmsteads in the world. And that brings special challenges, especially for crop production. Something that I have learned throughout the years is that you should not try to sow so tightly, cultivate grains that become ripe early in the summer, and be careful not to put too much fertilizer on the ground. And that is something that I have learned and realized through many discussions. You learn those things together with other farmers. Everything that you talk about is put into your experience storage, which you then could use. It is therefore important to have someone to talk to and discuss your different experiences with. Although the farmers down at the river do not fully understand our unique agricultural conditions, they can absolutely bring valuable ideas and experiences.”

The farmer in this empirical excerpt also highlights the educational significance of analytical thinking among different agriculturalists belonging to nearby local agricultural communities. This intercommunal aspect of the learning practice of storying the land is particularly telegraphed in the above standing empirical excerpt when the farmer says that it is “important to have someone to talk to and discuss your different experiences with”, because “everything that you talk about is put into your experience storage.” This suggests that the learning practice of storying the land across various local agricultural communities functions as a way for the farmers to situate their different environmental and agricultural experiences within a wider field of accumulated local land knowledge. When the farmer further exclaims that “although the farmers down at the river do not fully understand our

unique agricultural conditions, they can absolutely bring valuable ideas and experiences," it highlights that the farmers treat the similarities and differences between different environmental and agricultural experiences across different farmsteads as analytical resources. The divergence is not treated as a hindrance for their learning, but rather as a reflective means, in the sense that the contrasts may stimulate further reflection and bring certain patterns and dimensions of the surrounding natural and agricultural landscape into a new light. The main point raised by this section is thus that the learning practice of storying the land also seems to transpire and occur through intercommunal modes of analytical thinking between different farmers belonging to nearby local agricultural communities.

The empirical observation that the farmers collectively share and reflect upon various kinds of environmental and agricultural experiences across different local agricultural communities holds arguably strong theoretical relevance. Dewey argued that all reflections "depend upon the general state of the culture" (Dewey 1933:96) since it is through the collective "recognition of definite relations of interdependence between considerations previously unorganized and disconnected" that the "discovery and insertion of new facts and properties" (Dewey 1933:81) that binds "isolated items into a coherent single whole" can transpire and occur (Dewey 1933:80). The practice of analytical thinking becomes thus the act of "relate things to one another" (Dewey 1933:57) since "suggestions must be organized" and "arranged with reference to one another and with reference to the facts on which they depend for proof" (Dewey 1933:39). Hence, to enable sound and rigorous analytical thinking and reflection one must thus "be conscious of the layers of culture weaved in the observations" (Miettinen 2000:65) since "a large accumulation of data may fail to suggest a proper conclusion because existing customs are averse to entertaining it" (Dewey 1933:20). Theoretically, this consequently implies that all forms of reflection must be "aimed at the discovery of facts" by the practice of "uncovering assumptions, the conceptual glue that holds our perspectives, meaning schemes, and habits of mind in place" (Brookfield 2010:216). When the farmers engage in intercommunal modes of reflection and experience sharing across different

local agricultural communities, they attempt thus to reach beyond the confines of their habitual thinking. They seek to embrace a “hospitality to new ways of seeing and understanding” (Rodgers 2002:860) in the sense of a willingness “to entertain different perspectives, coupled with an acceptance of the possibility of error even in the beliefs that are dearest” (Dewey 1933:30). In other words, by putting their preunderstanding and analytical thinking under social scrutiny, they are thus essentially framing their learning practice of storying the land not as any “blind acceptance of all kinds of ideas without intelligent critique” (Dewey 1933:30) but rather as a critical, reflective endeavour of acknowledging and managing “the limitations of one’s own perspective (Rodgers 2002:860). The farmers’ learning practice of storying the land emerges thus as a collective analytical and reflective endeavour “marked by acceptance or rejection of something as reasonably probable or improbable” (Dewey 1933:4) based upon the evaluation of “people’s capacity for holding assumptions that contradict each other” (Brookfield 2010:216).

These empirical insights fundamentally resemble previous research on farmers' lifelong learning. Prior studies have noted that neighbouring farmers must share their local knowledge and understanding of their different farmlands in order to be able to learn and understand them (Dale et al. 2012). This is because their different farmlands undoubtedly tend to be intimately tied and connected in multiple ways through the surrounding natural and agricultural landscape (Dale et al. 2012; Antrop & Van Eetvelde 2017). The empirical observation that the farmers’ lifelong environmental learning process builds upon the learning practice of storying the land across different local agricultural communities aligns thus well with former research.

## SHAPING THE LAND

Although the reflective experience of analytical thinking constitutes a vital means through which the experiential learning process occurs, it does not comprise the only way in which people gain different kinds of experiential knowledge or insights. Dewey argued that the interaction between an individual and the environment is not “merely

physical nor merely mental” (Dewey 1934:246). Theoretically, he claimed that there are “no intrinsic psychological divisions between the intellectual and the sensory” and “the emotional and ideational” and “the imaginative and the practical” (Dewey 1934:247). The second type of reflective experience that Dewey proposes is thus trial and error, whereby the given learner is presumed to learn by purposefully conducting various kinds of experiments with the world.

Etymologically, the two terms experience and experiment share the same linguistic root from Latin (Rodgers 2002). One of the first definitions of the concept of experience was very close to the modern meaning of experiment in the sense that it denoted something that is ‘tried’ and ‘put to the test’ (Rodgers 2002). Similarly, for Dewey, knowledge is also simply not whatever a person takes it to be (Holdo 2023). He consistently argued that objects of knowledge exist in the sense that we apprehend them rather than make them up, which implies that we learn as we discover and experiment with the world (Holdo 2023). Theoretically speaking, objects of knowledge are thus not in sufficient existence on their own prior to the act of discovery, since they first come into existence by the deliberate practice of interpreting them and making them part of our personal experience. Conceptually, this then implies that our practical experimentation within various kinds of real-life contexts and environments is ontologically essential to our experiential learning process (Holdo 2023).

Throughout the empirical data, the farmers frequently described how they have learned about their different farmlands by practically experimenting with them. They consistently highlighted that they often intentionally seek to produce various kinds of effects in the landscape in order to make their different farmlands display and reveal various things to them. Hence, the farmers' learning practice of shaping the land could thus be defined as their deliberate practical experimentation with their different farmlands through the process of trial and error. However, as outlined below, the empirical data also suggest that this learning practice primarily takes the form of systematic and collective forms of agricultural experimentation. To fully capture this dimension inherent in the learning practice of shaping the land, further exploration of these patterns is thus undoubtedly needed.

## SHAPING SYSTEMATICALLY

The first way that the farmers' learning practice of shaping the land could be portrayed and understood, based on the empirical data, is as a systematic mode of learning. This in the sense that the farmers are actively experimenting with their different farmlands in order to gain and acquire various kinds of insights about them. This systematic dimension of the learning practice of shaping the land is, for instance, displayed in the following empirical excerpt, whereby persistent and purposeful agricultural interventions are argued to be educationally beneficial for the lifelong environmental learning process.

The farmer pointed into the distance and said, "Over there, we have 15 acres of land that have caused me to learn a lot. Originally, the land was a huge bog. But many years ago, we decided to transform it into new farmland. And that was so much work. You cannot imagine! First, we had to survey the whole bog with a long metal pole to detect any large boulders. And fortunately, we did not find any. Hence, we then dug huge dikes to divert the water away from the bog. And then we naively thought that we just could cultivate the ground right away. But you see, former bogs are strange grounds, and we soon realized that they cannot be managed as other plots of land. Below the surface, they consist of intricate root systems that hold them together. Normally, in a traditional crop rotation, you usually till the soil every five years. But you cannot do that with former bogs since you will destroy the root systems and deplete them of their strength. Hence, we then naturally began to experiment, seeking to find different ways that we could enhance the stability of the land. We sowed seeds and tried to instil many different plants in the soil. And after a long process, we got the experience of how to do it. You know, we had to ask the land what it needed by experimenting. But you may not get your answers right away, so we learned that you must be attentive to how it responds."

"What you mean by asking the land", I responded.

The farmer said, "As a farmer, there is always a lot of learning by doing. You do things, waiting for the land to respond, and

depending on the answer, you then adjust your actions further. Every day, it is the same. What you essentially do is that you are asking the land what it needs, and then you give it what it wants. They cannot verbally tell you what they want. But they can react to what you are offering them. And thereby, you get to know them and learn what works for them and not. You live in that relationship. You just have to be strategic about what you want and how you ask. Either you do things you know work, or you have to do things that help you learn and test your knowledge. And knowing what to do comes from experience.”

In this empirical excerpt, the farmer emphasizes the educational significance of systematically experimenting with the land in order to be able to learn about its physical transformation and composition. The farmer argues that by methodologically launching different kinds of agricultural interventions that make the farmlands react and respond in different ways, it is possible to learn about them by observing and reevaluating the consequences and effects of the given agricultural experimentation. This is particularly evident in the above standing empirical excerpt in the sense that the farmer depicts the learning as a structured and cyclical process of intervention, observation, and adjustment. When the farmer says that "you do things, waiting for the land to respond, and depending on the answer, you then adjust your actions further," it highlights this iterative side of the learning practice of shaping the land. Theoretically, this arguably echoes the reflective experience of trial and error in the sense that “we simply do something and when it fails, we do something else and keep on trying until we hit upon something which works” (Dewey 1916:169–170) and through this practice that we then learn “that a certain way of acting and a certain consequence are connected” (Dewey 1916:170). This experimental approach is observable in the above standing empirical excerpt in the sense that the farmer claims that you get to know your lands by "learning by doing" in the sense of observing how "they react to what you are offering them." In this way, the farmers' learning practice of shaping the land could thus be understood as a systematic feedback-driven process in which their local land knowledge is gradually

produced through repeated experimental engagements with the land. Or as the farmer put it, "knowing what to do comes from experience."

Throughout the empirical data, the farmers consistently stressed that they had to deliberately experiment and purposely interact with their different farmlands in order to gain different insights about their inherent character, composition, and transformation. Some of the farmers, for example, described how a deliberate use of small-scale variation in land preparation and crop application has helped them understand how certain material variations and agricultural interventions continuously shape and form their different farmlands. Another example of this systematic dimension of the learning practice of shaping the land can also be found in the following empirical excerpt, whereby one of the farmers implicitly portrays how the sustained and long-term agricultural experimentation with the land has been key to the development of local land knowledge.

"Tell me more about how you have learned to understand your different farmlands the way you do", I asked.

The farmer thought for a moment and said, "It is difficult to describe, but it is something that grows from experience, when you have worked on the farm for a long time. After many years, you just know. You feel it. You start to see patterns and draw conclusions. You think about whether things make sense or not. This intuition, the feeling for the whole, comes from your life and upbringing on the farm."

"What do you mean?", I asked.

The farmer responded, "I'll tell you, if you are not curious about your different farmlands, you won't learn anything. But if you truly care about them, you will make an effort to understand what is happening to them. And I have learned that the hard way, through the experience of success and failure. It is often through my mistakes that I have realized what kind of farmlands I am dealing with here. It is the costly and labour-intensive mistakes that stick with you. That's when you start to clearly see what affects what. But many times, it takes a long time to realize what you have in front of you."

The farmer in this empirical excerpt also highlights the educational significance of systematically experimenting with the land in order to develop local land knowledge. The farmer asserts that by learning from "the experience of success and failure," the inherent character and transformation of the local farmlands then become comprehensible. This systematic aspect of the learning practice of shaping the land is particularly evident in the above standing empirical excerpt in that the farmer says that the local land knowledge is something that "grows from experience, when you have worked on the farm for a long time" and that you must "make an effort to understand what is happening to them". This speaks of a process whereby the local land knowledge is progressively formed through repeated agricultural interventions with the land, whereby the prolonged accumulation of experimental experiences gradually displays the relationship between nature and agriculture. The main point raised in this section is thus that the learning practice of shaping the land constitutes a systematic form of doing, trying, and undergoing that the farmers purposefully embrace and engage in to be able to perceive and comprehend the physical composition and transformation of their different farmlands.

The empirical observation that the farmers tend to systematically and methodologically experiment with their different farmlands has arguably strong theoretical merits. Dewey argued that all kinds of experiences could be regarded as "an aggregate of more or less isolated particulars" (Dewey 1930:389) since they "primarily consist of the active relations subsisting between a human being and his natural and social surroundings" (Dewey 1930:319-320). He claimed that when "connections are established between what happens to a person and what he does in response, and between what he does to his environment and what it does in response to him, his acts and the things about him acquire meaning" (Dewey 1930:320) and it is first then that "he learns to understand both himself and the world" (Dewey 1930:320). Theoretically, this then implies that "the material of thinking is not thoughts, but actions, facts, events, and the relations of things" (Dewey 1930:184) and "to turn the thing over in mind, to reflect, means to hunt for additional evidence, for new data" (Dewey 1933:13). The reflective experience of trial and error constitutes thus

“an act of searching, hunting, inquiring to find material that will resolve the doubt, settle and dispose of the perplexity” (Dewey 1933:12).

Hence, when the farmers seek to systematically experiment with their different farmlands, “the agriculturist is [thus] merely to judge of evidence and to act accordingly” (Dewey 1933:18) in the conscious dialogue and conversation between the subject and the situation (Clará 2015). As Dewey argued, “to plant seeds, to cultivate the soil, to harvest grain, are intentional acts, possible only to a being who has learned to subordinate the immediately felt elements of an experience to those values which these hint at” (Dewey 1933:15). In other words, “nature speaks a language which may be interpreted. To a being who thinks, things are records of their past, as fossils tell of the prior history of the earth and are prophetic of their future” (Dewey 1933:15). When the farmers describe that their learning practice of shaping the land builds upon a systematic approach to agricultural experimentation, they highlight thus that by deliberately interacting with their different farmlands, observing how they react and respond to different agricultural interventions, and then purposefully and thoughtfully reply to the results that they are given, they are thus able to determine the meaning and relationship between what they “do and what happens in consequence” (Dewey 1930:169). In other words, they emphasise the educational philosophy that “you cannot understand a system until you try to change it” (Ling Lo 2012:86).

These empirical insights echo the results of previous research. Prior studies have shown that the lifelong learning of farmers often takes the form of doing (Šūmane et al. 2018; Knapp & Fernandez-Gimenez 2008, 2009), experimenting (Milestad et al. 2010a), and problem-solving on different farmsteads (Ingram 2010; Baars 2010). Several studies have indicated that farmers' local knowledge and understanding of their different farmlands tend to emerge from their direct, experiential engagement with their surrounding local natural environment (Thomas et al. 2020; Krzywoszynska 2016). Moreover, experiential, interactive, and participatory learning experiences (Randall 2012; Jose et al. 2017; Clover et al. 2013), particularly those grounded in hands-on activities (Dillon et al. 2006; Kossack & Bogner 2012; Randall 2012), have also been shown by former research to be

especially beneficial and advantageous for the environmental learning process. The empirical observation that the farmers are systematically and methodologically experimenting with their different farmlands align thus well with the commonly accepted notion that by continuous interactions and observations of the local natural environment, farmers tend to be able to acquire knowledge about how their various farmlands normally change and react in response to different environmental circumstances and interventions (Leung & Darnhofer 2021; Ingram 2010; Knapp & Fernandez-Gimenez 2008, 2009).

### SHAPING COLLECTIVELY

The second way that the learning practice of shaping the land could be conveyed and understood, based on the empirical data, is as a collective mode of learning. This in the sense of a shared venture of agricultural experimentation together with other local farmers belonging to the same and neighbouring local agricultural communities. In the empirical excerpt below, one of the farmers depicts this collective dimension of the learning practice of shaping the land by bringing our attention to the educational significance of trying things out across different generations of agriculturalists.

“What would you say has been an important part of your learning about your different farmlands?”, I asked.

The farmer then answered, “The first thing that comes to mind is the fact that I was given a lot of responsibility early on when I was new as a farmer. When you are allowed to make mistakes and see the consequences of your actions, you learn a lot. You must work closely with your different farmlands and discover who they are before you learn how to manage them. I mean, it is no coincidence that many farms are passed down through generations. The experience that previous generations have is important to acknowledge. Otherwise, things might not work out. Learning the practical skills is the easy part. The difficult part is knowing what to do, when, and why. Then it is important to work with the more experienced. I

cannot tell you how many times we have come together to try something out here on the farmstead. When the land is not producing as expected, it can be a great resource to try things with the more experienced to figure out what works. They have the experience of the land and often know what a good way of proceeding can be and how you should and should not think about what is happening.”

In this empirical excerpt, the farmer accentuates the educational significance of collective agricultural experimentation for the ongoing redevelopment of local land knowledge. The farmer asserts that "you must work closely with your different farmlands and discover who they are before you learn how to manage them." In doing so, it is then critical, according to the farmer, "to work with the more experienced" as "they have the experience of the land and often know what a good way of proceeding can be and how you should and should not think about what is happening.” By collaboratively launching different kinds of agricultural interventions across multiple generations of agriculturalists, the farmer then suggests that the currently held local land knowledge can be further redeveloped and refined. Through joint ventures of agricultural experimentation, moments of uncertainty and disjuncture, such as "when the land is not producing as expected," can then be turned into a refined body of local knowledge and understanding of the local farmlands. In this way, the learning practice of shaping the land becomes thus a shared and distributed learning process in which the farmers' local land knowledge is continuously negotiated, adjusted, and strengthened through the locally shared and collaborative experimental engagements with the land.

Throughout the empirical data, the farmers recurrently depicted their collective agricultural experimentation as key to their lifelong environmental learning process. Although their collaboration with various family members and employees is highlighted the most, the farmers also conveyed that other local agriculturalists are important to collaborate with. This is because they are argued to have valuable perspectives, based on their divergent experience of the same natural and agricultural landscape. Another illustration of this collective

dimension of the learning practice of shaping the land is the following empirical excerpt, in which one of the farmers explains how collective agricultural experimentation with neighbouring farmers forms a fundamental part of the lifelong environmental learning process.

“Tell me more about your learning here on the farm”, I said.

The farmer thought for a moment and responded, “As I said, in practice, it has mainly been through learning by doing. You make mistakes, you learn, and try new things. It is that simple. You go out, and then you do it. You test things by yourself. But at the same time, you also need people to talk to. You know, a network of people with knowledge and experience. I have many friends here in the village whom I often visit and call to talk to, so that I can conduct industrial espionage.”

The farmer softly giggled and continued, “Jokes aside, you really need people to talk to when you try different things. They get your brain going since they have a different perspective. Whenever we want to try something new or understand something, we then try to come together so that we can work on the issue together. One of us might then try a certain approach, while another tries something else, and together we then usually figure out what works on these lands. But, of course, most of the time we are just confused together.”

The farmer in this empirical excerpt also frames the learning practice of shaping the land as a collective mode of agricultural experimentation. The farmer contends that the lifelong environmental learning process mainly has revolved around the practice of "learning by doing," building on the educational approach of trying new things and making mistakes. However, the farmer also alludes to the fact that you "need people to talk to when you try different things" in the sense of "a network of people with knowledge and experience" that can "get your brain going since they have a different perspective." When the farmer says that "whenever we want to try something new or understand something, we then try to come together so that we can work on the issue together", it speaks of a learning process whereby the local

land knowledge is gradually formed through collectively shared modes of agricultural experimentation. The main point raised in this section is thus that the learning practice of shaping the land also takes the form of a socially embedded process of trial and error.

The empirical observation that the farmers collectively engage in different kinds of agricultural experimentations to make their various farmlands reveal different aspects to them is theoretically reasonable. Dewey argued that the experiential environments that people are part of are vital for their learning since “all meanings are consequences of socially shared action” (Garrison 1999:291) in the sense that “comparison, without contrast, does not amount to anything logically” (Dewey 1933:89). He suggested that the reflective experience of trial and error in many ways is a social process in which people jointly try to solve different problems by creating and testing various hypotheses and ideas based on their collective repertoire of previous experiences (Egelandstad & Ness 2021). In this sense, to learn from the reflective experience of trial and error becomes a quest of making “a backward and forward connection between what we do to things and what we enjoy or suffer from things in consequence. Under such conditions, doing becomes a trying; an experiment with the world to find out what it is like; the undergoing becomes instruction, discovery of the connection of things” (Dewey 1930:164). Consequently, collective experiments are thus commonly acknowledged across former educational studies to be able to foster different forms of discovery learning (Misiko 2009). This is because shared and collective inquiries may enable people to learn from each other and identify new opportunities and hidden possibilities that otherwise might have remained unseen and unnoticed by the individual (Misiko 2009). When the farmers portray their learning practice of shaping the land as a collective undertaking, this is thus what they are basically pointing at. By collectively sharing the quest of experimenting with the land, they are creating an experiential learning environment that enables them to jointly form their local land knowledge since they can collectively cover more comprehensive and deeper ‘conversations’ with the land.

The experimental dimension of the lifelong learning of farmers is well documented and acknowledged in previous research (Šūmane et

al. 2018; Knapp & Fernandez-Gimenez 2008, 2009). Prior studies have shown that environmental learning fundamentally revolves around the creation, acquisition, and transformation of different forms of environmental experiences (Shutaleva 2023; Cincera et al. 2020) and that the ongoing accumulation of different forms of environmental experiences tends to enable farmers to understand how their various farmlands usually change and respond to different kinds of agricultural interventions and varying environmental conditions (Leung & Darnhofer 2021; Ingram 2010; Knapp & Fernandez-Gimenez 2008, 2009). However, the empirical insight is that farmers jointly and collectively embark on shared ventures of agricultural experimentation have not, to my knowledge, previously been demonstrated in connection to farmers' lifelong learning.

## SUMMARY OF THE RESULTS

Fundamentally, the empirical results show that the farmers' lifelong environmental learning process builds upon the three interrelated learning practices of sensing, storying, and shaping the land. Theoretically, these three learning practices could be thought of as echoing Dewey's different forms of aesthetic and reflective experience and also confirming many aspects of the already established theoretical understanding of farmers' lifelong learning. Conceptually, the learning practice of sensing the land could be argued to mirror Dewey's concept of aesthetic experience. The learning practice of storying the land could be reasoned to resemble Dewey's reflective experience of analytical thinking. And the learning practice of shaping the land could be thought to echo Dewey's reflective experience of trial and error.

The learning practice of sensing the land encompasses the farmers' continuous redevelopment of an embodied understanding of their various farmlands through different forms of sensory interactions with the surrounding natural and agricultural landscape. The learning practice can be defined as the farmers' deliberate production of aesthetic experiences through their ongoing multisensory interactions and engagements with their surrounding local natural environments. Specifically, the empirical inquiry also shows that the learning

practice could be characterized and understood as a systematic, slow, and attentive mode of learning. This in the sense that the farmers seem to slowly and methodically produce, embrace, and digest their multisensory impressions from their local natural environments to be able to comprehend the physical composition and transformation of their different farmlands. Simply put, their systematic sensing enables them to comprehend the recurring physical composition of their farmlands. In contrast, their slow and attentive sensing allows them to apprehend the material nuances of the local natural environment. Theoretically, these empirical insights strengthen previous research in the sense that they confirm the commonly held idea that farmers' lifelong learning often builds upon direct and multisensory interactions with the surrounding natural and agricultural landscape.

The learning practice of storying the land contains the farmers' deliberate analytical practice of making sense of the continuous transformation of their different farmlands by collectively analysing and reflecting upon various kinds of environmental and agricultural experiences within their local agricultural communities. The learning practice can be defined as the farmers' collective analytical thinking about how nature and agriculture continuously interconnect and are reforming a particular plot of farmland. Furthermore, the narrative study also indicates that this learning practice primarily takes the form of intergenerational and intercommunal modes of analytical thinking. This in the sense that the farmers share, analyse, and renegotiate their local knowledge, experience, and understanding of their different farmlands across several generations of agriculturalists and between different local farmers who belong to neighbouring local agricultural communities. In a nutshell, the intergenerational mode of analytical thinking enables the farmers to 'vertically' comprehend the many natural and agricultural histories of their different farmlands as deeply interconnected and entangled conditions and transformations over long periods of time. In contrast, the intercommunal mode of analytical thinking allows them to 'horizontally' view the many natural and agricultural histories of their different farmlands as aspects of larger trends and patterns within the local landscape. Theoretically, these empirical results then give support for former research in terms

of confirming the notion that the lifelong learning of farmers often revolves around the social learning and reflection that continuously transpires and occurs within different local agricultural communities.

The learning practice of shaping the land constitutes the farmers' practical agricultural experimentation with their different farmlands. The learning practice can be defined as the farmers' deliberate, practical experimentation with their different farmlands through the process of trial and error. Particularly, the narrative inquiry also suggests that this learning practice mainly takes the form of a systematic and collective mode of agricultural experimentation. This in the sense that the farmers launch different kinds of agricultural interventions on their various farmlands in order to make them reveal different sides and aspects. The systematic shaping enables them to intentionally expose the relationship between nature and agriculture in the development of a particular farmland. In contrast, the collective shaping allows them to evaluate how these relationships make sense across a multitude of instances and experiences. These empirical insights confirm previous research in the sense that farmers' lifelong learning has often been shown to revolve around the farmers' doing, experimenting, and problem-solving on their different farmsteads.

Overall, the empirical results thus show that the farmers' lifelong environmental learning process emerges through the learning practices of sensing, storying, and shaping the land, which respectively emphasize sensory perception, reflection, or experimentation within the lifelong environmental learning process. The observation of these learning practices within the empirical data then arguably confirms that the lifelong learning of farmers in northern Sweden is deeply rooted in multisensory engagement with the local natural environment, social reflection and experience sharing with other local farmers, and hands-on experimentation.

## DISCUSSION

This sixth chapter aims to discuss the empirical results, which show that the farmers' lifelong environmental learning process is underpinned by the learning practices of sensing, storying, and shaping the land. The primary objective of this chapter is to convey what characterizes the farmers' lifelong environmental learning process and examine how it may be facilitated and supported in times of climate change. Hence, this chapter seeks thus to provide a holistic understanding of the lifelong environmental learning of farmers in northern Sweden by discussing the overall picture emanating from the empirical results. In other words, in a metaphorical sense, discuss how the underlying streams, currents, and tributaries of sensing, storying, and shaping the land collectively integrate and interweave into the overall flow of the river known as farmers' lifelong environmental learning.

The first section argues that the lifelong environmental learning process of farmers in northern Sweden is characterized by an integration of body and mind, as well as a deep embeddedness within specific geographical contexts and local agricultural communities. The same section also makes the argument that the farmers' various habits both function as educational resources and constraints within their lifelong environmental learning process. Thereafter, the second section summarizes the theoretical contribution of the empirical results to the emerging educational subfield on farmers' lifelong environmental learning. The third section then suggests that, in the context of climate change, supporting farmers' lifelong environmental learning requires strengthening their sensory engagement with their local natural environments, fostering their ability to exchange and reflect upon various kinds of environmental and agricultural experiences within their local agricultural communities, and enhancing their capacity to conduct diverse forms of on-farm experimentation. Thereupon, the fourth

section discusses how the formal agricultural education of farmers may be enhanced in light of the empirical results. Finally, the fifth section outlines several directions for further research, highlighting some key areas where further educational research is especially warranted.

## CHARACTERISTICS OF FARMERS' LIFELONG ENVIRONMENTAL LEARNING

Conceptually, the lifelong environmental learning of farmers in northern Sweden could be perceived and understood as comprising four distinct key characteristics. Firstly, the learning process seems to be best conceptualized as a holistic mode of learning that integrates body and mind. Secondly, the learning process also appears to be deeply embedded within different local agricultural communities. Thirdly, the learning process could also be thought of as inherently situated and place-based, grounded and embedded within different geographical places. Fourth and finally, the learning process also seems to be shaped by the farmers' various habits, which arguably both function as educational resources and constraints within their lifelong environmental learning process. In the sections below, these four characteristics will be further elaborated and explored.

### LEARNING THAT INTEGRATES BODY AND MIND

The first characteristic of the farmers' lifelong environmental learning process is that it can be conceptualized and understood as a holistic mode of learning that integrates body and mind. As the empirical results show, the farmers' lifelong environmental learning process appears to be rooted in the three interrelated learning practices of sensing, storying, and shaping the land, which theoretically could be understood as three different forms of aesthetic and reflective experience. Considering that aesthetic and reflective experiences are intimately interconnected and intertwined conceptually (Dewey 1934; Quay & Seaman 2013; Quay 2020), the learning practices of sensing, storying, and shaping the land could thus consequently be thought of as deeply interwoven and entangled modes of learning.

When the farmers engage in their learning practice of sensing the land, they essentially seek to cultivate different forms of aesthetic experiences that enable them to perceive the material composition of their different farmlands. By actively attending to different kinds of seasonal rhythms and material shifts in the surrounding landscape, they subsequently develop a situated, embodied understanding of what their local natural environment physically holds and contains. The sensory impressions emanating from their aesthetic experiences are then reinterpreted and analysed in the light of their prior knowledge and experience through their learning practice of storying the land. By situating their embodied understanding of their different farmlands within longer temporal horizons, wider geographical contexts, and larger bodies of knowledge, they then subsequently develop a situated and place-based understanding of how their different farmlands usually change and transform over time in response to various kinds of natural and agricultural shifts and changes. Moreover, when the farmers engage in their learning practice of shaping the land, they deliberately also launch different kinds of agricultural interventions for the purpose of uncovering different aspects of their various farmlands. By observing how their different farmlands react and respond to different environmental alterations, they then subsequently produce a situated understanding of what their different farmlands materially contain, and how they shift and change in response to different kinds of natural and agricultural processes and conditions.

Although this kind of depiction partly displays the learning practices of sensing, storying, and shaping the land as three distinct aspects of the farmers' lifelong environmental learning process, they theoretically do not transpire independently or sequentially from one another. Aesthetic and reflective experiences are thought to be dialectically related in the sense that each form of experience necessarily involves and transforms the other (Quay & Seaman 2013), which consequently means that the farmers' learning practices of sensing, storying, and shaping the land cannot function in isolation, as each necessarily draws upon and reconfigures the others. In other words, sensing without storying and shaping produces merely episodic and unintegrated sensory impressions. Storying without sensing and shaping

simply generates abstract reflections detached from the material reality. And shaping without sensing and storying undoubtedly risks becoming purely instrumental, in the sense of a routinized activity without the capacity to produce or deepen knowledge, experience, or insight. Theoretically, the lifelong environmental learning process of farmers in northern Sweden appears thus to precisely emerge at the integration of embodied and cognitive modes of learning through the continuously ongoing interplay between the different learning practices. Metaphorically, the different aesthetic experiences produced by the learning practice of sensing the land constitute thus fundamentally the soil from which the reflective experiences generated by the learning practices of storying and shaping the land grow and continue to be rooted over time throughout the farmers' everyday lives, which consequently implies that the farmers must always "grip in order to grasp" (Szczepanski 2025:208) their different farmlands.

Understanding the farmers' lifelong environmental learning process as a holistic mode of learning that integrates body and mind is arguably reasonable with respect to Dewey's theoretical framework of experiential learning. Throughout his writings, Dewey (1928, 1938) recurrently challenged the idea "that mind and body are separate" (Hodkinson et al. 2008:38) and argued that "many of the categories in dualistic pairs are actually operationally co-dependent" (Bleazby 2007:32). From a pragmatic point of view, "we do not have two entities or substances, body and mind, that somehow have to come into relation to each other for a human being to exist. Instead, 'mind' is an emergent process, never separate from the body" (Johnson 2006:48). Consequently, Dewey (1902, 1922) then suggested that the experiential learning process "is thoroughly practical and involves not simply the human mind, but the living human being in continuous interaction with its environment" (Hodkinson et al. 2008:38).

However, this holistic conceptualization of the farmers' lifelong environmental learning process undoubtedly challenges the seemingly narrow theoretical lenses within previous research. Former studies have primarily sought to understand the lifelong learning of farmers as either an embodied (Leung & Darnhofer 2021; Krzywoszynska 2016) or cognitive learning process (Dooley 2021; Skaalsveen

et al. 2020; Thomas et al. 2020). Notably, few studies have previously sought to examine and conceptualize farmers' lifelong learning as a holistic learning process that integrates both body and mind. Hence, presuming that the farmers' continuous redevelopment of local land knowledge requires both the learning practices of sensing, storying, and shaping the land in order to be able to take place and transpire in their everyday life, further theoretical advancements considering the lifelong environmental learning process of farmers must thus arguably seek to extend beyond the theoretical divide of body and mind.

#### LEARNING EMBEDDED IN LOCAL AGRICULTURAL COMMUNITIES

The second characteristic of the lifelong environmental learning process of farmers in northern Sweden is that it can be perceived and understood as a holistic mode of learning deeply embedded within different local agricultural communities. As Dewey (1938) argued, although the process of experiential learning, to some degree, is an individual phenomenon, it is also deeply rooted in different social milieus.

When the farmers engage in their learning practice of sensing the land, they fundamentally aim to uncover different aspects of their various farmlands by developing an embodied understanding of their inherent physical and material composition. At first glance, this may appear to be a purely individual mode of learning, but this is not necessarily the case from a theoretical standpoint. The environmental cues that the different farmers detect through their various sensory engagements are also profoundly conditioned by the different social norms and traditions that can be found within their local agricultural communities. Arguably, their ongoing redevelopment of different forms of aesthetic experiences is always located within a local web of social norms, which subsequently shape and form how they seek to embodiedly comprehend their different farmlands through their various senses. Hence, the learning practice of sensing the land could thus be understood as a form of learning that is deeply embedded within different local agricultural communities. It builds on individual sensory engagements while, at the same time, being anchored and conditioned by different social norms.

Moreover, the farmers' learning practice of storying the land could also be thought of as being deeply embedded within different social contexts. When interpreting and making sense of their aesthetic experiences of their different farmlands, the empirical results show that the farmers engage in intergenerational and intercommunal forms of analytical thinking, in the sense of trying to understand their different environmental and agricultural experiences in relation to the collectively held body of local land knowledge. This arguably makes the learning practice of storying the land a reflective mode of learning deeply connected to the local social milieu.

Furthermore, the farmers' learning practice of shaping the land could also be thought of as being deeply anchored within different local agricultural communities. When the farmers conduct their various agricultural interventions on their different farmlands, they basically seek to generate different kinds of environmental consequences, which are then used to inform their ongoing redevelopment of local land knowledge. The empirical results also suggest that these agricultural experimentations do, in fact, also hold a social dimension in the sense that the farmers' agricultural experimentation transpires in collaboration with other local farmers. In this way, the learning practice of shaping the land combines thus the 'individuality' found within the farmers' embodied transactions with their different farmlands and the 'collectiveness' found within the analytical thinking that continuously transpires within their local agricultural communities.

Viewing the farmers' lifelong environmental learning process as a mode of learning that is deeply embedded within different local agricultural communities has arguably theoretical merits with regard to Dewey's theoretical framework of experiential learning. This is because reflective experiences always exist at the intersection of the social and individual worldview since objects of knowledge always must be understood according to "their own appropriate meanings" and "unique stories" (Dewey 1933:39). Theoretically, this consequently implies that "all meanings are consequences of socially shared action" (Garrison 1999:291) building on "the active relations subsisting between a human being and his natural and social surroundings" (Dewey 1930:319-320). In other words, presuming that "the human

environment is a social one" (Bleazby 2007:129), "the embodied individual is also [arguably] a social individual" (Hodkinson et al. 2008:31). Hence, in this sense, the social and individual dimensions of the farmers' lifelong environmental learning process could thus be thought of as mutually constitutive, as the subject inevitably always shapes the context, and vice versa.

However, this conceptualization of the farmers' lifelong environmental learning process undoubtedly challenges the theoretical outlook within previous research, as "individual learning is not always understood as embodied and social" (Hodkinson et al. 2008:31). Educational research has historically adhered to either the cognitivist or the situational strand of conceptualizing the phenomena of human learning (Hodkinson et al. 2008) in the sense that cognitivist theorists "draw upon the root metaphor of acquisition to conceptualise learning, whereas situated learning theorists draw upon the metaphor of participation" (Hodkinson et al. 2008:30). This theoretical divide can be observed within the examined cohort of prior studies on farmers' lifelong learning who primarily has conceptualized the learning process as either an individual (Krzywoszynska 2016; Leung & Darnhofer 2021) or socially embedded phenomenon (Dolinska & d'Aquino 2016; Sligo et al. 2005; Sligo & Massey 2007). Drawing on the empirical results of this research endeavour, it appears thus questionable if such selective interpretations of farmers' lifelong environmental learning are theoretically reasonable. The lifelong environmental learning process of farmers in northern Sweden must arguably be understood simultaneously "from both the perspective of the individual learner, and that of the learning situation" (Hodkinson et al. 2008:28). Hence, from a pragmatic perspective, "there is [arguably] no reason why individual learning cannot be addressed from within a broadly situated or socio-cultural perspective" (Hodkinson et al. 2008:30).

#### LEARNING EMBEDDED IN GEOGRAPHICAL CONTEXTS

The third defining feature and characteristic of the farmers' lifelong environmental learning process is that it can be comprehended as a deeply situated and place-based learning phenomenon. This is

because the various farmlands that the different farmers care for and manage in their everyday lives theoretically could be perceived as constitutive educational conditions for their lifelong environmental learning process. The underlying material composition of their farmlands arguably both enables and constrains what and how the farmers can learn about them. Their specific features, histories, and spatial arrangements do not merely provide a backdrop for the lifelong environmental learning process. Rather, it appears to be the case that they actively shape and form the very process through which the farmers continuously redevelop and refine their local land knowledge.

When the farmers engage in their learning practice of sensing the land, they essentially seek to comprehend the tangible and material composition of their different farmlands. By attending to, for instance, soil texture, moisture levels, and vegetation growth across different seasons, they continuously become aware of the different physical dimensions that jointly form and compose their different farmlands. However, the aesthetic experiences that the farmers continuously acquire through their learning practice of sensing the land are undoubtedly much more than mere sensory exposure (Dewey 1916, 1930; Ord & Leather 2011). Theoretically, their aesthetic experiences inevitably also involve the process of undergoing (Dewey 1916, 1930; Ord & Leather 2011), whereby they continuously experience the consequences of the physical composition of their different farmlands. This process of undergoing basically implies that the farmers cannot simply comprehend whatever they want through their various sensory engagements with their different farmlands. Rather, they can only apprehend what is 'revealed' or 'given' to them through their sensory engagements with their physical surroundings. In this sense, their different farmlands can, therefore, be thought of as constitutive educational conditions for the farmers' lifelong environmental learning process, as their aesthetic experiences inevitably always build upon the "transaction taking place between an individual and what, at the time, constitutes his environment" (Dewey 1938:43). Hence, the farmers' learning practice of sensing the land is therefore deeply geographically embedded and indexed. What they learn is arguably inseparable from where they learn. In other words, the learning process is

conceptually anchored in the farmers' sustained and long-term sensory engagements with specific fields, meadows, forests, and pastures, whose material compositions consistently delimit and constrain what can be sensed, interpreted, and apprehended.

Likewise, the farmers' learning practice of storying the land is also conditioned by the specific material composition of their different farmlands. As the farmers seek to interpret and make sense of the many natural and agricultural processes that are continuously unfolding on their different farmlands, they must undoubtedly situate their analytical thinking in relation to the specific, historically determined conditions of their different farmlands. As Dewey observed, "nature speaks a language which may be interpreted. To a being who thinks, things are records of their past, as fossils tell of the prior history of the earth and are prophetic of their future" (Dewey 1933:15). This consequently means that the farmers cannot construct whatever meanings they want when they attempt to decipher and interpret the continuous transformation of their different farmlands. This is because the different substances of their thoughts are deeply embedded in the historical trajectories of their different farmlands, making the roots of their analytical thinking highly place-based and situated.

Moreover, when the farmers carry out their different agricultural interventions through their learning practice of shaping the land, they are not merely applying previously acquired knowledge to their different agricultural practices. Rather, they actively seek to unveil particular aspects of their different farmlands by observing how they react and respond to their different environmental modifications. By embracing this kind of transactional ontological outlook, the farmers' farmlands become, therefore, not only passive recipients of their agricultural interventions but also active subjects in their ongoing redevelopment of local land knowledge. As Dewey argued, "to plant seeds, to cultivate the soil, to harvest grain, are intentional acts, possible only to a being who has learned to subordinate the immediately felt elements of an experience to those values which these hint at" (Dewey 1933:15). Consequently, this means that the farmers cannot simply derive any meaning they choose from their various agricultural interventions, because their different farmlands undoubtedly always

respond in very specific and sometimes also unpredictable ways. These responses then make certain interpretations viable while rendering others untenable within their ongoing redevelopment of local land knowledge. Hence, the farmers' various farmlands become, therefore, not merely passive backdrops of their learning, but rather the very constitutive educational conditions that shape and form their continuous lifelong environmental learning process. In other words, their learning emerges as highly context-dependent in the sense that it requires a deep sensitivity to the various natural and agricultural conditions encompassing their different farmlands.

Understanding the farmers' lifelong environmental learning process as a deeply situated and place-based learning phenomenon has both strong and wider-reaching theoretical merits. As human beings, we are constantly connected to the world through our different physical bodies (Malpas 2018; Seamon 2018; 2023), and nothing we do, think, or experience is ever 'unplaced' in an ontological sense (Greenwood 2013). Theoretically, this then subsequently implies that "learners do not simply occupy an external and separate context where they learn, they are part of the situation where they learn, and their learning is part of the practices of that situation" (Hodkinson et al. 2008:32). Put differently, "we never experience nor form judgements about objects and events in isolation, but only in connection with a contextual whole" (Dewey 1938:72), meaning that the farmers' lifelong environmental learning process cannot transpire and occur detached from its spatial and geographical roots.

Previous research has commonly suggested that farmers' lifelong learning is a notoriously situated and place-based learning phenomenon (Thomas et al. 2020; Sutherland et al. 2017) and that the environmental learning process effectively must build upon multiple ways of knowing, comprehending, and exploring the local natural environment (Styres 2011; Simpson 2014; McCoy et al. 2016). Considering the empirical results of this doctoral thesis, the theoretical claim that the farmers' lifelong environmental learning process might be deeply embedded within different geographical contexts seems thus to be well-sustained with respect to previous research.

## HABITS AS EDUCATIONAL RESOURCES AND CONSTRAINTS

The fourth and final defining feature of the farmers' lifelong environmental learning process is that it seems to be underpinned by the farmers' various habits (Dewey 1981). First and foremost, the different habits that the farmers develop and rely on in their everyday lives could essentially be thought of as the basic educational conditions that stimulate their different learning practices. Without relatively stable ways of thinking and acting, the various environmental processes that they try to manage and overcome through their different agricultural practices would undoubtedly become so unpredictable that they, over time, would be impossible to navigate. However, at the same time, these habits, in the sense of underlying dispositions, could also be thought to narrow the farmers' perceptions and limit how they interpret various kinds of environmental changes that might transpire across their different farmlands, thereby hindering them from developing new insights. In other words, they may be thought of as the established 'grooves' of thinking and acting that guide and steer "the very styles, patterns, and ways" (Sullivan 2001:26) in which the farmers develop their local land knowledge in their everyday lives.

All three of the interrelated learning practices of sensing, storying, and shaping the land seem to be sustained by various kinds of habitual dispositions that underpin the farmers' lifelong environmental learning process. Through their learning practice of sensing the land, the farmers cultivate long-term, embodied understandings of their different farmlands. By attending closely to particular aspects in their local natural environment, they subsequently learn to notice subtle shifts in the material composition because their perceptual habits have been cultivated and refined over long periods of time. In this way, their sensory habits filter the overwhelming material complexity of their different farmlands, allowing certain sensory cues to stand out as particularly notable and meaningful. Moreover, the learning practice of storying the land appears also to be deeply structured by the farmers' various habits. In their analytical thinking, they undoubtedly rely on familiar interpretive patterns when they try to explain and make sense of the different environmental changes that occur throughout their various farmlands. These cognitive habits

fundamentally link present observations to past experiences, offering stable frameworks through which different shifts in the local natural environment become known and comprehensible. In this way, the farmers' various habits thus provide continuity within their ongoing analysis and interpretation of their different farmlands. Likewise, the farmers' learning practice of shaping the land also seems to depend on accumulated, habitual engagements with their different farmlands. When the farmers experiment, they undoubtedly do so against the backdrop of their acquired professional knowledge and expertise. Years of working on the same farmlands undoubtedly give them a great repertoire of understandings, responses, and techniques, enabling them to carry out informed agricultural experimentations on their different farmlands, rather than simply blind attempts of trial and error. Across all these three learning practices, the farmers' habits function thus as "forms of becoming and as vectors of change" (Bridge 2020:345), in the sense that they carry past experiences into present action and enable gradual transformations over time. Hence, without the farmers' various habits, there would thus, arguably, be no form of continuity within their lifelong environmental learning process.

However, the farmers' various habits can also be perceived as educational constraints to their ongoing redevelopment of local land knowledge, particularly under the emerging conditions of climate change. Firstly, the farmers' deeply ingrained attentional and sensory habits may lead them to unconsciously overlook different environmental shifts and patterns that emerge throughout their different farmlands. When certain patterns have indicated specific timings and outcomes for a long time, new climatic variations may then naturally be interpreted as simple temporary irregularities, rather than as indications of structural change. Consequently, this means that the farmers' various habits may limit what they can detect and perceive during their learning practice of sensing the land when the effects of climate change roll around. Secondly, the farmers' established interpretive frameworks may also become too rigid to facilitate their ongoing redevelopment of local land knowledge. They may continue to explain recurring environmental developments and conditions through their past experience and knowledge, relying on familiar interpretive

structures. Such interpretive grooves may then delay their recognition of 'novel' insights associated with climate change, as new phenomena are tried to be fitted into old explanatory models. Thirdly, the farmers' experimental engagements might also risk becoming routinized over time. Practices that once emerged as adaptive responses to knowledge production could become solidified into fixed procedures. When environmental patterns shift, projecting the future on the basis of past regularities and previous experimentations may then no longer be a reliable foundation of their local land knowledge. In other words, the projective quality of the farmers' habits may then mislead their agricultural practice rather than guide them into intelligent action. Although the farmers' various habits may stabilize their lifelong environmental learning process, they may also slow down their continuous recognition of various kinds of environmental changes and conditions, thereby hindering them from developing new insights.

Consequently, for the farmers, habits function thus both as educational resources and constraints. On the one hand, they reduce uncertainty, support experimentation, and stabilise their meaning-making. But on the other hand, they can also narrow attention, routinize practices, and delay the recognition of environmental change. Their habits may then generate both educative and mis-educative experiences within their lifelong environmental learning process. While they arguably provide stability and continuity, new knowledge and insights arguably only emerge when the farmers seek to leave their established grooves of predispositions and begin to question and reflect upon their established ways of thinking and acting. In other words, they need to produce problematic situations that force them to leave the act of recognition for the practice of perceptivity in their everyday flow of environmental and agricultural experience.

## THEORETICAL CONTRIBUTION TO THE RESEARCH FIELD

The empirical results of this doctoral thesis both confirm and extend the current theoretical understanding of farmers' lifelong environmental learning in several important ways. Firstly, the results provide

strong empirical support for a number of well-established theoretical claims. In particular, the study reinforces the widely accepted view that the lifelong learning of farmers often transpires through different forms of experiential and practical engagements with the local natural environment (Šūmane et al. 2018; Milestad et al. 2010a; Baars 2010). Moreover, the empirical results also support the theoretical idea that multisensory engagements play a crucial role in the continuous redevelopment of farmers' local knowledge and understanding of their different farmlands (Krzywoszynska 2016; Leung & Darnhofer 2021) and that slow and sustained sensory interactions with the local natural environment may be a key aspect of the environmental learning process (Payne & Wattchow 2009). In addition, the study also confirms that the lifelong learning of farmers commonly also builds upon the collective discussions within their different local agricultural communities (Dooley 2021; Thomas et al. 2020; Šūmane et al. 2018; Skaalsveen et al. 2020). Taken together, the results thus fundamentally strengthen the empirical foundation of existing research, while also contributing new empirical insights from the underrepresented geographical context of northern Sweden.

However, the empirical results of this doctoral thesis also advance the current theoretical understanding of farmers' lifelong learning in several important ways. It conceptualizes farmers' lifelong environmental learning as a holistic learning process structured around the three interrelated learning practices of sensing, storying, and shaping the land. This triadic framework arguably offers a clearer and more nuanced account of how embodied, cognitive, and practical modes of learning are intimately intertwined and interwoven within the lifelong environmental learning process of farmers in northern Sweden. Furthermore, the study also challenges dualistic perspectives within previous research by showing how the farmers' lifelong environmental learning process seems to be best conceptualized as a holistic mode of learning that integrates body and mind. Additionally, it also deepens the contemporary theoretical understanding by suggesting that the farmers' lifelong environmental learning process is deeply embedded within different geographical places and local agricultural communities. Finally, by highlighting the role of habits as both

educational resources and constraints, the study also introduces a philosophical dimension to existing theory, in the sense that it shows how habitual dispositions may both support and delimit the farmers' lifelong environmental learning process, particularly in the context of climate change in the far north of Sweden.

## FACILITATING FARMERS' LIFELONG ENVIRONMENTAL LEARNING

Considering that climate change is expected to fundamentally transform the subarctic landscape and significantly alter the preconditions for subarctic agriculture in the upcoming decades, how may the lifelong environmental learning of farmers in northern Sweden then be facilitated and supported in times of climate change? Drawing on previous research and the empirical results of this doctoral thesis, keys to facilitate the lifelong environmental learning of farmers may then arguably revolve around strengthening their sensory engagement with their local natural environments, fostering their ability to exchange and reflect upon various kinds of environmental and agricultural experiences within their local agricultural communities, and enhancing their capacity to conduct diverse forms of on-farm experimentation. In the sections below, these proposed keys to farmers' lifelong environmental learning will be further elaborated and discussed.

### STRENGTHENING SENSING THE LAND

The first key to facilitating the lifelong environmental learning process of farmers in northern Sweden might be to strengthen their sensory engagement with their local natural environments. As shown by the results, through their learning practice of sensing the land, the farmers seem to be able to generate different forms of aesthetic experiences, which they then subsequently can analyse, evaluate, and learn from. Hence, based on the results of this doctoral thesis, their sensory engagement and exposure to their different farmlands do not seem to constitute any fringe or peripheral aspect of their lifelong environmental learning process. On the contrary, their sensory interactions

and impressions of their local natural environments appear to constitute the very educational foundation that underpins their continuous redevelopment of local land knowledge.

Previous research has also commonly demonstrated that farmers' lifelong learning about their different farmlands "accrues from the engagement with the environment" (Scott & Gough 2003:14) and builds upon various forms of embodied environmental experiences (Leung & Darnhofer 2021; Thomas et al. 2020; Krzywoszynska 2016). Enabling the farmers to comprehend their various farmlands through different forms of sensory engagement appears thus also to be a significant educational key for further stimulating their lifelong environmental learning process based on previous research. In particular, it could be argued that outdoor experiences that allow the farmers to explore and apprehend their different local natural environments first-hand and in situ (Randall 2012; Jose et al. 2017) and systematic examinations and comparisons between different places at various stages and under diverging conditions (Measham 2006) might provide particularly favourable educational conditions for their learning.

#### FOSTERING STORYING THE LAND

The second key to facilitating the lifelong environmental learning of farmers in northern Sweden might be to foster their ability to exchange and reflect upon various kinds of environmental and agricultural experiences within their local agricultural communities. As the results indicate, through their learning practice of storying the land, the farmers engage in different forms of social learning within their different local agricultural communities, whereby they recount various past events and collectively attempt to analyse and decipher what they mean and imply. By sharing and discussing their different environmental and agricultural experiences, they then effectively refine their local land knowledge in their everyday lives by reviewing the knowledge and experience of other local farmers.

In essence, the farmers' local agricultural communities and networks could thus be thought of as vital educational settings in which their local land knowledge can be reviewed and redeveloped over

time. While certain practices and bodies of knowledge may lose their validity and relevance as a result of climate change, the social infrastructure that enables intergenerational and intercommunal learning among different farmers is undoubtedly likely to remain indispensable even in the future. Without spaces for social learning, farmers cannot, arguably, effectively function as each other's 'eyes and ears' and help each other navigate the environmental transformations that are expected to unfold across their different farmlands. Previous research shows that farmers' lifelong learning is often deeply embedded in different local agricultural communities (Dooley 2021; Thomas et al. 2020; Skaalsveen et al. 2020; Dolinska & d'Aquino 2016). Studies also suggest that the most far-reaching and resilient transitions toward sustainability are often made by farmers who actively participate in different communities where their environmental and agricultural experiences can be socially shared, discussed, and processed (Slimi et al. 2021). Considering the results of prior research, fostering social exchange and strengthening local agricultural communities appears thus also to be a significant key in the educational quest of supporting farmers' lifelong environmental learning in contemporary times.

#### ENHANCING SHAPING THE LAND

The third key to facilitating the lifelong environmental learning of farmers in northern Sweden might be to enhance their capacity to conduct diverse forms of on-farm experimentation. As the results show, through their learning practice of shaping the land, the farmers commonly engage in different forms of agricultural experimentation on their different farmlands with the purpose of revealing different aspects of them. By deciphering how their different farmlands react and respond to their different agricultural interventions, they then subsequently refine their local land knowledge throughout their daily farming practice. The farmers' capacity to conduct different forms of agricultural experimentations and interventions on their different farmlands could thus be thought of as a foundational educational condition underpinning their lifelong environmental learning process. With respect to the expected effects of climate change, the educational

significance of carrying out local agricultural experimentation may then also increase in the future, as previously reliable patterns can no longer be taken for granted, which means that new forms of knowing the land must be established.

Considering that previous research has shown that experiential, interactive, and participatory learning experiences (Randall 2012; Jose et al. 2017; Clover et al. 2013), particularly those grounded in hands-on activities (Kossack & Bogner 2012; Nedovic & Morrissey 2013; Benavot 2014; Wals & Benavot 2017) and agricultural demonstrations (Sutherland & Marchand 2021; Adamson-Fiskovica & Grivins 2022), are especially advantageous educational strategies with regard to environmental learning, it appears thus aösp to be well-substantiated from an academic perspective that it is reasonable to stimulate farmers' lifelong environmental learning by enhancing their practical capacity to conduct various forms of local agricultural experimentation on their different farmlands. Measures such as financial incentives for on-farm trials, support for collaborative experimentation among neighbouring farmers, and advisory assistance in designing small-scale pilot projects may, for instance, help create the practical conditions necessary for farmers to begin to engage and learn from agricultural interventions on their different farmlands in times of climate change. However, agricultural experimentation often also entails considerable economic risks for individual farmers, as new interventions may reduce short-term agricultural yields and outputs. Reducing these risks would, therefore, arguably, also be vital with regard to the question of how to facilitate the lifelong environmental learning process of farmers in times of climate change.

## IMPLICATIONS FOR THE FORMAL EDUCATION OF FARMERS

As shown by this doctoral thesis, the farmers' lifelong environmental learning process seems to be grounded in the three interrelated learning practices of sensing, storying, and shaping the land. Presuming that these empirical insights can be theoretically transferred and applied within the context of formal and non-formal agricultural

education, educational initiatives seeking to develop farmers' local land knowledge in times of climate change may therefore have academic support for employing experiential (Roberts 2011; Szczepanski 2025) and place-based educational approaches (Gruenewald 2003; Gruenewald & Smith 2014; Watthcow & Brown 2011).

Agricultural extension programs could, for example, be organized around on-farm demonstrations, collaborative field trials, and problem-based learning activities focused on real-life challenges faced by different local farmers. Rather than presenting universal solutions, educators could thus instead facilitate the farmers' lifelong environmental learning by supporting them to analyse their own farmlands, experiment and test alternatives, and collectively reflect upon different kinds of environmental and agricultural consequences and outcomes. Farm advisory services might therefore successfully adopt a more facilitative role in education, helping local farmers design experiments, interpret the results, and connect local observations with broader bodies of knowledge. Moreover, educational institutions could also collaborate more closely with local agricultural communities and networks to ensure that different educational initiatives are conceptually grounded in specific agricultural conditions. By embedding the formal educational support within local agricultural communities and landscapes, the formal educational system surrounding the agricultural industry could then build upon the same learning practices that the farmers already rely on in their everyday lives.

Experiential learning has often been perceived and regarded as the foundational pedagogical tenet of the formal and non-formal agricultural education (Baker et al 2012; Coleman et al. 2024). Considering the empirical results of this doctoral thesis, this will probably also continue into the future, since agricultural subjects are particularly well-suited to be taught through different kinds of experiential and place-based educational approaches. In particular, farmer field schools appear thus to be especially well supported from an academic perspective, considering their experiential and place-based educational orientation (Smeds 2017; Smeds et al. 2011; Smeds et al. 2015a, 2015b). By engaging farmers in observation, joint experimentation, and collective reflection in close connection to their different

farmlands, such educational initiatives may then arguably create favourable learning opportunities for farmers to apprehend different environmental changes, share and interpret their environmental and agricultural experiences, and test different theories and hypotheses about their different farmlands. This educational approach may be especially important considering the 'young farmer problem' (Grubbström & Joosse 2021; Zagata & Sutherland 2015), which arguably suggests that new forms and pathways for agricultural education and farmers' lifelong environmental learning must be established in order to facilitate the development of a climate change resilient and sustainable agricultural industry of the future.

## DIRECTIONS FOR FURTHER RESEARCH

This doctoral thesis opens a range of promising directions for further research on the subject of farmers' lifelong environmental learning. As northern Sweden rapidly develops into a new agricultural frontier, the demand for more nuanced, locally grounded educational research is becoming both pressing and timely. Building on the empirical and theoretical insights presented in this doctoral thesis, several areas of research then arguably stand out as particularly fruitful avenues for further educational inquiry and research.

Firstly, there is a strong need for longitudinal educational research that follows and examines how farmers' lifelong environmental learning process unfolds and develops over time. Such longitudinal studies could especially examine how the farmers' lifelong environmental learning process adapts to new agricultural and environmental conditions. Moreover, long-term educational studies would also provide a far more dynamic and temporally sensitive understanding of farmers' lifelong environmental learning process than what has been offered by previous educational studies like this one.

Secondly, while the geographical focus on northern Sweden within this doctoral thesis undoubtedly provides several valuable empirical insights, there is also a clear need for educational research conducted in other geographical regions as well to determine whether the learning practices of sensing, storying, and shaping the land also hold

relevance in other agricultural and environmental settings. Comparative studies across different landscapes and local agricultural communities could thus help identify both common educational patterns and context-specific differences in how the farmers continuously learn and redevelop their local land knowledge in their everyday lives. Such comparative studies would, arguably, be instrumental in building a more comprehensive and generalizable educational theory of farmers' lifelong environmental learning process, which is a framework that would be highly valuable in contemporary times.

Thirdly, further research could also examine how different social categories, such as gender, age, education, ethnicity, and economic resources, tend to shape and form farmers' access, development, and transmission of local land knowledge. The structural dimensions of farmers' lifelong learning, such as market access, land tenure arrangement, and national policy, must undoubtedly also be thoroughly addressed in order to be able to truly understand the educational preconditions for farmers' lifelong environmental learning. Investigating these educational conditions would probably shed light on how farmers perceive and negotiate the inherent tension between their local land knowledge, their different learning practices, and the constantly shifting pressures emanating from various kinds of environmental, agricultural, technological, and social changes.

Fourthly, to more fully grasp the embodied and sensory dimensions of farmers' lifelong environmental learning, further research would also benefit from applying participatory, arts-based, and multimodal research methodologies, such as video ethnography, sensory mapping, and collaborative storytelling. These methodological approaches have the potential to reveal nuances of the farmers' lifelong environmental learning process that otherwise are difficult to capture through more commonly applied qualitative and quantitative research methods. By engaging directly with the textures, movements, and sensory cues and impressions within the farmers' everyday lives, such methodological means and techniques could undoubtedly significantly deepen our understanding of how farmers continuously learn and redevelop their local land knowledge in their everyday lives.

Fifthly, further research could also move beyond the implicit anthropocentric framing of farmlands as passive physical objects, and more explicitly explore other theoretical perspectives that conceptualize the natural world as its own subject within the farmers' lifelong environmental learning process. While this doctoral thesis has acknowledged and proposed that the farmers' farmlands could be conceptualised and perceived as constitutive educational conditions, there remains a considerably broader scope for further theoretical elaboration drawing on relational and biocentric ontologies and partnership-based understandings of farmers' relationship with nature (Chapman & Deplazes-Zemp 2024; Braito et al. 2017; Muhar & Böck 2018; Primdahl et al. 2013). If farmlands are understood not only as educational resources but also as active participants in human learning, then the epistemological foundations underpinning farmers' lifelong environmental learning process undoubtedly require renewed scrutiny and examination. Such an approach would involve educational research to examine how farmlands actively co-produce different kinds of learning situations and delimit what becomes learnable in specific environmental and agricultural contexts. Conceptualizing farmlands as subjects rather than objects would thus reposition them as agentive and dialogical counterparts in the farmers' lifelong environmental learning process, thereby challenging dominant human-centred assumptions within modern research on farmers' lifelong learning. By further theorizing farmlands as active subjects within the farmers' lifelong environmental learning process, further studies could thus contribute to a more ecologically attuned educational theory capable of addressing the complex interdependencies that characterize the lifelong environmental learning process of farmers.

Sixth and finally, agricultural policy could also be considered to constitute a particularly promising, yet underexplored, avenue for further educational research, not least because existing frameworks rarely articulate how farmers' lifelong environmental learning should be systematically supported or enhanced. Within the context of the European Union and its executive body, the European Commission, agricultural development is primarily governed through comprehensive policy frameworks such as the Common Agricultural Policy and

the Agricultural Knowledge and Innovation System (Augère-Granier 2017; Movchan & Komisarenko 2019). Although these policy frameworks emphasise knowledge transfer, innovation, and advisory systems (Ecorys 2023; Augère-Granier 2017), they tend to frame farmers' lifelong learning predominantly in terms of formal qualifications, technological uptake, and industrial competitiveness, leaving the broader, place-based, and experiential educational dimensions of farmers' lifelong environmental learning process comparatively underexplored and implicit. From an educational research perspective, this lack of pedagogical depth within contemporary agricultural policy is thus analytically interesting. Future studies could therefore critically examine how the Common Agricultural Policy or the Agricultural Knowledge and Innovation System might be reconceptualized in order to more explicitly integrate the pedagogical principles found within the educational traditions of place-based and experiential education. This in the sense of acknowledging the experiential and place-based dimensions of the farmers' lifelong environmental learning process as central rather than peripheral aspects of agricultural development. By examining the theoretical presumptions embedded within agricultural policy and by exploring how these policies could be further redeveloped and reframed to foreground farmers' lifelong environmental learning process, researchers could then open up new possibilities for aligning structural governance mechanisms with respect to the educational experiences and traditions of local farmers.



## SAMMANFATTNING

Detta sjunde och avslutande kapitel innehåller en sammanfattning av doktorsavhandlingens olika avsnitt på svenska. Syftet med detta avslutande kapitel är inte att ge en uttömmande redogörelse för avhandlingens samtliga avsnitt, utan snarare att erbjuda en populärvetenskaplig översikt kring studiens olika centrala byggstenar. Konkret omfattar denna korta sammanfattning avhandlingens problemformulering, syfte och frågeställningar, bakgrund, teoretiska ramverk, forskningsdesign och metod, empiriska resultat samt resultatdiskussion.

### PROBLEMFÖRMULERING

Lantbruket i norra Sverige står idag inför en spännande men samtidigt också osäker framtid. Detta kommer av att klimatförändringarna förväntas förändra det subarktiska landskapet och därmed eventuellt revolutionera förutsättningarna för lantbruket i norra Sverige. Redan vid nästa sekelskifte förutspås världens olika subarktiska områden att ha blivit nya lantbruksregioner med större produktionskapaciteter.

Konkret handlar det om att den snabba uppvärmningen av det subarktiska landskapet förväntas kunna ge upphov till ett nytt naturlandskap bättre anpassat för lantbruk. En ökning av den årliga temperaturen och nederbörden förväntas exempelvis kunna förlänga den lokala växtsäsongen samt möjliggöra fler och större skördar. Men samtidigt finns det även farhågor om att en ökning av genomsnittstemperatur och nederbörd även kommer att kunna medföra försämrade markförhållanden och större problem med ogräs och skadedjur, vilket på sikt även också skulle kunna komplicera olika moment såsom markbearbetning, sådd, och skörd inom det lokala lantbruket. Om dessa förändringar realiseras kommer det otvivelaktigt att medföra stora pedagogiska utmaningar för de olika lantbrukare som idag

bor och verkar i norra Sverige, eftersom de oundvikligen måste börja omforma och vidareutveckla sin lokala kunskap och förståelse för sina olika skogs- och jordbruksmarker.

I dag betraktas ofta vetenskaplig kunskap som den allra mest värdefulla resursen för den kontinuerliga vidareutvecklingen av ett konkurrenskraftigt, motståndskraftigt, och hållbart lantbruk världen över. Det har därmed på senare år vuxit fram en global efterfrågan på pedagogiska studier som just undersöker lantbrukares livslånga lärande om sina olika skogs- och jordbruksmarker. Men idag råder det brist på pedagogisk forskning som har undersökt hur lantbrukare lär och vidareutvecklar sin lokala kunskap och förståelse för sina olika skogs- och jordbruksmarker, särskilt inom den geografiska kontexten kring norra Sverige. Denna doktorsavhandling strävar därmed efter att bemöta denna kunskapslucka.

## SYFTE OCH FRÅGESTÄLLNINGAR

Denna doktorsavhandling syftar till att utforska, beskriva och förstå hur lantbrukare i norra Sverige lär och utvecklar sin lokala kunskap och förståelse för sina olika skogs- och jordbruksmarker i sin vardag som lantbrukare. Detta för att bidra med pedagogiska kunskaper som skulle kunna främja och stödja den kontinuerliga vidareutvecklingen av ett konkurrenskraftigt, motståndskraftigt, och hållbart lantbruk i norra Sverige i en tid av klimatförändringar. Följande forskningsfrågor har väglett och guidat studiens praktiska genomförande.

- Vilka lärandepraktiker och erfarenheter beskriver lantbrukare i norra Sverige som särskilt betydelsefulla i den lärprocess genom vilken de tillägnar sig sin lokala kunskap och förståelse för sina olika skogs- och jordbruksmarker?
- Vad kännetecknar och karakteriserar den lärprocess genom vilken lantbrukare i norra Sverige tillägnar sig sin lokala kunskap och förståelse för sina olika skogs- och jordbruksmarker?
- Hur kan lantbrukares livslånga lärande om sina olika skogs- och jordbruksmarker blir främjat utifrån ett pedagogiskt perspektiv i en tid av klimatförändringar i norra Sverige?

## BAKGRUND

För att kunna förstå och kontextualisera det vetenskapliga bidraget av denna studies empiriska resultat tar denna doktorsavhandling avstamp från fyra olika historiska och teoretiska positioneringar.

Den första positioneringen rör de olika utbildningstraditioner som traditionellt sett har präglat lantbrukares livslånga lärande. Historiskt sett har lantbrukares livslånga lärande främst tagit form som generationsöverskridande kunskapsöverföringar inom olika lantbruksfamiljer. I Sverige uppskattas mer än nio av tio lantbrukare ha tillägnat sig sin lokala kunskap och förståelse för sina olika skogs- och jordbruksmarker genom denna typ av informellt lärande. Formell och icke-formell lantbruksutbildning har även traditionellt sett också byggt på olika former av erfarenhetsbaserat lärande.

Den andra positioneringen behandlar den teoretiska definitionen och inramningen av lantbrukares lokala kunskap och förståelse för sina olika skogs- och jordbruksmarker. I denna doktorsavhandling betraktas just dessa marker som olika former av natur- och kulturlandskap. Följaktligen definieras därmed lantbrukares lokala kunskap och förståelse för sina olika skogs- och jordbruksmarker i linje med begreppet lokal markkunskap, vilket avser lantbrukarnas kumulativa kunskap om hur den lokala naturen och lantbruket kontinuerligt samverkar för att omforma ett specifikt landområde.

Den tredje positioneringen rör avgränsningen av det vetenskapliga fältet kring lantbrukares livslånga lärande om sina olika skogs- och jordbruksmarker, vilket idag utgör ett relativt nytt forskningsområde. Trots att flera interdisciplinära vetenskapliga studier tidigare har behandlat lantbrukares livslånga lärande så saknas det fortfarande idag ett tydligt och etablerat forskningsfält på området. Denna doktorsavhandling argumenterar därmed för att lantbrukares livslånga lärande om sina olika skogs- och jordbruksmarker borde ses som ett framväxande forskningsfält i gränslandet mellan de pedagogiska delområden livslångt lärande och miljöpedagogik.

Den fjärde och sista positioneringen handlar om vad tidigare forskning har pekat på när det kommer till lantbrukares livslånga lärande. Tidigare studier har särskilt visat att lantbrukares kunskap och

kompetens ofta utvecklas genom direkta och kroppsliga interaktioner med det omgivande landskapet i kombination med olika former av diskussioner och erfarenhetsutbyten med andra lokala lantbrukare. Detta indikerar att skapandet och delandet av olika lantbruks- och landskaps erfarenheter verkar vara mycket pedagogiskt betydelsefullt för den kontinuerliga vidareutvecklingen av lantbrukares lokala kunskap och förståelse för sina olika skogs- och jordbruksmarker.

## TEORETISKT RAMVERK

För att teoretiskt sett kunna tolka, förstå och diskutera lantbrukares livslånga lärande om sina olika skogs- och jordbruksmarker utgår denna doktorsavhandling från den amerikanske utbildningsfilosofen John Deweys teoretiska ramverk för erfarenhetsbaserat lärande. Detta teoretiska ramverk bygger på ett pragmatiskt perspektiv på lärande och kunskap där dikotomierna teori-praktik, tänkande-handlande, och kropp-sinne ses som två olika sidor av samma mynt. Konkret teoretiserade Dewey att processen för erfarenhetsbaserat lärande inleds med att människor utvecklar olika estetiska erfarenheter av sin omgivning i termer av en kroppslig och sensorisk förståelse för omgivningens materiella utformning och karaktär. När de sedan ställs inför olika situationer där deras estetiska erfarenhet inte överensstämmer med deras etablerade kunskap och förståelse så inleder de därefter samtidigt olika reflexiva erfarenheter. Dessa reflexiva erfarenheter syftar i grunden till att hantera den diskrepans som har uppstått i den estetiska erfarenheten, och tar i praktiken form som antingen analytiskt tänkande eller som praktiskt experimenterande. På så sätt sker estetiska och reflexiva erfarenheter integrerat och simultant och inte separat eller sekventiellt från varandra.

## FORSKNINGSDESIGN OCH METOD

De empiriska resultaten som ligger till grund för denna doktorsavhandling har blivit producerade genom en kvalitativ narrativ studie baserad på en induktiv, naturalistisk forskningsansats med utgångspunkt från ett interpretivistiskt vetenskapsfilosofiskt perspektiv.

Studien bygger på 14 olika lantbrukares livsberättelser om hur de genom livet har utvecklat och tillägnat sig sin lokala kunskap och förståelse för sina olika skogs- och jordbruksmarker.

Det empiriska materialet har konkret blivit producerat genom 20 olika livsberättelseintervjuer och 10 olika promenadintervjuer. Livsberättelseintervjuerna genomfördes hemma vid lantbrukarnas olika köksbord och inleddes med att deltagarna fritt fick berätta om sitt livslånga lärande om sina olika skogs- och jordbruksmarker utan avbrott. Därefter följde ett reflekterande samtal där deras olika läroerfarenheter tolkades och fördjupades. Promenadintervjuerna genomfördes sedan ute på lantbrukarnas olika skogs- och jordbruksmarker och tog form som olika reflexiva samtal om deras olika platsbundna erfarenheter av lärande. Samtliga intervjuer spelades in och transkriberades sedan enligt metoden intelligent verbatim, vilket innebär att deltagarnas utsagor grammatiskt korrigerades och anpassades till skriftspråk för att det empiriska materialet skulle kunna bli tillgängligt och forskningsbart. Genom att kombinera livsberättelseintervjuer med promenadintervjuer har därmed dataproduktionen kunnat fånga både de livslånga och platsbundna dimensionerna av lantbrukarnas livslånga lärande om sina olika skogs- och jordbruksmarker.

Det empiriska materialet analyserades därefter genom analysmetoden reflexiv tematisk analys. Analysen genomfördes i sex olika steg där materialet successivt tolkades, kodades, och tematiserades i olika empiriska och teoretiska teman. För att avgöra när analysen var tillräcklig användes begreppet teoretisk tillräcklighet, vilket innebär att dataanalysen avslutades när de identifierade temana framstod som empiriskt förankrade och teoretiskt meningsfulla. Genom denna analysprocess kunde därmed studiens resultat både förankras i den empiriska datan samt kunna förstås utifrån olika teoretiska perspektiv.

## EMPIRISKA RESULTAT

De empiriska resultaten av den narrative studien visar att lantbrukarnas livslånga lärande om sina olika skogs- och jordbruksmarker i grunden bygger på de tre interrelaterade lärandepraktikerna att erfara (sensing), att tolka (storying) och att forma (shaping) landskapet.

Den första lärandepraktiken, att erfara landskapet, handlar om lantbrukarnas kroppsliga och sensoriska erfارande av sina olika skogs- och jordbruksmarker. Denna lärandepraktik inbegriper både långsamma, systematiska och multisensoriska interaktioner med det omgivande landskapet, där lantbrukarna gradvis utvecklar olika estetiska erfarenheter av landskapets materiella egenskaper och förändringar. Det systematiska sensoriska erfارandet gör det möjligt för lantbrukarna att uppfatta den återkommande fysiska sammansättningen av deras olika skogs- och jordbruksmarker, medan deras långsamma sensoriska erfارande möjliggör utvecklingen av en nyanserad sensorisk förståelse för landskapets materiella dimensioner. Dessa resultat stärker tidigare forskning som har pekat på att lantbrukares livslånga lärande ofta bygger på direkta och multisensoriska interaktioner med det omgivande landskapet.

Den andra lärandepraktiken, att tolka landskapet, handlar om hur lantbrukarna analyserar och reflekterar över sina olika estetiska erfarenheter av sina olika skogs- och jordbruksmarker. Denna lärandepraktik inbegriper intergenerationella och interkommunala former av analytiskt tänkande i termer av kollektiv reflektion och erfarenhetsutbyte inom olika lokala lantbruksnätverk. Det intergenerationella analytiska tänkandet gör det möjligt för lantbrukarna att utveckla en 'vertikal' förståelse för hur den lokala naturen och lantbruket kontinuerligt samverkar för att omforma ett specifikt landområde på deras marker över långa tidshorisonter. I kontrast möjliggör det interkommunala analytiska tänkandet utvecklingen av en 'horisontell' förståelse för hur den lokala naturen och lantbruket kontinuerligt samverkar för att omforma det större, omkringliggande natur- och kulturlandskapet som deras marker är en del av. Dessa resultat ligger i linje med tidigare forskning som har indikerat att lantbrukares kontinuerliga reflektion och erfarenhetsutbyten inom olika lokala lantbruksnätverk ofta spelar en central pedagogisk roll inom deras livslånga lärande om sina olika skogs- och jordbruksmarker.

Den tredje och sista lärandepraktiken, att forma landskapet, handlar om lantbrukarnas aktiva formande och experimenterande med sina olika skogs- och jordbruksmarker. Denna lärandepraktik innefattar både systematiska och kollektiva former av praktisk

experimentering i linje med den reflexiva erfarenheten trial-and-error. Den systematiska experimenteringen gör det möjligt för lantbrukarna att urskilja relationen mellan den lokala naturen och lantbruket i det kontinuerliga omformandet av ett specifikt landområde på deras olika marker. I kontrast möjliggör den kollektiva experimenteringen lantbrukarna att utvärdera hur dessa relationer ter sig meningsfulla över en mängd olika erfarenheter och tillfällen. Dessa resultat bekräftar tidigare studier som har visat att olika former av praktisk försöksverksamhet ofta utgör en central del av lantbrukares livslånga lärande om sina olika skogs- och jordbruksmarker.

## RESULTATDISKUSSION

De empiriska resultaten både fördjupar och nyanserar den etablerade teoretiska förståelsen för lantbrukares livslånga lärande om sina olika skogs- och jordbruksmarker på framförallt fyra olika sätt.

För det första indikerar de empiriska resultaten att lantbrukarnas livslånga lärande om sina olika skogs- och jordbruksmarkerna skulle kunna ses som en holistisk lärandeprocess som integrerar både kropp och sinne. För att kunna utveckla en lokal kunskap och förståelse för sina olika skogs- och jordbruksmarker verkar lantbrukarna både behöva erfa, tolka och forma sina olika skogs- och jordbruksmarker i en ständigt iterativ process. Detta utmanar tidigare forskning på området som främst har försökt förstå lantbrukares livslånga lärande som antingen en kroppslig eller en kognitiv lärandeprocess.

För det andra signalerar de empiriska resultaten att lantbrukarnas livslånga lärande om sina olika skogs- och jordbruksmarker verkar vara djupt förankrat och sammankopplat med deras olika lokala sociala lantbruksgemenskaper. Samtliga lärandepraktiker verkar vara villkorade av det sociala sammanhanget och miljön inom vilken de är tillämpliga. Detta utmanar tidigare studier på området som främst har försökt förstå lantbrukares livslånga lärande utan hänsyn och referens till den sociala kontexten för lärandet.

För det tredje verkar lantbrukarnas livslånga lärande om sina olika skogs- och jordbruksmarker även bäst kunna förstås som en djupt situerad och platsbaserad lärandeprocess. Markernas specifika

materiella och historiska egenskaper och förändringar tycks både kunna möjliggöra och begränsa hur och vad lantbrukarna kan lära sig om dem. Markerna erbjuder otvivelaktigt vissa sensoriska stimuli, bär på en specifik historisk utveckling och reagerar på lantbrukarnas olika interventioner på särskilda sätt. Filosofiskt sett indikerar detta att lantbrukarna inte enbart lär sig om och på sina olika skogs- och jordbruksmarker, utan också med och från dem.

För det fjärde verkar även lantbrukarnas livslånga lärande om sina olika skogs- och jordbruksmarker i hög grad också vara format och villkorat av deras invanda sätt att uppmärksamma, tolka och handla i landskapet. Genom sitt långvariga arbete med sina olika skogs- och jordbruksmarker utvecklar lantbrukarna otvivelaktigt olika former av sensoriska, analytiska och praktiska vanor som hjälper dem att upptäcka och förstå olika former av materiella förändringar i landskapet. På så sätt skapar deras vanor kontinuitet i deras livslånga lärande, vilket gör det möjligt att hantera landskapets komplexitet, men samtidigt kan dessa vanor även begränsa deras livslånga lärande genom att rikta och begränsa deras uppmärksamhet i linje med redan etablerade tolkningsmönster och förståelser. I tider av klimatförändringar kan detta exempelvis innebära att nya miljömönster först uppfattas som tillfälliga avvikelser snarare än strukturella förändringar, vilket innebär att lantbrukarnas vanor därmed både kan stödja och hämma deras utveckling av lokal markkunskap.

Sammantaget tyder de empiriska resultaten av denna doktorsavhandling på att lantbrukarnas livslånga lärande om sina olika skogs- och jordbruksmarker bäst främjas genom olika former av erfarenhetsbaserat och platsbaserat lärande som integrerar både individuella och kollektiva former av erfarenhet, experimenterande och reflekterande. För att praktiskt sett kunna stödja och upprätthålla lantbrukares livslånga lärande om sina olika skogs- och jordbruksmarker i norra Sverige i en tid av klimatförändringar behöver man därmed sannolikt möjliggöra följande pedagogiska förutsättningar. För det första behöver lantbrukarna ges tid och möjlighet att kunna observera och interagera med sina olika skogs- och jordbruksmarker för att kunna utveckla olika former av estetiska erfarenheter av dem. För det andra behöver de tillgång till olika lokala lantbruksnätverk för att kunna

dela och diskutera sina olika erfarenheter av landskapet. För det tredje behöver de möjligheten och kunskapen att kunna genomföra olika former av experiment på sina olika skogs- och jordbruksmarker. Slutligen krävs det även sannolik tillgång till formella lantbruksutbildningar som bygger på olika sorters erfarenhetsbaserade och platsbaserade pedagogiska strategier.

För att vidareutveckla den vetenskapliga kunskapen om lantbrukares livslånga lärande om sina olika skogs- och jordbruksmarker föreslår därmed även denna doktorsavhandling att vidare forskning särskilt skulle kunna tillämpa longitudinella forskningsmetoder, biocentriska filosofiska positioneringar, samt adressera den underliggande pedagogiska filosofin inom (inter)nationell lantbrukspolicy.

# REFERENCES

- Abdul Mumin, Y., & Abdulai, A. (2022). Informing Food Security and Nutrition Strategies in Sub-Saharan African Countries: An Overview and Empirical Analysis. *Applied Economic Perspectives and Policy*, 44, 364-393.  
<https://doi.org/10.1002/aep.13126>
- Abrar, M., & Hasibuan, N. (2025). Proof of Truth in Inductivism Theory. *International Journal of Multidisciplinary Research (IJMR)*, 1(1), 125-133.  
<https://ojssulthan.com/ijmr/article/view/113/68>
- Adamsone-Fiskovica, A., & Grivins, M. (2022). Knowledge Production and Communication in On-Farm Demonstrations: Putting Farmer Participatory Research and Extension into Practice. *The Journal of Agricultural Education and Extension*, 28(4), 479-502. <https://doi.org/10.1080/1389224x.2021.1953551>
- Adu, K., Puthenkalam, J.J., & Kwabena, A.E. (2022) Agricultural and Extension Education for Sustainability Approach, *British Journal of Environmental Studies*, 2(1), 20-37.  
<https://doi.org/10.32996/bjes.2022.2.1.2>
- Agar, M. (1980). *The Professional Stranger: An Informal Introduction to Ethnography*. Emerald Group Publishing Limited.
- Agnew, J. (1987). *Place and Politics: The Geographical Mediation of State and Society*. Routledge.  
<https://doi.org/10.4324/9781315756585>
- Agnew, J. A., & Livingstone, D. N. (Eds.). (2011). *The Sage Handbook of Geographical Knowledge*. Sage Publishers.
- Aikenhead, G. S., & Michell, H. (2011). *Bridging Cultures: Indigenous and Scientific Ways of Knowing Nature*. Pearson Canada.
- Alm, B. (2019). *Introduktion till Etnografiskt Fältarbete*. Gleerups.
- Altdorff, D., Borchard, N., Young, E. H., Galagedara, L., Sorvali, J., Quideau, S., & Unc, A. (2022). Agriculture in Boreal and Arctic Regions Requires an Integrated Global Approach for Research and Policy. *Agronomy for Sustainable Development*, 41(23).  
<https://doi.org/10.1007/s13593-021-00676-1>
- Altman, I., & Low, S. M. (Eds.). (1992). *Place Attachment*. Springer.  
<https://doi.org/10.1007/978-1-4684-8753-4>
- Amundsen-Meyer, L., Pennanen, K., Turner, K., Campos Díaz, P., & Ayoungman, V. (2023). Learning from the Land: The

- Application of Archaeology and Land-Based Learning as an Experiential Learning Tool for Building Intercultural Competency. *Journal of Archaeology and Education*, 7(2).  
<https://digitalcommons.library.umaine.edu/jae/vol7/iss2/1>
- Ando, H., Cousins, R., & Young, C. (2014). Achieving Saturation in Thematic Analysis: Development and Refinement of a Codebook. *Comprehensive Psychology*, 3,  
<https://doi.org/10.2466/03.CP.3.4>
- Angelstam, P., Munoz-Rojas, J., & Pinto-Correia, T. (2019). Landscape Concepts and Approaches Foster Learning about Ecosystem Services. *Landscape Ecology*, 34(7), 1445–1460.  
<https://doi.org/10.1007/s10980-019-00866-z>
- Angstmann, J.L., Rollings, A.J., Fore, G.A., & Sorge, B.H. (2019) A Pedagogical Framework for the Design and Utilization of Place-Based Experiential Learning Curriculum on a Campus Farm, *Journal of Sustainability Education*, 20.
- Antman, A., Brubæk, S., Andersen, B. H., Lindqvist, K., Markus-Johansson, M., Sørensen, J., & Teerikangas, J. (2015). *Nordic Agriculture Air and Climate: Baseline and System Analysis Report*. Nordic Council of Ministers.  
<http://dx.doi.org/10.6027/TN2015-570>
- Antrop, M. (2015). Interacting Cultural, Psychological, and Geographical Factors of Landscape Preference. In D. Bruns, O. Kühne, A. Schönwald, & S. Theile (Eds.), *Landscape Culture: Culturing Landscapes: The Differentiated Construction of Landscapes*, Springer VS Wiesbaden.  
<https://doi.org/10.1007/978-3-658-04284-4>
- Antrop, M., & Van Eetvelde, V. (2017). *Landscape Perspectives: The Holistic Nature of Landscape*. Springer Dodrecht.  
<https://doi.org/10.1007/978-94-024-1183-6>
- Ardoin, N. M. (2006). Toward an Interdisciplinary Understanding of Place: Lessons for Environmental Education. *Canadian Journal of Environmental Education*, 11, 112–126.
- Ardoin, N. M., & Bowers, A. W. (2020). Early Childhood Environmental Education: A Systematic Review of the Research Literature. *Educational Research Review*, 31, 100353.  
<https://doi.org/10.1016/j.edurev.2020.100353>
- Ardoin, N. M., & Heimlich, J. E. (2021). Environmental Learning in Everyday Life: Foundations of Meaning and a Context for Change. *Environmental Education Research*, 27(12), 1681-1699. <https://doi.org/10.1080/13504622.2021.1992354>
- Atkinson, R. (1998). *The Life Story Interview: Qualitative Research Methods*. Sage Publications.

- Atkinson, R. (2012). The Life Story Interview as a Mutually Equitable Relationship. In J. F. Gubrium, J. A. Holstein, A. B. Marvasti, & K. D. McKinney (Eds.), *The Sage Handbook of Interview Research: The Complexity of the Craft*. Sage Publications. <https://doi.org/10.4135/9781452218403>
- Attride-Stirling, J. (2001). Thematic Networks: An Analytic Tool for Qualitative Research. *Qualitative Research*, 1(3), 385–405. <https://doi.org/10.1177/146879410100100307>
- Augère-Granier, M. L. (2017). *Agricultural Education and Lifelong Training in the EU*. European Parliamentary Research Service.
- Baars, T. (2011). Experiential Science: Towards an Integration of Implicit and Reflected Practitioner-Expert Knowledge in the Scientific Development of Organic Farming. *Journal of Agricultural and Environmental Ethics*, 24(6), 601–628. <https://doi.org/10.1007/s10806-010-9281-3>
- Baker, M. A., & Robinson, J. S. (2016). The Effects of Kolb's Experiential Learning Model on Successful Intelligence in Secondary Agriculture Students. *Journal of Agricultural Education*, 57(3), 129–144. <https://doi.org/10.5032/jae.2016.03129>
- Baker, M. A., & Robinson, J. S. (2017a). The Effects of an Experiential Approach to Learning on Student Motivation. *Journal of Agricultural Education*, 58(3), 150–167. <https://doi.org/10.5032/jae.2017.03150>
- Baker, M. A., & Robinson, J. S. (2017b). The Effect of Two Different Pedagogical Delivery Methods on Students' Retention of Knowledge Over Time. *Journal of Agricultural Education*, 59(1), 100–118. <https://doi.org/10.5032/jae.2018.01100>
- Baker, M. A., & Robinson, J. S. (2019). The Interaction of Learning Style on Measures of Successful Intelligence in Secondary Agriculture Students Exposed to Experiential and Direct Instruction. *Journal of Agricultural Education*, 60(3), 14–31. <https://doi.org/10.5032/jae.2019.03014>
- Baker, M. A., Brown, N. R., Blackburn, J., & Robinson, J. S. (2014). Determining the Effects that the Order of Abstraction and Type of Reflection have on Content Knowledge when Teaching Experientially: An Exploratory Experiment. *Journal of Agricultural Education*, 55(2), 106–119. <https://doi.org/10.5032/jae.2014.02106>
- Baker, M. A., Robinson, J. S., & Kolb, D. A. (2012). Aligning Kolb's Experiential Learning Theory with a Comprehensive Agricultural Education Model. *Journal of Agricultural Education*, 53(4), 1–16. <https://doi.org/10.5032/jae.2012.04001>

- Ballantyne, R., & Packer, J. (2002). Nature-Based Excursions: School Students' Perceptions of Learning in Natural Environments. *International Research in Geographical and Environmental Education*, 11(3), 218–236.  
<https://doi.org/10.1080/10382040208667488>
- Ballantyne, R., & Packer, J. (2009). Introducing a Fifth Pedagogy: Experience-Based Strategies for Facilitating Learning in Natural Environments. *Environmental Education Research*, 15(2), 243–262. <https://doi.org/10.1080/13504620802711282>
- Bamka, W., Komar, S., Melendez, M., & Infante-Casella, M. (2020) 'Ask the Ag Agent' Weekly Webinar Series: Agriculture-Focused Response to the COVID-19 Pandemic. *The Journal of Extension*. 58(4), 4.
- Barrett, D., & Younas, A. (2024) Induction, Deduction and Abduction. *Evidence Based Nursing*, 27(1), 6-7,  
<https://doi.org/10.1136/ebnurs-2023-103873>
- Bath, D. M., & Smith, C. D. (2009). The Relationship between Epistemological Beliefs and the Propensity for Lifelong Learning. *Studies in Continuing Education*, 31(2), 173-189.  
<https://doi.org/10.1080/01580370902927758>
- Baumgart-Getz, A., Prokopy, L. S., & Floress, K. (2012). Why Farmers Adopt Best Management Practices in the United States: A Meta-Analysis of the Adoption Literature. *Journal of Environmental Management*, 96(1), 17–25.  
<https://doi.org/10.1016/j.jenvman.2011.10.006>
- Beard, C. (2018). Dewey in the World of Experiential Education. *New Directions for Adult and Continuing Education*, 158, 49–58. <https://doi.org/10.1002/ace.20276>
- Becker, G. S. (2002). The Age of Human Capital. In Lazear, E. (Ed.), *Education in the Twenty-First Century*. Hoover Institution.
- Bedeian, A.G (2016) A Note on the Aphorism “There is Nothing as Practical as a Good Theory”, *Journal of Management History*, 22(2), 236-242,  
<http://dx.doi.org/10.1108/JMH-01-2016-0004>
- Beitin, B. K. (2012). Interview and Sampling: How Many and Whom. In J. F. Gubrium, J. A. Holstein, A. B. Marvasti, & K. D. McKinney (Eds.), *The Sage Handbook of Interview Research: The Complexity of the Craft*. Sage.  
<https://doi.org/10.4135/9781452218403.n17>
- Benavot, A. (2014). *Education for Sustainable Development in Primary and Secondary Education: Background Paper for the Decade of Education for Sustainable Development*. The United Nations Educational, Scientific and Cultural Organization.

- <https://doi.org/10.13140/RG.2.1.1978.9283>
- Bendassolli, P. F. (2013). Theory Building in Qualitative Research: Reconsidering the Problem of Induction. *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research*, 14(1), 25. <http://nbn-resolving.de/urn:nbn:de:0114-fqs1301258>
- Bender, B. (2002). Time and Landscape. *Current Anthropology*, 43(4), 103–112. <https://doi.org/10.1086/339561>
- Bendfeldt, E., McGonagle, M., & Niewolny, K. (2021). Rethinking Farmer Knowledge from Soil to Plate through Narrative Inquiry: An Agroecological Food Systems Perspective. *Journal of Agriculture, Food Systems, and Community Development*, 11(1), 137–151. <https://doi.org/10.5304/jafscd.2021.111.012>
- Bergdahl, E., & Berterö, C.M. (2015) The Myth of Induction. *Nursing Philosophy*, 16(2), 110–120. <https://doi.org/10.1111/nup.12073>
- Bergsteiner, H., & Avery, G. C. (2014). The Twin-Cycle Experiential Learning Model: Reconceptualising Kolb's Theory. *Studies in Continuing Education*, 36(3), 257–274. <https://doi.org/10.1080/0158037x.2014.904782>
- Bergsteiner, H., Avery, G. C., & Neumann, R. (2010). Kolb's Experiential Learning Model: Critique from a Modelling Perspective. *Studies in Continuing Education*, 32(1), 29–46. <https://doi.org/10.1080/01580370903534355>
- Berkes, F. (2017). *Sacred Ecology*. Routledge.
- Berosik, M. A. (2019). *Curators of Place: Farmers' Narratives of Sense of Place and Learning*, Doctoral Thesis, University of North Dakota.
- Billett, S. (2010). The Perils of Confusing Lifelong Learning with Lifelong Education. *International Journal of Lifelong Education*, 29(4), 401–413. <https://doi.org/10.1080/02601370.2010.488803>
- Billett, S. (2014). Conceptualising Lifelong Learning in Contemporary Times. In T. Halttunen et al. (Eds.), *Promoting, Assessing, Recognizing and Certifying Lifelong Learning: International Perspectives and Practices*. 20, 19–35, Springer Dordrecht. [https://doi.org/10.1007/978-94-017-8694-2\\_2](https://doi.org/10.1007/978-94-017-8694-2_2)
- Billett, S. (2018). Distinguishing Lifelong Learning from Lifelong Education. *Journal of Adult Learning, Knowledge and Innovation*, 2(1), 1–7. <https://doi.org/10.1556/2059.01.2017.3>
- Bindi, M., & Olesen, J. E. (2011). The Responses of Agriculture in Europe to Climate Change. *Regional Environmental Change*, 11, 151–158. <https://doi.org/10.1007/s10113-010-0173-x>

- Bjursell, C. (2020). *Tre Perspektiv på Livslångt Lärande*. Jönköping University
- Bjursell, C. (2021). *Why do People Engage in Lifelong Learning?* Inaugural Lecture at the School of Education and Communication, Jönköping University, 23rd September 2021.
- Bjursell, C. (2024). Lifelong Learning: Politics and Philosophy. In E. Eikeland & H. Johannesen (Eds.), *Lifelong learning: Expanding Concepts and Practices*, 59-77, Peter Lang.
- Bjursell, C., Boström, A. K., & Dybelius, A. (2023). Intergenerational Learning in a Changing World. Knitting Generations Together. *Journal of Theories and Research in Education*, 18(2), 51-65. <https://doi.org/10.6092/issn.1970-2221/15942>
- Blackburn, J. J., Robinson, J. S., & Kacal, A. (2015). Determining the Effects of Reflection Type and Cognitive Style on Students' Content Knowledge. *Journal of Agricultural Education*, 56(3), 195–209. <https://doi.org/10.5032/jae.2015.03195>
- Bleazby, J. (2007) *Social Reconstruction Learning: Using Philosophy for Children & John Dewey to Overcome Problematic Dualisms in Education and Philosophy*. Doctoral Dissertation, University of New South Wales, <https://doi.org/10.26190/unsworks/17633>
- Blix Germundsson, L. (2020) *AKIS and Advisory Services in Sweden*, Swedish University of Agricultural Sciences
- Blossfeld, H. P., & Rossbach, H. G. (2019). *Education as a Lifelong Process: The German National Educational Panel Study*. Springer VS Wiesbaden. <https://doi.org/10.1007/978-3-658-23162-0>
- Bold, C. (2013). *Using Narrative in Research*. Sage Publications.
- Boonstra, W. J., Ahnström, J., & Hallgren, L. (2011). Swedish Farmers Talking about Nature: A Study of the Interrelations between Farmers' Values and the Sociocultural Notion of Naturintresse. *Sociologia Ruralis*, 51(4), 420–435. <https://doi.org/10.1111/j.1467-9523.2011.00547.x>
- Boonstra, W. J., & Hentati-Sundberg, J. (2014). Classifying Fishers' Behaviour: An Invitation to Fishing Styles. *Fish and Fisheries*, 17(1), 78–100. <https://doi.org/10.1111/faf.12092>
- Borg, C., & Mayo, P. (2004). Diluted Wine in New Nottles: The Key Messages of the EU Memorandum (on Lifelong Learning). *Lifelong Learning in Europe*, 9(1), 19–25. <https://www.um.edu.mt/library/oar/handle/123456789/1482>

- Borg, C., & Mayo, P. (2005). The EU Memorandum on Lifelong Learning: Old Wine in New Bottles? *Globalisation, Societies and Education*, 3(2), 203–225.  
<https://doi.org/10.1080/14767720500167082>
- Boyadjieva, P., & Ilieva-Trichkova, P. (2018). Lifelong Learning as an Emancipation Process: A Capability Approach. In M. Milana et al. (Eds.), *The Palgrave International Handbook on Adult and Lifelong Education and Learning*.  
[https://doi.org/10.1057/978-1-137-55783-4\\_1](https://doi.org/10.1057/978-1-137-55783-4_1)
- Bradford, T., Jr., Hock, G., Greenhaw, L., & Kingery, W. L. (2019). Comparing Experiential Learning Techniques and Direct Instruction on Student Knowledge of Agriculture in Private School Students. *Journal of Agricultural Education*, 60(3), 80–96. <https://doi.org/10.5032/jae.2019.03080>
- Brandenburg, A. M., & Carroll, M. S. (1995). Your Place or Mine? The Effect of Place Creation on Environmental Values and Landscape Meanings. *Society & Natural Resources*, 8(4), 381–398. <https://doi.org/10.1080/08941929509380931>
- Brandy, C. B. (2013). Landscapes as Contexts for Learning. In R. B. Stevenson, M. Brody, J. Dillon, & A. E. J. Wals (Eds.), *International Handbook of Research on Environmental Education*. Routledge. <https://doi.org/10.4324/9780203813331>
- Braun, V., & Clarke, V. (2006). Using Thematic Analysis in Psychology. *Qualitative Research in Psychology*, 3(2), 77–101.  
<https://doi.org/10.1191/1478088706qp0630a>
- Braun, V., & Clarke, V. (2016). (Mis)Conceptualising Themes, Thematic Analysis, and Other Problems with Fugard and Potts' (2015) Sample-Size Tool for Thematic Analysis. *International Journal of Social Research Methodology*, 19(6), 739–743.  
<https://doi.org/10.1080/13645579.2016.1195588>
- Braun, V., & Clarke, V. (2019). Reflecting on Reflexive Thematic Analysis. *Qualitative Research in Sport, Exercise and Health*, 11(4), 589–597.  
<https://doi.org/10.1080/2159676X.2019.1628806>
- Braun, V., & Clarke, V. (2021a). Can I Use TA? Should I Use TA? Should I not Use TA? Comparing Reflexive Thematic Analysis and Other Pattern-Based Qualitative Analytic Approaches. *Counselling and Psychotherapy Research*, 21(1), 37–47.  
<https://doi.org/10.1002/capr.12360>
- Braun, V., & Clarke, V. (2021b). One Size Fits All? What Counts as Quality Practice in (Reflexive) Thematic Analysis? *Qualitative Research in Psychology*, 18(3), 328–352.  
<https://doi.org/10.1080/14780887.2020.1769238>

- Braun, V., & Clarke, V. (2021c). To Saturate or not to Saturate? Questioning Data Saturation as a Useful Concept for Thematic Analysis and Sample-Size Rationales. *Qualitative Research in Sport, Exercise and Health*, 13(2), 201–216.  
<https://doi.org/10.1080/2159676x.2019.1704846>
- Braun, V., & Clarke, V. (2022). Conceptual and Design Thinking for Thematic Analysis. *Qualitative Psychology*, 9(1), 3–26.
- Braun, V., & Clarke, V. (2023). Toward Good practice in Thematic Analysis: Avoiding Common Problems and Be(com)ing a Knowing Researcher. *International Journal of Transgender Health*, 24(1), 1–6.  
<https://doi.org/10.1080/26895269.2022.2129597>
- Braun, V., Clarke, V., & Weate, P. (2016). Using Thematic Analysis in Sport and Exercise Research. In Smith, B. & Sparkes, A.C (Eds.), *Routledge Handbook of Qualitative Research in Sport and Exercise*, 213–227. Routledge.  
<https://doi.org/10.4324/9781315762012>
- Braun, V., Clarke, V., Hayfield, N., & Terry, G. (2019). Thematic Analysis. In P. Liamputtong (Ed.), *Handbook of Research Methods in Health Social Sciences*, 843–860, Springer.  
[https://doi.org/10.1007/978-981-10-5251-4\\_103](https://doi.org/10.1007/978-981-10-5251-4_103)
- Braun, V., Clarke, V., Hayfield, N., Davey, L., & Jenkinson, E. (2023). Doing Reflexive Thematic Analysis. In Bager-Charleson, S. & McBeath, A. (eds) *Supporting Research in Counselling and Psychotherapy: Qualitative, Quantitative, and Mixed Methods Research*. Palgrave MacMillan.  
<https://doi.org/10.1007/978-3-031-13942-0>
- Breault, D. A. (2014). Inquiry and Education: A Way of Seeing the World. In D. A. Breault & R. Breault (Eds.), *Experiencing Dewey: Insights for Today's Classroom*. Routledge.  
<https://doi.org/10.4324/9780203765081>
- Bresler, L. (2013). The Spectrum of Distance: Empathic Understanding and the Pedagogical Power of the Arts. In B. White & T. Constantino (Eds.), *Aesthetics, Empathy and Education*, 9–28. Peter Lang. <https://doi.org/10.3726/978-1-4539-1041-2>
- Breslin, S. (2023). Computing Trust: On Writing ‘Good’ Code in Computer Science Education. *Journal of Cultural Economy*, 1–20. <https://doi.org/10.1080/17530350.2023.2258887>
- Brody, M. (2005). Learning in Nature. *Environmental Education Research*, 11(5), 603–621.  
<https://doi.org/10.1080/13504620500169809>
- Brookfield, S. (2010). Critical Reflection as an Adult Learning Process. In N. Lyons (Ed.), *Handbook of Reflection and Reflective*

- Inquiry: Mapping a Way of Knowing for Professional Reflective Inquiry*, 33–44. Springer.  
<https://doi.org/10.1007/978-0-387-85744-2>
- Brown, P., & Lauder, H. (2012). Globalization, Knowledge, and the Myth of the Magnet Economy. In D. W. Livingstone & D. Guile (Eds.), *The Knowledge Economy and Lifelong Learning: A Critical Reader*. Sense Publishers Rotterdam.  
[https://doi.org/10.1007/978-94-6091-915-2\\_6](https://doi.org/10.1007/978-94-6091-915-2_6)
- Bruner, J. (1985). Narrative and Paradigmatic Modes of Thought. *Teachers College Record*, 86(6), 97–115.  
<https://doi.org/10.1177/016146818508600606>
- Brunori, G., Barjolle, D., Dockès, A. C., Helmle, S., Ingram, J., Klerkx, L., Moschitz, H., Nemes, G., & Tisenkopfs, T. (2013). CAP Reform and Innovation: The Role of Learning and Innovation Networks. *EuroChoices*, 12(2), 27–33.  
<https://doi.org/10.1111/1746-692X.12025>
- Bucholtz, M. (2000). The Politics of Transcription. *Journal of Pragmatics*, 32(10), 1439–1465.  
[https://doi.org/10.1016/S0378-2166\(99\)00094-6](https://doi.org/10.1016/S0378-2166(99)00094-6)
- Burgess, J., Clark, J., & Harrison, C. M. (2000). Knowledges in Action: An Actor-Network Analysis of a Wetland Agri-environment Scheme. *Ecological Economics*, 35(1), 119–132.  
[https://doi.org/10.1016/S0921-8009\(00\)00172-5](https://doi.org/10.1016/S0921-8009(00)00172-5)
- Burlingame, K. (2020). *Dead Landscapes: and How to Make Them Live*. Doctoral Dissertation, Lund University.
- Burton, R. J. F. (2004). Seeing Through the ‘Good Farmer’s’ Eyes: Towards Developing an Understanding of the Social Symbolic Value of ‘Productivist’ Behaviour. *Sociologia Ruralis*, 44(2), 195–215.  
<https://doi.org/10.1111/j.1467-9523.2004.00270.x>
- Burton, R. J., & Fischer, H. (2015). The Succession Crisis in European Agriculture. *Sociologia Ruralis*, 55(2), 155–166.  
<https://doi.org/10.1111/soru.12080>
- Braito, M. T., Böck, K., Flint, C., Muhar, A., Muhar, S., & Penker, M. (2017). Human–Nature Relationships and Linkages to Environmental Behaviour. *Environmental Values*, 26(3), 365–389.  
<https://doi.org/10.3197/096327117X14913285800706>
- Bridge, G. (2020) Habit, Experience and Environment: A Pragmatist Perspective, *Environment and Planning D: Society and Space*, 2020, 38(2) 345–363,  
<https://doi.org/10.1177/0263775819882715>

- Byrne, D. (2021). A Worked Example of Braun and Clarke's Approach to Reflexive Thematic Analysis. *Quality & Quantity*, 56(3), 1391–1412. <https://doi.org/10.1007/s11135-021-01182-y>
- Byrnes, K. (2012). A Portrait of Contemplative Teaching: Embracing Wholeness. *Journal of Transformative Education*, 10(1), 22–41. <https://doi.org/10.1177/1541344612456431>
- Caffaro, F., Micheletti Cremasco, M., Roccato, M., & Cavallo, E. (2020) Drivers of Farmers' Intention to Adopt Technological Innovations in Italy: The Role of Information Sources, Perceived Usefulness, and Perceived Ease of Use. *Journal of Rural Studies*, 76, 264–271. <https://doi.org/10.1016/j.jrurstud.2020.04.028>
- Cai, J., Guanming, S., & Ruifa, H. (2016). An Impact Analysis of Farmer Field School in China. *Sustainability*, 8(2), 37. <http://www.mdpi.com/2071-1050/8/2/137/htm>
- Calonge, A., Molina-Navarro, E., & Alfaro, P. (2022). Training and Dissemination about the Environment: Keys to Impulse the Abiotic Component of Environmental Education. In C. Vasconcelos & C. S. C. Calheiros (Eds.), *Enhancing Environmental Education through Nature-Based Solutions* (pp. 27–39). Springer. [https://doi.org/10.1007/978-3-030-91843-9\\_2](https://doi.org/10.1007/978-3-030-91843-9_2)
- Carlaw, K., Oxley, L., Walker, O., Thorns, D., & Nuth, M. (2012). Beyond the Hype: Intellectual Property and the Knowledge Society/Knowledge Economy. In D. W. Livingstone & D. Guile (Eds.), *The Knowledge Economy and Lifelong Learning: A Critical Reader*. Sense Publishers. <https://doi.org/10.1111/j.1467-6419.2006.00262.x>
- Carolan, M. (2008). More-Than-Representational Knowledge/s of the Countryside: How we Think as Bodies. *Sociologia Ruralis*, 48(4), 408–422. <https://doi.org/10.1111/j.1467-9523.2008.00458.x>
- Carolan, M. (2018). Lands Changing Hands: Experiences of Succession and Farm (Knowledge) Acquisition among First-generation, Multigenerational, and Aspiring Farmers. *Land Use Policy*, 79, 179–189. <https://doi.org/10.1016/j.landusepol.2018.08.011>
- Chalmers, A. F. (2013). *What is this Thing called Science?* Hackett Publishing Company.
- Chan, A. (2017). Reflection, Reflexivity, Reconceptualisation: Life Story Inquiry and the Complex Positionings of a Researcher. *Reconceptualizing Educational Research Methodology*, 8(1). <https://doi.org/10.7577/rerm.2544>

- Chan, C. K. Y. (2023). *Assessment for Experiential Learning*. Routledge. <https://doi.org/10.4324/9781003018391>
- Charatsari, C., Koutsouris, A., Lioutas, E.D., Kalivas, A., & Tsaliki, E. (2018). Promoting Lifelong Learning and Satisfying Farmers' Social and Psychological Needs Through Farmer Field Schools: Views from Rural Greece, *Journal of Agricultural & Food Information*, 19(1), 66-74, <https://doi.org/10.1080/10496505.2017.1325742>
- Charatsari, C., Lioutas, E.D., Papadaki-Klavdianou, A., Koutsouris, A., & Michalilidis, A. (2022) Experiential, Social, Connectivist, or Transformative Learning? Farm Advisors and the Construction of Agroecological Knowledge, *Sustainability*, 14(4), 2426, <https://doi.org/10.3390/su14042426>
- Chapman, M., & Deplazes Zemp, A. (2024). Moving Beyond Stewardship to Partnership with Nature: How Swiss Alpine Farmers' Relationships to Nature and Relational Values are Co-constituted. *Ecosystems and People*, 20(1). <https://doi.org/10.1080/26395916.2024.2374757>
- Cincera, J., Johnson, B., & Kroufek, R. (2020). Outdoor Environmental Education Programme Leaders' Theories of Experiential Learning. *Cambridge Journal of Education*. 50(6), 729-745 <https://doi.org/10.1080/0305764x.2020.1770693>
- Cisani, M., Castiglioni, B., & Sgard, A. (2022). Landscape and Education: Politics of/in Practices. *Landscape Research*, 47(2), 137-141. <https://doi.org/10.1080/01426397.2022.2039111>
- Clandinin, J. D., & Connelly, M. F. (2004). *Narrative Inquiry: Experience and Story in Qualitative Research*. Jossey-Bass.
- Clandinin, D. J., & Caine, V. (2013). Narrative Inquiry. In Trainor. A.A & Graue, E. (eds) *Reviewing Qualitative Research in the Social Sciences*. Routledge. <https://doi.org/10.4324/9780203813324>
- Clarà, M. (2015). What is Reflection? Looking for Clarity in an Ambiguous Notion. *Journal of Teacher Education*, 66(3), 261-271. <https://doi.org/10.1177/0022487114552028>
- Clark, A., & Emmel, N. (2010). *Using Walking Interviews*. University of Manchester. <https://eprints.ncrm.ac.uk/id/eprint/1323>
- Clover, D. W., Jayme, B., Hall, B. L., & Follen, S. (Eds.). (2013). *The Nature of Transformation: Environmental Adult Education*. Sense Publishers, Rotterdam.
- Coffey, A. (1996). The Power of Accounts: Authority and Authorship in Ethnography. *Qualitative Studies in Education*, 9(1), 61-74. <https://doi.org/10.1080/0951839960090106>

- Cohen, N., & Arieli, T. (2011). Field Research in Conflict Environments: Methodological Challenges and Snowball Sampling. *Journal of Peace Research*, 48(4), 423–435. <https://doi.org/10.1177/0022343311405698>
- Coker, J. S., Heiser, E., Taylor, L., & Book, C. (2017). Impacts of Experiential Learning Depth and Breadth on Student Outcomes. *Journal of Experiential Education*, 40, 5–23. <https://doi.org/10.1177/1053825916678265>
- Colecraft, D., & Kudadjie Freeman, C. (2015). Agricultural Informational Flow in Informal Communication Networks of Farmers in Ghana. *Journal of Development and Communication Studies*, 4(2), 1–19. <https://doi.org/10.4314/jdcs.v4i2.4>
- Coleman, B. M., Bunch, J. C., Thoron, A. C., & Roberts, T. G. (2020). Examining the Effects of Reflection Type and Abstraction order on Content Knowledge and Content Knowledge Retention during Experiential Learning. *Journal of Agricultural Education*, 61(3), 308–320. <https://doi.org/10.5032/jae.2020.03308>
- Coleman, B. M., Bunch, J. C., Thoron, A. C., & Roberts, T. G. (2021). Examining the Effects of Reflection Type and Abstraction order on Students' Scientific Reasoning Skills during Experiential Learning. *Journal of Agricultural Education*, 62(2), 13–26. <https://doi.org/10.5032/jae.2021.02013>
- Coleman, B. M., Bunch, J. C., & Roberts, T. G. (2024). Experiential Learning in Agricultural Education: A Philosophical Discussion. *Journal of Agricultural Education*, 65(1), 283–302. <https://doi.org/10.5032/jae.v65i1.2479>
- Connelly, F. M., & Clandinin, D. J. (2006). Narrative Inquiry. In J. Green, G. Camilli, & P. Elmore (Eds.), *Handbook of Complementary Methods in Education Research*. 375–385. Lawrence Erlbaum. <https://doi.org/10.4324/9780203874769>
- Constantinou, C. S., Georgiou, M., & Perdikogianni, M. (2017). A Comparative Method for Themes Saturation (COMETs) in Qualitative Interviews. *Qualitative Research*, 17(5), 571–588. <https://doi.org/10.1177/1468794116686650>
- Cooreman, H., Vandenabeele, B., De Bruyne, L., Ingram, D., Chiswell, H., Koutsouris, A., Pappa, E., & Marchand, F. (2018). A Conceptual Framework to Investigate the Role of Peer Learning Processes at On-farm Demonstrations in the Light of Sustainable Agriculture. *International Journal of Agricultural Extension*, 91–103.
- Corbin, J., & Strauss, A. L. (2015). *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*. Sage Publishers. <https://doi.org/10.4135/9781452230153>

- Cornelisse, S., Hyde, J., Raines, C., Kelley, K., Ollendyke, D., & Remcheck, J. (2011) Entrepreneurial Extension Conducted via Social Media. *Journal of Extension* 49(6), 5–10.  
<https://doi.org/10.34068/joe.49.06.26>
- Cortazzi, M., & Jin, L. (2006). Asking Questions, Sharing Stories and Identity Construction: Sociocultural Issues in Narrative Research. In: Trahar, S. (Ed.), *Narrative Research on Learning: Comparative and International Perspectives*. Symposium Books.
- Council of Europe. (2000). *European Landscape Convention and Reference Documents*.
- County of Norrbotten. (2023). *Planeringsunderlag för brukningsvärd jordbruksmark i Norrbotten*.
- Cravey, A. J., & Petit, M. (2012). A Critical Pedagogy of Place: Learning through the Body. *Feminist Formations*, 24(2), 100–119.  
<https://doi.org/10.1353/ff.2012.0012>
- Crespo Castellanos, J. M., Martínez-Hernández, C., Mateo Girona, M. R., & Rodríguez De Castro, A. (2023). Landscape Education two Decades after the European Landscape Convention: A Study with Trainee Teachers. *Education Sciences*, 13(12), 1188.  
<https://doi.org/10.3390/educsci13121188>
- Cresswell, T. (2013). *Place: An Introduction*. Wiley-Blackwell.
- Creswell, J. (2015). *30 Essential Skills for the Qualitative Researcher*. Sage Publications.
- Creswell, J.W. & Creswell, J.D. (2023) *Research Design: Qualitative, Quantitative and Mixed Methods Approaches*. Sage.
- Creswell, J. W., & Poth, C. N. (2016). *Qualitative Inquiry & Research Design: Choosing among Five Approaches*. Sage.
- Crotty, M. (2015). *The Foundations of Social Research*. Sage.
- Crowther, J. (2004). “In and Against” Lifelong Learning: Flexibility and Corrosion of Character. *International Journal of Lifelong Education*, 23(2), 125–136.  
<https://doi.org/10.1080/0260137042000184174>
- Curry, N., Ingram, J., Kirwan, J., & Maye, D. (2012). Knowledge Networks for Sustainable Agriculture in England. *Outlook on Agriculture*, 41(4), 243–248.  
<https://doi.org/10.5367/oa.2012.0106>
- Dahlin, B. (2001). The Primacy of Cognition—or of Perception? A Phenomenological Critique of the Theoretical Bases of Science Education. *Science & Education*, 10, 453–475.  
<https://doi.org/10.1023/a:1011252913699>

- Dale, V. H., Kline, K. L., Kaffka, S. R., & Langeveld, J. W. A. (2012). A Landscape Perspective on Sustainability of Agricultural Systems. *Landscape Ecology*, 28, 1111–1123. <https://doi.org/10.1007/s10980-012-9814-4>
- Dalton, T. J., Yahaya, I., & Naab, J. (2014). Perceptions and Performance of Conservation Agriculture Practices in Northwestern Ghana. *Agriculture, Ecosystems & Environment*, 187, 65–71. <https://doi.org/10.1016/j.agee.2013.11.015>
- Daniels, J., Baldacchino, G., & Vodden, K. (2015). Matters of Place: The Making of Place and Identity. In K. Vodden, G. Baldacchino, & R. Gibson (Eds.), *Place Peripheral: Place-Based Development in Rural, Island, and Remote Regions*. <https://www.um.edu.mt/library/oar/handle/123456789/16581>
- Dargan, L., & Harris, E. (2010). The Reconstruction of Local Food Knowledge in the Isle of Skye, Scotland. In M. Fonte & A. G. Papadopoulos (Eds.), *Naming Food after Places: Food Relocalisation and Knowledge Dynamics in Rural Development*. Routledge. <https://doi.org/10.4324/9781315597195>
- David, P. A., & Foray, D. (2002). An Introduction to the Economy of the Knowledge society. *International Social Science Journal*, 54(171), 9–23. <https://doi.org/10.1111/1468-2451.00355>
- David, P. A., & Foray, D. (2005). Economic Fundamentals of the Knowledge Society. *Policy Futures in Education*. 1(1). <https://doi.org/10.2304/pfie.2003.1.1.7>
- Davis, K. (2008) Extension in Sub-Saharan Africa: Overview and Assessment of Past and Current Models, and Future Prospects. *Journal of International Agricultural and Extension Education*. 15(3), 15–28.
- Delors, J., Al Mufti, I., Amagi, I., Carneiro, R., Chung, F., Geremek, B., Gorham, W., Kornhauser, A., Manley, M., Padrón Quero, M., Savane, M.A., Singh, K., Stavenhagen, R., Myong, W.S, & Zhou, N. (1996). *Learning: The Treasure Within. Report to UNESCO of the International Commission on Education for the Twenty-First Century*. United Nations Educational, Scientific and Cultural Organization.
- Denicolo, P., Long, T., & Bradley-Cole, K. (2016). *Constructivist Approaches and Research Methods: A Practical Guide to Exploring Personal Meanings*. Sage Publications. <https://doi.org/10.4135/9781526402660>
- Denzin, N. K., & Salvo, J. (2020). *New Directions in Theorizing Qualitative Research*. Myers Education Press.

- Devine-Wright, P., & Clayton, S. (2010) Introduction to the Special Issue: Place, Identity and Environmental Behavior. *Journal of Environmental Psychology*, 30(3), 267–70
- Dewey, J. (1897). *My Pedagogic Creed*. E.L Kellogg & Company
- Dewey, J. (1902). *The School and Society: The Child and the Curriculum*. University of Chicago Press.
- Dewey, J. (1916). *Democracy and Education: An Introduction to the Philosophy of Education*. The MacMillan Company
- Dewey, J. (1922/1957). *Human Nature and Conduct. An Introduction to Social Psychology*. The Modern Library.
- Dewey, J. (1928) Body and Mind, *Bulletin New York Academy of Medicine*, 4(1), 3–19.
- Dewey, J. (1929). *Experience and Nature*. Dover Publications
- Dewey, J. (1930). Philosophy and Education. In J. A. Boydston (Ed.), *The Later Works of John Dewey, Volume 5, 1925–1953: 1929–1930, Essays, The Sources of a Science of Education, Individualism, Old and New, and Construction and Criticism*. Illinois University Press.
- Dewey, J. (1933). *How we Think: A Restatement of the Relation of Reflective Thinking to the Educative Process*. D.C. Heath & Co.
- Dewey, J. (1934). *Art as Experience*. University of Michigan Press
- Dewey, J. (1938). *Experience and Education*. University of Michigan Press
- Dewey, J (1938) *Logic: The Theory of Inquiry*, Read Books
- Dewey, J. (1984). The Quest for Certainty. In J. A. Boydston (Ed.), *The Later Works of John Dewey, Volume 5, 1925–1953: 1929–1930, Essays, The Sources of a Science of Education, Individualism, Old and New, and Construction and Criticism*. Southern Illinois University Press.
- Dey, I. (1999). *Grounding Grounded Theory: Guidelines for Qualitative Inquiry* Academic Press.
- DiBenedetto, C. A., Blythe, J. M., & Myers, B. E. (2017). Effects of the Order of Abstraction and Type of Reflection on Content Knowledge when Teaching Experientially in a High School Classroom. *Journal of Agricultural Education*, 58(2), 67–82. <https://doi.org/10.5032/jae.2017.02067>
- Dierking, L. D., Falk, J. H., & Storksdieck, M. (2013). Learning from Neighboring Fields: Conceptualizing Outcomes of Environmental Education within the Framework of Free-choice Learning Experiences. In R. B. Stevenson, M. Brody, J. Dillon, & E. J. Wals (Eds.), *International Handbook of Research on Environmental Education*. Routledge. <https://doi.org/10.4324/9780203813331>

- Dillon, J., Rickinson, M., Teamey, K., Morris, M., Choi, M. Y., & Sanders, D. (2006). The Value of Outdoor Learning: Evidence from Research in the UK and Elsewhere. In J. Dillon (Ed.), *Towards a Convergence between Science and Environmental Education: The Selected Works of Justin Dillon*. Routledge.  
<https://doi.org/10.4324/9781315730486>
- Dolinska, A., & D'Aquino, P. (2016). Farmers as Agents in Innovation Systems: Empowering Farmers for Innovation through Communities of Practice. *Agricultural Systems*, 142, 122–130.  
<https://doi.org/10.1016/j.agsy.2015.11.009>
- Donohoe, J. (2014). *Remembering Places: A Phenomenological Study of the Relationship between Memory and Place*. Lexington Books.
- Dooley, E. (2021). *Reorientating Social Learning: An Ethnographic Exploration of Metacognition and Critical Discourse in Farmer Discussion Groups*. Doctoral dissertation, University of Exeter.
- Duranti, A. (2006). Transcripts, like Shadows on a Wall. *Mind, Culture, and Activity*, 13(4), 301–310.  
[https://doi.org/10.1207/s15327884mca1304\\_3](https://doi.org/10.1207/s15327884mca1304_3)
- Duvall, J., & Zint, M. (2007). A Review of Research on the Effectiveness of Environmental Education in Promoting Intergenerational Learning. *The Journal of Environmental Education*, 38(4), 14–24. <https://doi.org/10.3200/joe.38.4.14-24>
- Dykhuizen, G. (1959). John Dewey: The Vermont Years. *Journal of the History of Ideas*, 20(4), 515–544.  
<https://www.jstor.org/stable/2707890>
- Eckersten, H., Karlsson, S., & Torssell, B. (2008). *Climate Change and Agricultural Land Use in Sweden: A Literature Review*, Swedish University of Agricultural Sciences
- Ecorys, Metis & Agrosynergy (2023). *Mapping and Analysis of CAP Strategic Plans Assessment of Joint Efforts for 2023–2027*.
- Egan, J. D., Tolman, S., McBrayer, J. S., & Ballesteros, E. (2023). Reconceptualizing Kolb's Learning Cycle as Episodic and Lifelong. *Experiential Learning and Teaching in Higher Education*, 6(1), 24–33. <https://doi.org/10.46787/elthe.v6i1.3607>
- Egelandsdal, K., & Ness, I. J. (2021). The Possible in the Life and Work of John Dewey. In V. P. Glăveanu (Ed.), *The Palgrave Encyclopedia of the Possible*. 1234-1240, Palgrave MacMillan.  
<https://doi.org/10.1007/978-3-030-90913-0>
- Eistrup, M., Sanches, A. R., Muñoz-Rojas, J., & Pinto Correia, T. (2019). A “Young Farmer Problem”? Opportunities and

- ConStraints for Generational Renewal in Farm Management: An Example from Southern Europe. *Land*, 8(4), 70.  
<https://doi.org/10.3390/land8040070>
- Elliott, J. (2005). *Using Narrative in Social Research: Qualitative and Quantitative Approaches*. Sage Publications.  
<https://doi.org/10.4135/9780857020246>
- Elliott, V. (2018). Thinking about the Coding Process in Qualitative Data Analysis. *Qualitative Report*, 23(11), 2850–2861.  
<https://doi.org/10.46743/2160-3715/2018.3560>
- Emerson, R. M., Fretz, R. I., & Shaw, L. L. (2011). *Writing Ethnographic Fieldnotes*. University of Chicago Press.
- Emmel, N., & Clark, A. (2009). *The Methods Used in Connected lives: Investigating Networks, Neighbourhoods, and Communities*. ESRC National Centre for Research Methods.  
<http://www.manchester.ac.uk/realities/research/connected>
- Ernst, C. M., Buddle, C. M., & Soluk, L. (2014). The Value of Introducing Natural History Field Research into Undergraduate Curricula: A Case Study. *Bioscience Education*. 1-12  
<https://doi.org/10.11120/beej.2014.00023>
- Errington, A., & Lobley, M. (2002). Handing over the Reins: A Comparative Study of International Farm Transfers. In *Agricultural Economics Society Annual Conference*. Wageningen: European Association of Agricultural Economists.  
<https://doi.org/10.22004/ag.econ.24905>
- European Commission. (2000). *Commission Staff Working Paper: A Memorandum on Lifelong Learning*. Brussels, Belgium.
- European Commission. (2001). *Making a European Area of Lifelong Learning a Reality*. Brussels, Belgium.
- European Commission. (2019). *Building Stronger Agricultural Knowledge and Innovation Systems (AKIS) to Foster Advice, Knowledge and Innovation in Agriculture and Rural Areas*
- European Communities. (2004). *Facing the Challenge*. Official Publications of the European Communities.
- European Union. (2016). Agriculture statistics: family farming in the EU: 2016. [http://ec.europa.eu/eurostat/statistics-explained/index.php/Agriculture\\_statistics\\_-\\_Family\\_farming\\_in\\_the\\_EU](http://ec.europa.eu/eurostat/statistics-explained/index.php/Agriculture_statistics_-_Family_farming_in_the_EU)
- Falk, J. H. (2005). Free-choice Environmental Learning: Framing the Discussion. *Environmental Education Research*, 11(3), 265–280. <https://doi.org/10.1080/13504620500081129>
- Fang, W.-T., Hassan, A., & Lepage, B. A. (2023). *The Living Environmental Education: Sound Science toward a Cleaner, Safer, and Healthier Future*. Springer.

- <https://doi.org/10.1007/978-981-19-4234-1>  
 Fathi, M. (2023). 'City as Jome': Conducting Walking Interviews as a Biographical Method with Migrant Men in Cork. *Irish Journal of Sociology*, 31(1), 82–100.  
<https://doi.org/10.1177/07916035221131609>
- Faure, E., Herrera, F., Kaddoura, A.R., Lopes, H., Petrovski, A.V., Rahnama, M., & Ward, F.C (1972). *Learning to Be: The World of Education Today and Tomorrow*. The United Nations Educational, Scientific and Cultural Organization
- Fazey, I. R. A., Fazey, J. A., Salisbury, J. G., Lindenmayer, D., & Dovers, S. (2006). The Nature and Role of Experiential Knowledge for Environmental Conservation. *Environmental Conservation*, 33(1), 1–10.  
<https://doi.org/10.1017/S037689290600275X>
- Feder, G., Murgai, R., & Quizon, J. B. (2004). Sending Farmers back to School: The Impact of Farmer Field Schools in Indonesia. *Applied Economic Perspectives and Policy*, 26(1), 45–62.  
<https://doi.org/10.1111/J.1467-9353.2003.00161.X>
- Fenwick, T. J. (2001). Experiential Learning: A Theoretical Critique from Five Perspectives. *Information Series*. 385.
- Finlay, L. (2021). Thematic Analysis: The 'Good', the 'Bad', and the 'Ugly'. *European Journal for Qualitative Research in Psychotherapy*, 11, 103–116.  
<https://doi.org/10.24377/EJQRP.article3062>
- Fleck, L. (1979). *Genesis and Development of a Scientific Fact*. University of Chicago Press.
- Fogelfors, H., Wivstad, M., Eckersten, H., Holstein, F., Johansson, S., & Verwijst, T. (2009). *Strategic Analysis of Swedish Agriculture in a Time of Change*. Swedish University of Agricultural Sciences
- Fonte, M. (2008). Knowledge, Food, and Place: A Way of Producing, a Way of Knowing. *Sociologia Ruralis*, 48(2), 200–222.  
<https://doi.org/10.1111/j.1467-9523.2008.00462.x>
- Franzel, S., Wambugu, C., Nanok, T., & Coe, R. (2013) The 'Model Farmer' Extension Approach Revisited: Are Expert Farmers Effective Innovators and Disseminators. In: *Proceedings of the Conference on Innovations in Extension*, Nov 15-18, 2011.
- Freeman, L., & Sullivan, C. (2019). Thematic Analysis. In Sullivan, C & Forrester, M.A (eds) *Doing qualitative research in psychology: A practical guide*. Sage Publications
- Freeman, M. (2011). Stories, Big and Small: Toward a Synthesis. *Theory & Psychology*, 21(1), 114–121.  
<https://doi.org/10.1177/0959354309354394>

- Gadamer, H.-G. (2012). *Truth and Method*. Continuum International Publishing Group.
- Garavito-Bermúdez, D. (2016). *Learning Ecosystem Complexity: A Study on Small-scale Fishers' Ecological Knowledge Generation*. Doctoral dissertation, Stockholm University.
- Garavito-Bermúdez, D. (2019). Biocultural Learning: Beyond Ecological Knowledge Transfer. *Journal of Environmental Planning and Management*, 63(10), 1791–1810.  
<https://doi.org/10.1080/09640568.2019.1688651>
- Garavito-Bermúdez, D., & Boonstra, W. J. (2023). Knowing through Fishing: Exploring the Connection between Fishers' Ecological Knowledge and Fishing Styles. *Journal of Environmental Planning and Management*, 66(9), 1841–1860.  
<http://dx.doi.org/10.1080/09640568.2022.2043257>
- Garavito-Bermúdez, D., & Lundholm, C. (2017). Exploring Interconnections between Local Ecological Knowledge, Professional Identity and Sense of Place among Swedish Fishers. *Environmental Education Research*, 23(5), 627–655.  
<https://doi.org/10.1080/13504622.2016.1146662>
- Garavito-Bermúdez, D., Lundholm, C., & Crona, B. (2016). Linking a Conceptual Framework on Systems Thinking with Experiential Knowledge. *Environmental Education Research*, 22(1), 89–110. <https://doi.org/10.1080/13504622.2014.936307>
- Garrison, J. (1999). John Dewey's Theory of Practical Reasoning. *Educational Philosophy and Theory*, 31(3), 291–312.  
<https://doi.org/10.1111/j.1469-5812.1999.tb00467.x>
- Geertz, C. (1973). *The Interpretation of Cultures*. Basic Books.
- Geertz, C. (1983). *Local Knowledge: Further Essays in Interpretive Anthropology*. Basic Books.
- Georgakopoulou, A. (2007). “Thinking Big with Small Stories in Narrative and Identity Analysis”. *Narrative Inquiry*, 16(1), 122-130. <https://doi.org/10.1075/ni.16.1.16geo>
- Germeten, S. (2013). Personal Narratives in Life History Research. *Scandinavian Journal of Educational Research*, 57(6), 612–624. <https://doi.org/10.1080/00313831.2013.838998>
- Gielen, K., & Nyström, M. (2019). *Nationell kunskapsförsörjning för en hållbar och konkurrenskraftig animaliesektor*. Swedish Board of Agriculture.
- Gilleran Stephens, C., Short, A., & Linnane, S. (2021). H2O Heroes: Adding Value to an Environmental Education Outreach Programme through Intergenerational Learning. *Irish Educational Studies*.  
<https://doi.org/10.1080/03323315.2021.1932549>

- Glesne, C. (2011). *Becoming Qualitative Researchers* Pearson.
- Gliessman, S. (2018). The Co-creation of Agroecological Knowledge. *Agroecology and Sustainable Food Systems*, 42(1), 1–12.  
<https://doi.org/10.1080/21683565.2017.1289727>
- Goldman, R., Hunt, M. K., Allen, J. D., Hauser, S., Emmons, K., Maeda, M., & Sorensen, G. (2012). The Life History Interview Method: Applications to Intervention Development. *Health Education & Behavior*, 30(5), 564–581.  
<https://doi.org/10.1177/1090198103254393>
- Goodson, I. (2001). The Story of Life History: Origins of the Life History Method in Sociology. *Identity: An International Journal of Theory and Research*, 1(2), 129–142.  
[https://doi.org/10.1207/S1532706XID0102\\_02](https://doi.org/10.1207/S1532706XID0102_02)
- Goodson, I. (2013). *Developing Narrative Theory: Life Histories and Personal Representation*. Routledge.
- Goodson, I., & Gill, S. (2011). *Narrative Pedagogy: Life History and Learning*. Peter Lang.
- Goodson, I., & Sikes, P. (2001). *Life History Research in Educational Settings: Learning Lives*. Open University Press.
- Gottschall, J. (2012). The Storytelling Animal: How Stories make us Juman. *Scientific Study of Literature*, 2(2), 115–130.  
<https://doi.org/10.1075/ssol.2.2.07bor>
- Gough, A. (2013). The Emergence of Environmental Education Research: A “History” of the Field. In R. B. Stevenson, M. Brody, J. Dillon, & A. E. J. Wals (Eds.), *International Handbook of Research on Environmental Education*. Routledge.
- Gould, R. K., Ardoin, N. M., Thomsen, J., & Wyman Roth, N. (2019). Exploring Connections between Environmental Learning and Behavior through Four Everyday-life Case Studies. *Environmental Education Research*, 25(3), 314–340.  
<https://doi.org/10.1080/13504622.2018.1510903>
- Greene, J., & McClintock, C. (1985). Triangulation in Evaluation: Design and Analysis Issues. *Evaluation Review*, 9(5), 523–545.  
<https://doi.org/10.1177/0193841X8500900501>
- Greenwood, D. (2013). A Critical Theory of Place-Conscious Education. In R. Stevenson, M. Brody, J. Dillon, & A. Wals (Eds.), *International Handbook of Research on Environmental Education*. Routledge.
- Grokholskiy, V. L., Kaida, N. I., Albul, S. V., Ryzhkov, E. V., & Trehub, S. Y. (2020). Cognitive and Metacognitive Aspects of the Development of Lifelong Learning Competencies in Law Students. *International Journal of Cognitive Research in Science, Engineering and Education*, 8(2), 1–14.

- Grubbström, A., & Joosse, S. (2021). New Entrants in Agriculture: The Case of Young Immigrant Farmers in Sweden. *European Countryside*, 13(1), 22–37.  
<https://doi.org/10.2478/euco-2021-0002>
- Gruenewald D. A. (2003b). Foundations of Place: A Multidisciplinary Framework for Place-Conscious Education. *American Educational Research Journal*, 40, 619-654.
- Gruenewald D. A., Smith G. A. (Eds.). (2014). *Place-Based Education in the Global Age: Local Diversity*. Psychology Press.
- Hager, P. (2021). Concepts and Definitions of Lifelong Learning. In M. London (Ed.), *The Oxford Handbook of Lifelong Learning*.  
<https://doi-org.e.bibl.liu.se/10.1093/oxfordhb/9780197506707.013.2>
- Hägerstrand, T. (2009). *Tillvaroväven*. Forskningsrådet Formas.
- Hakala, K., Jauhiainen, L., Himanen, S. J., Rötter, R., Salo, T., & Kahiluoto, H. (2012). Sensitivity of Barley Varieties to Weather in Finland. *Journal of Agricultural Science*, 150, 145–160.  
<https://doi.org/10.1017/S0021859611000694>
- Hamilton, W., Bosworth, G., & Ruto, E. (2015). Entrepreneurial Younger Farmers and the “Young Farmer Problem” in England. *Agriculture and Forestry*, 61(4), 61–69.  
<https://doi.org/10.17707/Agricultforest.61.4.05>
- Hammersley, M., & Atkinson, P. (2019). *Ethnography: Principles in Practice*. Routledge.
- Hamunen, K., Appelstrand, M., Hujala, T., Kurttila, M., Srisankarajah, N., Vilkriste, L., Westberg, L., & Tikkanen, J. (2015). Defining Peer-to Peer Learning: From an Old ‘Art of Practice’ to a New Mode of Forest Owner Extension? *The Journal of Agricultural Education and Extension*, 21(4), 293–307.  
<https://doi.org/10.1080/1389224X.2014.939199>
- Hanks, W. F. (1991). Foreword. In J. Lave & E. Wenger, *Situated Learning: Legitimate Peripheral Participation*. Cambridge University Press.  
<https://doi.org/10.1017/CBO9780511815355.002>
- Haque, M. S. (2022). Inductive and/or Deductive Research Designs. In Islam, M.R, Khan, N.A, & Baikady, R. (eds) *Principles of Social Research Methodology*. 59-71, Singapore: Springer.  
[https://doi.org/10.1007/978-981-19-5441-2\\_5](https://doi.org/10.1007/978-981-19-5441-2_5)
- Harari, Y. N. (2014). *Sapiens: A Brief History of Humankind*. McClelland and Stewart.
- Harding, J. (2013). *Qualitative Data Analysis: From Start to Finish*. Sage Publications.

- Hart, T. (2014). *The Integrative Mind: Transformative Education for a World on Fire*. Bloomsbury Publishing.
- Haydon, G., Browne, G., & Van Der Riet, P. (2018). Narrative Inquiry as a Research Methodology Exploring Person-centred Care in Nursing. *Collegian*, 25(1), 125–129. <https://doi.org/10.1016/j.colegn.2017.03.001>
- Hébert, C. (2015). Knowing and/or Experiencing: A Critical Examination of the Reflective Models of John Dewey and Donald Schön. *Reflective Practice*, 16(3), 361–371. <https://doi.org/10.1080/14623943.2015.1023281>
- Heise, A. (2018). *Ludwik Fleck's Philosophy and Sociology of Science and the Resilience of Modern Neoclassical Economics: A Case Study*. ZÖSS Discussion Paper, 70, Hamburg University
- Hermans, F., Klerkx, L., & Roep, D. (2015). Structural Conditions for Collaboration and Learning in Innovation Networks: Using an Innovation System Performance Lens to Analyse Agricultural Knowledge Systems. *Journal of Agricultural Education and Extension*, 21(1), 35–54. <https://doi.org/10.1080/1389224X.2014.991113>
- Höckert, J. (2017). *Sharing Lifeworlds and Creating Collaborative Cultures Challenges for the Advisory System in order to Contribute to a Sustainable Farm Development*, Doctoral Dissertation. Swedish University of Agricultural Sciences.
- Höglin, S. (1998). *Agrarhistorisk landskapsanalys över Norrbottens län: Länsöversikt*. Riksantikvarieämbetet.
- Hodkinson, P., Biesta, G., & James, D. (2008) Understanding Learning Culturally: Overcoming the Dualism Between Social and Individual Views of Learning, *Vocations and Learning*, 1, 27–47, <https://doi.org/10.1007/s12186-007-9001-y>
- Holdo, M. (2023). Critical Reflection: John Dewey's Relational View of Transformative Learning. *Journal of Transformative Education*, 21(1), 9–25. <https://doi.org/10.1177/15413446221086727>
- Holman, D., Pavlica, K., & Thorpe, R. (1997). Rethinking Kolb's Theory of Experiential Learning: The Contribution of Social Constructivism and Activity Theory. *Management Learning*, 28(2), 135–148, <https://doi.org/10.1177/1350507697282003>
- Horsdal, M. (2011). *Telling Lives: Exploring Dimensions of Narratives*. Routledge.
- Hung, R. (2017). A Critical Trilogy of Place: Dwelling in/on an Irrigated Place. *Environmental Education Research*, 23(5), 615–626. <https://doi.org/10.1080/13504622.2016.1182624>

- Ingold, T. (1993). The Temporality of the Landscape. *World Archaeology*, 25(2), 152–174.  
<https://doi.org/10.1080/00438243.1993.9980235>
- Ingold, T. (2000). *The Perception of the Environment: Essays in Livelihood, Dwelling and Skill*. Routledge.
- Ingold, T. (2011). *Being Alive: Essays on Movement, Knowledge and Description*. Routledge.
- Ingram, J. (2010). Technical and Social Dimensions of Farmer Learning: An Analysis of the Emergence of Reduced Tillage Systems in England. *Journal of Sustainable Agriculture*, 34(2), 183–201. <https://doi.org/10.1080/10440040903482589>
- Ingram, J. (2015). Framing Niche-Regime Linkage as Adaptation: An Analysis of Learning and Innovation Networks for Sustainable Agriculture across Europe. *Journal of Rural Studies*, 40, 59–75. <https://doi.org/10.1016/j.jrurstud.2015.06.003>
- Ingram, J., Chiswell, H., Mills, J., Debruyne, L., Cooreman, H., Koutsouris, A., Pappa, E., & Marchand, F. (2018) Enabling Learning in Demonstration Farms: A Literature Review, *International Journal of Agricultural Extension*, 29-41
- Isaac, M. E., Erickson, B. H., Quashie-Sam, S. J., & Timmer, V. R. (2007). Transfer of Knowledge on Agroforestry Management Practices: The Structure of Farmer Advice Networks. *Ecology and Society*, 12(2), 35. <https://www.jstor.org/stable/26267879>
- Ison, N., Cusick, A., & Bye, R. A. (2014). Techniques to Tell the Real Story: Narrative Inquiry in Health Services Research. *BMC Health Services Research*, 14, 1.  
<https://doi.org/10.1186/1472-6963-14-S2-P22>
- Istead, L., & Shapiro, B. (2014). Recognizing the Child as Knowledgeable Other: Intergenerational Learning Research to Consider Child-to-Adult Influence on Parent and Family Cco-knowledge. *Journal of Research in Childhood Education*, 28(1), 115–127.  
<https://doi.org/10.1080/02568543.2013.851751>
- Jackson, J. E. (1990). “Déjà Entendu”: The Liminal Qualities of Anthropological Fieldnotes. *Journal of Contemporary Ethnography*, 19(1), 8–43.  
<https://doi.org/10.1177/089124190019001002>
- Jackson, A. Y., & Mazzei, L. A. (2012). *Thinking with Theory in Qualitative Research: Viewing Data Across Multiple Perspectives*. Routledge.
- Jacobs, M. H. (2006). *The Production of Mindscapes: A Comprehensive Theory of Landscape Experience*, Doctoral Dissertation, Wageningen University

- Jaitner, D (2018) Reconstructive Habits: Dewey on Human Functioning, *Ethics in Progress*, Vol. 9, No. 1, pp. 4-24.  
<https://doi.org/10.14746/eip.2018.1.1>
- Jarvis, P. (2010). *Adult Education and Lifelong Learning: Theory and Practice*. Taylor & Francis Group.
- Jarvis, P. (2006). *The Theory and Practice of Teaching*. Routledge.
- Jarvis, P. (2009). *Learning to be a Person in Society*. Routledge.
- Jarvis, P. (2012a). *Paradoxes of Learning: On Becoming an Individual in Society*. Routledge.
- Jarvis, P. (2012b). *Towards a Comprehensive Theory of Human Learning*. Routledge.
- Jarvis, P. (Ed.). (2009). *The Routledge International Handbook of Lifelong Learning*. Routledge.
- Jarvis, P., Parker, S., & Thorndike, E. L. (2006). *Human Learning*. Routledge.
- Jeffery, B. (2018). Ethnographic Writing. In D. Beach & S. Marques Da Silva (Eds.), *The Wiley Handbook of Ethnography of Education*, 33–44. John Wiley & Sons.
- Jeppesen, E., Kronvang, B., Olesen, J. E., Audset, J., Søndergaard, M., Hoffmann, C.C., Andersen, H.E., Lauridsen, T.L., Liboriusen, L., Larsen, S.E., Beklioglu, M., Meerhoff, M., Özen, A., & Özkan, K. (2010). Climate Change Effects on Nitrogen Loading from Cultivated Catchments in Europe: Implications for Nitrogen Retention, Ecological State of Lakes, and Adaptation. *Hydrobiologia*, 663, 1–21.  
<https://doi.org/10.1007/s10750-010-0547-6>
- Jick, T. D. (1979). Mixing Qualitative and Quantitative Methods: Triangulation in Action. *Administrative Science Quarterly*, 24(4), 602–611. <https://doi.org/10.2307/2392366>
- Johansson, S., & Gidlund, M. (2021). *Innovation i livsmedelskedjan: Slutrapport*. Sweden Food Arena.
- Johansson, N. (2023). Arctic Farmsteads as Places of Becoming. In P. Wallin (Ed.), *Exploring Meaning and Belonging: Lifescapes, Landscapes, Soundscapes*. Norwegian University of Technology and Sciences.
- Johansson, N. & Lundqvist Jones, T. (2026) Trollet i trollskogen: folktron som ett pedagogiskt verktyg i naturundervisningen, *Att Lära In Ute Bladet*, 40(1), 13-14, Naturskoleförningen
- Johnson, M. (2006). Mind Incarnate: From Dewey to Damasio. *Daedalus*, 135(3), 46-54.  
<https://doi.org/10.1162/daed.2006.135.3.46>

- Johnson, J. T. (2012). Place-Based Learning and Knowing: Critical Pedagogies Grounded in Indigeneity. *GeoJournal*, 77, 829–836. <https://doi.org/10.1007/s10708-010-9379-1>
- Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed Methods Research: A Research Paradigm whose Time has Come. *Educational Researcher*, 33(7), 14–26. <https://doi.org/10.3102/0013189X033007014>
- Jonasson, L. (2020). *Livsmedelsproduktion i Norrbottens län 2020: Arbetstillfällena, omsättning och försörjningsförmåga av mat*. Länsstyrelsen Norrbotten.
- Jonsen, K., & Jehn, K. A. (2009). Using Triangulation to Validate Themes in Qualitative Studies. *Qualitative Research in Organizations and Management: An International Journal*, 4(2), 123–150. <https://doi.org/10.1108/17465640910978391>
- Jonsson, G. (2023). *Naturbruk i Norrbotten*. County of Norrbotten.
- Joose, S., & Grubbström, A. (2017). Continuity in Farming: Not just Family Business. *Journal of Rural Studies*, 50, 198–208. <https://doi.org/10.1016/j.jrurstud.2016.11.018>
- Jørs, E., Konradsen, F., Huici, O., Morant, R. C., Volk, J., & Lander, F. (2016). Impact of Training Bolivian Farmers on Integrated Pest Management and Diffusion of Knowledge to Neighboring Farmers. *Journal of Agromedicine*, 21(2), 200–208. <https://doi.org/10.1080/1059924X.2016.1143428>
- Jose, S., Patrick, P. G., & Moseley, C. (2017). Experiential Learning Theory: The Importance of Outdoor Classrooms in Environmental Education. *International Journal of Science Education, Part B*, 7(3), 269–284. <https://doi.org/10.1080/21548455.2016.1272144>
- Josselson, R. (2007). The Ethical Attitude in Narrative Research. In D. J. Clandinin (Ed.), *Handbook of Narrative Inquiry: Mapping a Methodology*, 537–566, Sage Publications. <https://doi.org/10.4135/9781452226552.n21>
- Juhola, S., Klein, N., Käyhkö, J., & Neset, T. S. (2017). Climate Change Transformations in Nordic Agriculture. *Journal of Rural Studies*, 51, 28–36. <https://doi.org/10.1016/j.jrurstud.2017.01.013>
- Kamarudin, H., Abd Aziz, N. E., Khairulnizam Zaini, M., & Ariff, N. Z. Z. (2015). Exploring Knowledge Sharing Practices among Paddy Farmers towards Building a Foundation for Knowledge Creation. *International Journal of Social Science and Humanity*, 5(1), 19–23. <https://doi.org/10.7763/IJSSH.2015.V5.434>

- Kaplan, A. (2016). Lifelong Learning: Conclusions from a Literature Review. *International Online Journal of Primary Education*, 5(2), 43–45. <https://izlik.org/JA56FE68KR>
- Karlsson, A-B. (ed.) (2023) *Kompetensförsörjning: en förutsättning för att utveckla svensk livsmedelsproduktion: Slutrapport från KSLA:s kommitté för kompetensförsörjning inom livsmedelssystem*. Kungliga Skogs- och Lantbruksakademien.
- Kelly, N., McLean Bennett, J., & Starasts, A. (2017) Networked Learning for Agricultural Extension: A Framework for Analysis and Two Cases, *The Journal of Agricultural Education and Extension*, 23(5), 399-414. <https://doi.org/10.1080/1389224X.2017.1331173>
- Kerr, C., Nixon, A., & Wild, D. (2010). Assessing and Demonstrating Data Saturation in Qualitative Inquiry Supporting Patient-Reported Outcomes Research. *Expert Review of Pharmacoeconomics & Outcomes Research*, 10(3), 269–281. <https://doi.org/10.1586/erp.10.30>
- Kiefer, M., & Trumpp, N. M. (2012). Embodiment theory and education: The foundations of Cognition in Perception and Action. *Trends in Neuroscience and Education*, 1, 15–20. <https://doi.org/10.1016/j.tine.2012.07.002>
- Kilpatrick, S., & Johns, S. (2003). How Farmers Learn: Different Approaches to Change. *Journal of Agricultural Education and Extension*, 9(4), 151–164. <https://doi.org/10.1080/13892240385300231>
- Kim, J. (2015). *Understanding Narrative Inquiry*. Sage.
- King, M., Altdorff, D., Li, P., Galagedara, L., Holden, J., & Unc, A. (2018). Northward Shift of the Agricultural Climate Zone under 21st-century Global Climate Change. *Scientific Reports*, 8, 1–10. <https://doi.org/10.1038/s41598-018-26321-8>
- Kinney, P. (2017). Walking Interviews. *Social Research Update*, 67. University of Surrey.
- Klerkx, L., & Leeuwis, C. (2008) Matching Demand and Supply in the Agricultural Knowledge Infrastructure: Experiences with Innovation Intermediaries. *Food Policy*, 33(3), 260–276. <https://doi.org/10.1016/j.foodpol.2007.10.001>
- Klerkx, L., Van Mierlo, B., & Leeuwis, C. (2012). Evolution of Systems Approaches to Agricultural Innovation: Concepts, Analysis, and Interventions. In I. Darnhofer, D. Gibbon, & B. Dedieu (Eds.), *Farming Systems Research into the 21st Century: The New Dynamic*. Springer. [https://doi.org/10.1007/978-94-007-4503-2\\_20](https://doi.org/10.1007/978-94-007-4503-2_20)

- Klöffel, T., Young, E. H., Borchard, N., Vallotton, J. D., Nurmi, E., Shurpali, N. J., Urbano Tenorio, F., Liu, X., Young, G. H. F., & Unc, A. (2022). The Challenges Fraught with the Opportunity of Agricultural Expansion into Boreal and Arctic regions. *Agricultural Systems*, 203, 103507.  
<https://doi.org/10.1016/j.agsy.2022.103507>
- Knapp, C. N., & Fernandez-Gimenez, M. (2008). Knowing the Land: A Review of Local Knowledge Revealed in Ranch Memoirs. *Rangeland Ecology & Management*, 61(2), 148–155.  
<https://doi.org/10.2111/07-088.1>
- Knapp, C. N., & Fernandez-Gimenez, M. (2009). Knowledge in Practice: Exploring Ranchers' Ecological Knowledge in NW Colorado. *Human Ecology*, 36(5), 859–872.  
<https://doi.org/10.2111/08-175.1>
- Knobloch, N. A. (2003). Is Experiential Learning Authentic? *Journal of Agricultural Education*, 44(4), 22–34.  
<https://doi.org/10.5032/jae.2003.04022>
- Knook, J., Eory, V., Brander, M., & Moran, D. (2018) Evaluation of farmer participatory extension programmes. *The Journal of Agricultural Education and Extension*, 24(4), 309–325.  
<https://doi.org/10.1080/1389224X.2018.1466717>
- Kolb, A. Y., & Kolb, D. A. (2021). *The Kolb Experiential Learning Profile: A Guide to Experiential Learning Theory*. EBL Press.
- Kolb, D. A. (2014). *Experiential Learning: Experience as the Source of Learning and Development*. FT Press.
- Kossack, A., & Bogner, F. X. (2012). How does a One-day Environmental Education Programme Support Individual Connectedness with Nature? *Journal of Biological Education*, 46(3), 180–187. <https://doi.org/10.1080/00219266.2011.634016>
- Kristensen, K., Schelde, K., & Olesen, J. E. (2010). Winter Wheat Yield Response to Climate Variability in Denmark. *Journal of Agricultural Science*, 149, 33–47.  
<https://doi.org/10.1017/S0021859610000675>
- Krzywoszyńska, A. (2016). What Farmers Know: Experiential Knowledge and Care in Vine Growing. *Sociologia Ruralis*, 56(3), 289–310. <https://doi.org/10.1111/soru.12084>
- Kudryavtsev, A., Stedman, R.C., & Krasny, M.E (2012) Sense of Place in Environmental Education, *Environmental Education Research*, 18(2), 229–250,  
<http://dx.doi.org/10.1080/13504622.2011.609615>
- Kuk, H. S., & Holst, J. D. (2018). A Dissection of Experiential Learning Theory: Alternative Approaches to Reflection. *Adult Learning*, 29(4), 213–223.

- <https://doi.org/10.1177/1045159518779138>
- Kumar, S. (2024). Inductive and Deductive Approaches to Qualitative Research. *International Journal of Multidisciplinary Educational Research*, 13(1), 58–63.  
<http://ijmer.in.doi./2024/13.1.69>
- Küster, H. (2004). Past Landscape Use as an Ecological Influence on the Actual Environment. In H. Palang, H. Sooväli, M. Antrop, & G. Setten (Eds.), *European Rural Landscapes: Persistence and Change in a Globalising Environment*. 445–454. Springer. [https://doi.org/10.1007/978-0-306-48512-1\\_27](https://doi.org/10.1007/978-0-306-48512-1_27)
- Kvale, S. (1996). *Interviews: An Introduction to Qualitative Research Interviewing*. Sage Publications.
- Kyburz-Graber, R. (2013). Socioecological Approaches to Environmental Education and Research: A Paradigmatic Response to Behavioral Change Orientations. In R. B. Stevenson, M. Brody, J. Dillon, & A. E. J. Wals (Eds.), *International Handbook of Research on Environmental Education*. Routledge.
- Laal, M. (2012). Lifelong Learning: What does it Mean? *Procedia: Social and Behavioral Sciences*, 28, 470–474.  
<https://doi.org/10.1016/j.sbspro.2011.11.090>
- Laal, M., Laal, A., & Aliramaei, A. (2014). Continuing Education: Lifelong Learning. *Procedia: Social and Behavioral Sciences*, 116, 4052–4056.  
<https://doi.org/10.1016/j.sbspro.2014.01.889>
- Lacoste, M., Cook, S., Mcnee, M., Gale, D., Ingram, J., Bellon-Maurel, V., Macmillan, T., Sylvester-Bradley, R., Kindred, D., Bramley, R., Tremblay, N., Longchamps, L., Thompson, L., Ruiz, J., García, F. O., Maxwell, B., Griffin, T., Oberthür, T., Huyghe, C., Zhang, W., Mcnamara, J., & Hall, A. (2022). On-farm Experimentation to Transform Global Agriculture. *Nature Food*, 3, 11–18. <https://doi.org/10.1038/s43016-021-00424-4>
- Laforge, J. (2017). *Farmer Knowledge in Alternative Agriculture: Community Learning and the Politics of Knowledge*, Doctoral Dissertation, University of Manitoba.
- Lamons, B. (2012) *Habit, Education, and the Democratic Way of Life: The Vital Role of Habit in John Dewey's Philosophy of Education*, Doctoral Dissertation, University of South Florida.
- Langran, E., & Dewitt, J. (2020). *Navigating Place-Based Learning: Mapping for a Better World*. Palgrave Macmillan.  
<https://doi.org/10.1007/978-3-030-55673-0>
- Lapadat, J. C. (2000). Problematizing Transcription: Purpose, Paradigm and Quality. *International Journal of Social Research Methodology*, 3(3), 203–219.

- <https://doi.org/10.1080/13645570050083698>
- Larsen, S. C., & Johnson, J. T. (2012). Toward an Open Sense of Place: Phenomenology, Affinity, and the Question of Being. *Annals of the Association of American Geographers*, 102(3), 632–646. <https://doi.org/10.1080/00045608.2011.600196>
- Larsson, T., De Maré, L., Lindmark, P., Rangsjö, C.-J., & Johansson, T. (2013). *Jordbrukets markavvattningsanläggningar i ett nytt klimat*. Jordbruksverket.
- Laryeafio, M., & Ogbewe, O. C. (2023). Ethical Consideration Dilemma: Systematic Review of Ethics in Qualitative Data Collection through Interviews. *Journal of Ethics in Entrepreneurship and Technology*, 3(2), 94–110. <http://dx.doi.org/10.1108/JEET-09-2022-0014>
- Lauer, M., & Aswani, S. (2009). Indigenous Ecological Knowledge as Situated Practices: Understanding Fishers' Knowledge in the Western Solomon Islands. *American Anthropologist*, 111(3), 317–329. <https://doi.org/10.1111/j.1548-1433.2009.01135.x>
- Lave, J., & Wenger, E. (1991). *Situated Learning: Legitimate Peripheral Participation*. Cambridge University Press.
- Law, B. A. (2003). *Experiential Education as a Best Practice Pedagogy for Environmental Education in Teacher Education*, Doctoral Dissertation, Griffith University. <https://doi.org/10.25904/1912/1718>
- Leal Filho, W., Mifsud, M., & Pace, P. (Eds.). (2018). *Handbook of Lifelong Learning for Sustainable Development*. Springer International Publishing. <https://doi.org/10.1007/978-3-319-63534-7>
- Leather, M., & Thorsteinsson, J. F. (2021). Developing a Sense of Place. In Thomas, G., Dymont, J. & Prince, H (eds) *Outdoor Environmental Education in Higher Education*, 51–60, Springer. [https://doi.org/10.1007/978-3-030-75980-3\\_5](https://doi.org/10.1007/978-3-030-75980-3_5)
- Lee, W. O. (2014). Lifelong Learning and Learning to Learn: An Enabler of New Voices for the New Times. *International Review of Education*, 60(4), 463–464. <https://doi.org/10.1007/s11159-014-9443-z>
- Leeuwis, C. (2008) *Communication for Rural Innovation: Rethinking Agricultural Extension*. Blackwell Science.
- Leeuwis, C., & Aarts, N. (2011). Rethinking Communication in Innovation Processes: Creating Space for Change in Complex Systems. *Journal of Agricultural Education and Extension*, 17(1), 21–36. <https://doi.org/10.1080/1389224x.2011.536344>

- Lehane, L. (2020). Experiential learning: David A. Kolb. In B. Akpan & T. Kennedy (Eds.), *Science Education in Theory and Practice*. Springer.  
[https://doi.org/10.1007/978-3-030-43620-9\\_17](https://doi.org/10.1007/978-3-030-43620-9_17)
- Leis, A., Whittington, M. S., Bennett, M., & Kleinhenz, M. (2011). Student Farms at United States Colleges and Universities: Insights Gained from a Survey of the Farm Managers. *North American Colleges & Teachers of Agriculture Journal*, 55, 9–15. <https://www.jstor.org/stable/nactajournal.55.1.9>
- Leung, K. Y., & Darnhofer, I. (2021). Farmers as Bodies-in-the-Field, Becoming-With Rice. *Sustainability*, 13(14), 7660.  
<https://doi.org/10.3390/su13147660>
- Lewicka, M. (2011). Place Attachment: How far have we come in the last 40 years? *Journal of Environmental Psychology*, 31(3), 207–230. <https://doi.org/10.1016/j.jenvp.2010.10.001>
- Lewis, D. (2008). Using Life Histories in Social Policy Research: The Case of Third Sector/Public Sector Boundary Crossing. *Journal of Social Policy*, 37(4), 559–578.  
<https://doi.org/10.1017/S0047279408002213>
- Lewis-Beck, M. S., Bryman, A., & Liao, T. F. (2004). Life History Method. In Lewis-Beck, M.S., Bryman, A., & Liao, T.F (eds) *The Sage Encyclopedia of Social Science Research Methods*, 585–587, Sage Publications.  
<https://doi.org/10.4135/9781412950589>
- Lichtman, M. (2023). *Qualitative Research in Education: A User's Guide*. Sage Publications.  
<https://doi.org/10.4324/9781003281917>
- Liddicoat, K., & Krasny, M. E. (2013). Research on the Long-Term Impacts of Environmental Education. In R. B. Stevenson, M. Brody, J. Dillon, & A. E. J. Wals (Eds.), *International Handbook of Research on Environmental Education*. Routledge.
- Lieblein, G., Breland, T. A., Nicolaysen, A. M., Melin, M., & Francis, C. (2019). *Educational Approaches*, NextFood Project: Educating the next generation of professionals in the Agrifood System, Norwegian University of Life Sciences
- Liljequist, B. (2003). *Ludwik Fleck's Comparative Epistemology*, Doctoral Dissertation, Umeå University
- Lincoln, Y., & Guba, E. (1985). *Naturalistic Inquiry*. Sage.
- Lindblom, J., & Lundström, C. (2014). *Lantbrukarens beslutsfattande och lantbruksrådgivning: en förstudie*. Swedish University of Agricultural Sciences.
- Ling Lo, M. (2012). *Variation Theory and the Improvement of Teaching and Learning*. Acta Universitatis Gothoburgensis.

- Livingstone, D. W., & Guile, D. (2012). General introduction. In D. W. Livingstone & D. Guile (Eds.), *The Knowledge Economy and Lifelong Learning: A Critical Reader*. Sense Publishers.
- Livingstone, D. W. (2012). Debunking the ‘Knowledge Economy’: The Limits of Human Capital Theory. In D. W. Livingstone & D. Guile (Eds.), *The Knowledge Economy and Lifelong Learning: A Critical Reader*. Sense Publishers.
- Llewellyn, R.S (2007) Information Quality and Effectiveness for More Rapid Adoption Decisions by Farmers. *Field Crops Research*, 104, 148–156.  
<https://doi.org/10.1016/j.fcr.2007.03.022>
- Longino, H. E. (1990). *Science as Social Knowledge: Values and Objectivity in Scientific Inquiry*. Princeton University Press.
- Lönngren, J. (2021). On the Value of Using Shorthand Notation in Ethnographic Fieldwork. *Ethnography and Education*, 16(1), 60–76. <https://doi.org/10.1080/17457823.2020.1746917>
- López-Montero, R., García-Navarro, C., Delgado-Baena, A., Vela-Jiménez, R., & Sianes, A. (2022). Life Stories: Unraveling the Academic Configuration of a Multifaceted and Multidisciplinary Field of Knowledge. *Frontiers in Psychology*, 13, 960666.  
<https://doi.org/10.3389/fpsyg.2022.960666>
- Loughran, J. (2010). Reflection through Collaborative Action Research and Inquiry. In N. Lyons (Ed.), *Handbook of Reflection and Reflective Inquiry: Mapping a Way of Knowing for Professional Reflective Inquiry*. Springer.  
<https://doi.org/10.1007/978-0-387-85744-2>
- Low, J. (2019). A Pragmatic Definition of the concept of Theoretical Saturation. *Sociological Focus*, 52(2), 131–139.  
<https://doi.org/10.1080/00380237.2018.1544514>
- Lucas, A. M. (1972). *Environment and Environmental Education: Conceptual Issues and Curriculum Implications*, Doctoral Dissertation. The Ohio State University Press.
- Lucas, V., Gasselin, P., & Van der Ploeg, J. D. (2019). Local Inter-Farm Cooperation: A Hidden Potential for the Agroecological Transition in Northern Agricultures. *Agroecology and Sustainable Food Systems*, 43(2), 145–179.  
<https://doi.org/10.1080/21683565.2018.1509168>
- Lund, K. A., & Benediktsson, K. (2016). Introduction: Starting a Conversation with Landscape. In Benediktsson, K., & Lund, K.A (eds) *Conversations with Landscape*, 1–12, Routledge.  
<https://doi.org/10.4324/9781315574172>

- Lwoga, E. T., Stilwell, C., & Ngulube, N. (2011). Access and Use of Agricultural Information and Knowledge in Tanzania. *Journal of Agricultural Knowledge and Information*, 60, 383–389. <https://doi.org/10.1108/00242531111135263>
- Lyhagen, J., Danell, K., & Gustavsson, B. (2022) *Den gröna näringen under 200 år*. Kungliga Skogs- och Lantbruksakademien.
- Lyon, A., Bell, M. M., Gratton, C., & Jackson, R. (2011). Farming Without a Recipe: Wisconsin Graziers and New Directions for Agricultural Science. *Journal of Rural Studies*, 27(4), 384–393. <https://doi.org/10.1016/j.jrurstud.2011.04.002>
- McLellan, J.A., & Dewey, J. (1889) *Applied Psychology: An Introduction to the Principles and Practice of Education*. Educational Publishing Company.
- Maddalena, G. (2004). The Limits of Experience: Dewey and Contemporary American Philosophy. *Quaestio*, 4, 387–405. <https://doi.org/10.1484/J.Quaestio.2.300148>
- Maguire, M., & Delahunt, B. (2017). Doing a Thematic Analysis: A Practical, Step-by-Step Guide for Learning and Teaching Scholars. *All Ireland Journal of Higher Education*, 9(3). <https://doi.org/10.62707/aishej.v9i3.335>
- Malpas, J. (2018). *Place and Experience: A Philosophical Topography*. Routledge. <https://doi.org/10.4324/9781315265445>
- Mannion, G. (2012). Intergenerational Education: The Significance of Reciprocity of Place. *Journal of Intergenerational Relationships*, 10(4), 386–399. <https://doi.org/10.1080/15350770.2012.726601>
- Maracchi, G., Sirotenko, O., & Bindi, M. (2005). Impacts of Present and Future Climate Variability on Agriculture and Forestry in the Temperate Regions: Europe. In J. Salinger, M. V. K. Sivakumar, & R. P. Motha (Eds.), *Increasing Climate Variability and Change*. Springer. <https://doi.org/10.1007/S10584-005-5939-7>
- Marton, F. (2015). *Necessary Conditions of Learning*. Routledge.
- Marsick, V. J., & Watkins, K. E. (2018). Introduction to the Special Issue: An update on Informal and Incidental Learning Theory. *New Directions for Adult and Continuing Education*, 2018 (159), 9–19. <https://doi.org/10.1002/ace.20284>
- Marttila, V., Granholm, H., & Laanikari, J. (2005). *Nationell strategi för anpassning till klimatförändringen*, Jord- och Skogsbruksministeriet.
- Massey, D. (2005). Geographies of Responsibility. *Geografiska Annaler: Series B, Human Geography*, 86(1), 5–18.

- <https://doi.org/10.1111/j.0435-3684.2004.00150.x>
- Mastandrea, S., Tinio, P. P. L., & Smith, J. K. (2021). Editorial: Environment, Art, and Museums: The Aesthetic Experience in different Contexts. *Frontiers in Psychology, 12*, 675165. <https://doi.org/10.3389/fpsyg.2021.675165>
- Mazurkewicz, M., Harder, A., & Roberts, T. G. (2012). Evidence for Experiential Learning in Undergraduate Teaching Farm Courses. *Journal of Agricultural Education, 53*(1), 176–189, <http://eric.ed.gov/?id=ej993263>
- McCannon, J. (2013). *A History of the Arctic: Nature, Exploration and Exploitation*. Reaktion Books.
- McCoy, K., Tuck, E., & McKenzie, M. (2016). *Land Education: Re-thinking Pedagogies of Place from Indigenous, Postcolonial, and Decolonizing Perspectives*. Routledge.
- McKim, A. J., Raven, M. R., Palmer, A., McFarland, A., McFarland, A., & Isleib, J. (2019a). Land-based Learning: A Learning Paradigm for Building Community and Sustainable Farms. *The Journal of Extension, 57*(5), 19. <https://doi.org/10.34068/joe.57.05.19>
- McKim, A., Raven, M., Palmer, A., & McFarland, A. (2019b). Community as Context and Content: A Land-Based Learning Primer for Agriculture, Food, and Natural Resources Education. *Journal of Agricultural Education, 60*(1), 172–185. <https://doi.org/10.5032/jae.2019.01172>
- McMullin, C. (2023). Transcription and Qualitative Methods: Implications for Third Sector Research. *Voluntas: International Journal of Voluntary and Nonprofit Organizations, 34*(1), 140–153. <https://doi.org/10.1007/s11266-021-00400-3>
- Measham, T. G. (2006). Learning about Environments: The Significance of Primal Landscapes. *Environmental Management, 38*(3), 426–434. <https://doi.org/10.1007/s00267-005-0205-3>
- Mellegård, V., & Boonstra, W. J. (2020). Craftsmanship as a Carrier of Indigenous and Local Ecological Knowledge: Photographic Insights from Sámi Duodji and Archipelago Fishing. *Society & Natural Resources, 33*(10), 1252–1272. <https://doi.org/10.1080/08941920.2020.1729911>
- Meredith, M., Sommerkorn, M., Cassotta, S., Derksen, C., Ekaykin, A., Hollowed, A., Kofinas, G., Mackintosh, A., Melbourne-Thomas, J., Muelbert, M. M. C., Ottersen, G., Pritchard, H., & Schuur, E. A. G. (2019). Polar regions. In H.-O. Pörtner, D. C. Roberts, V. Masson-Delmotte, P. Zhai, M. Tignor, E. Poloczanska, K. Mintenbeck, A. Nicolai, M. Okem, J. Petzold, J. Rama, & N. M. Weyer (Eds.), *IPCC Special Report on the Ocean and*

- Cryosphere in a Changing Climate*. 203–320. Cambridge University Press. <https://doi.org/10.1017/9781009157964.005>
- Merriam, S. B., & Tisdell, E. J. (2015). *Qualitative Research: A Guide to Design and Implementation*. John Wiley & Sons.
- Merrill, B., & West, L. (2011). *Using Biographical Methods in Social Research*. Sage Publications.
- Miettinen, R. (2000). The Concept of Experiential Learning and John Dewey's Theory of Reflective Thought and Action. *International Journal of Lifelong Education*, 19(1), 54–72. <https://doi.org/10.1080/026013700293458>
- Milestad, R., Kummer, S., & Vogl, C. R. (2010a). Building Farm Resilience through Farmers' Experimentation. *9th European IFSA Symposium*, 770–778.
- Milestad, R., Westberg, L., Geber, U., & Björklund, J. (2010b). Enhancing Adaptive Capacity in Food Systems: Learning at Farmers' Markets in Sweden. *Ecology and Society*, 15(3). <https://www.jstor.org/stable/26268172>
- Millar, J., & Curtis, A. (1997). Moving Farmer Knowledge beyond the Farm Gate: An Australian Study of Farmer Knowledge in Group Learning. *Journal of Agricultural Education and Extension*, 4(2), 133–142. <https://doi.org/10.1080/13892249785300241>
- Miller, R. L. (2000). *Researching Life Stories and Family Histories*. Sage Publications.
- Miller, R. W. (1983). *Fact and Method: Explanation, Confirmation and Reality in the Natural and the Social Sciences*, Princeton University Press
- Mishler, E. G. (1999). *Storylines: Craft Artists' Narratives of Identity*. Harvard University Press
- Mishra, P., Worthington, V., Girod, M., Packard, B., & Thomas, C. (2001). Learning Science: A Deweyan Perspective. *Journal of Research in Science Teaching*, 38(3), 317–336. [https://psycnet.apa.org/doi/10.1002/1098-2736\(200103\)38:3%3C317::AID-TEA1008%3E3.0.CO;2-9](https://psycnet.apa.org/doi/10.1002/1098-2736(200103)38:3%3C317::AID-TEA1008%3E3.0.CO;2-9)
- Misiaszek, G. W. (2020). Ecopedagogy: Teaching Critical Literacies of 'Development,' 'Sustainability,' and 'Sustainable Development'. *Teaching in Higher Education*, 25(5), 615–632. <https://doi.org/10.1080/13562517.2019.1586668>
- Misiko, M. (2009). Collective Experimentation: Lessons from the Field. *Journal of Agricultural Education and Extension*, 15(4), 401–416. <https://doi.org/10.1080/13892240903309660>
- Möller, H., Berkes, F., Lyver, P. O., & Kislalioglu, M. (2004). Combining Science and Traditional Ecological Knowledge:

- Monitoring Populations for Co-management. *Ecology and Society*, 9(3). <http://www.ecologyandsociety.org/vol9/iss3/art2/>
- Movchan, L & Komisarenko, N (2019) *Agricultural Higher Education and Training in Europe*, Proceedings of the International Conference on Advanced Research in Teaching and Education, 33-37
- Monaghan, K., Swisher, M., Koenig, R. L., & Rodriguez, J. C. (2017). Education for Sustainable Agriculture: A Typology of the Role of Teaching Farms in Achieving Learning Goals and Objectives. *Environmental Education Research*, 23(6), 749–772. <https://doi.org/10.1080/13504622.2015.1091877>
- Monroe, M. C., Andrews, E., & Biedenweg, K. (2008). A Framework for Environmental Education Strategies. *Applied Environmental Education & Communication*, 6(3–4), 205–216. <https://doi.org/10.1080/15330150801944416>
- Moon, K., & Blackman, D. (2014). A Guide to Understanding Social Science Research for Natural Scientists. *Conservation Biology*, 28(5), 1167–1177. <https://doi.org/10.1111/cobi.12326>
- Morgan, S. L. (2011). Social Learning among Organic Farmers and the Application of the Communities of Practice Framework. *Journal of Agricultural Education and Extension*, 17(2), 99–112. <https://doi.org/10.1080/1389224x.2011.536362>
- Morris, C. (2006). Negotiating the Boundary between State-Led and Farmer Approaches to Knowing Nature: An Analysis of UK Agri-Environment Schemes. *Geoforum*, 37(1), 113–127. <https://doi.org/10.1016/j.geoforum.2005.01.003>
- Morris, T. H. (2020). Experiential Learning – A Systematic Review and Revision of Kolb’s Model. *Interactive Learning Environments*, 28(8), 1064–1077. <https://doi.org/10.1080/10494820.2019.1570279>
- Muhar, A., & Böck, K. (2018). Mastery over Nature as a Paradox: Societally Implemented but Individually Rejected. *Journal of Environmental Planning and Management*, 61(5–6), 994–1010. <https://doi.org/10.1080/09640568.2017.1334633>
- Mustajoki, H., & Mustajoki, A. (2017). *A New Approach to Research Ethics Using Guided Dialogue to Strengthen Research Communities*. Routledge. <https://doi.org/10.4324/9781315545318>
- Nacaroglu, O., Kizkapan, O., & Bozdog, T. (2021). Investigation of Lifelong Learning Tendencies and Self-Regulatory Learning Perceptions of Gifted Students. *Egitim ve Bilim*, 46(205), 113–135. <https://doi.org/10.15390/EB.2020.8935>

- Nadelson, L. S., & Jordan, J. R. (2012). Student Attitudes Toward and Recall of Outside Day: An Environmental Science Field Trip. *The Journal of Educational Research*, 105(3), 220–231. <https://doi.org/10.1080/00220671.2011.576715>
- Naeem, M. (2020). Uncovering the Role of Social Motivational Factors as a Tool for Enhancing Brand-Related Content. *Qualitative Market Research*, 23(2), 287–307. <https://doi.org/10.1108/QMR-10-2019-0121>
- Naeem, M., Ozuem, W., Howell, K., & Ranfagni, S. (2023). A Step-by-Step Process of Thematic Analysis to Develop a Conceptual Model in Qualitative Research. *International Journal of Qualitative Methods*, 22, 16094069231205789. <https://doi.org/10.1177/16094069231205789>
- Nagel, T. (1986). *The View from Nowhere*. Oxford University Press.
- Nainggolan, D. A., Abay, A. T., Christensen, J. H., & Termansen, M. (2023). The Impact of Climate Change on Crop Mix Shift in the Nordic Region. *Scientific Reports*, 13, 2962. <https://doi.org/10.1038/s41598-023-29249-w>
- Nakoinz, O., & Knitter, D. (2016). *Modelling Human Behaviour in Landscapes: Basic Concepts and Modelling Elements*. Springer. <https://doi.org/10.1007/978-3-319-29538-1>
- Nasheeda, A., Abdullah, H. B., Krauss, S. E., & Ahmed, N. B. (2019). Transforming Transcripts into Stories: A Multimethod Approach to Narrative Analysis. *International Journal of Qualitative Methods*, 18, 1609406919856797. <https://doi.org/10.1177/1609406919856797>
- Nederlof, S. E., & Odonkor, E. N. (2006). Lessons from an Experiential Learning Process: The Case of Cowpea Farmer Field Schools in Ghana. *Journal of Agricultural Education and Extension*, 12(4), 249–271. <https://doi.org/10.1080/13892240601062447>
- Nedovic, S., & Morrissey, A. (2013). Calm Active and Focused: Children's Responses to an Organic Outdoor Learning Environment. *Learning Environments Research*, 16(3), 281–295. <https://doi.org/10.1007/s10984-013-9127-9>
- Nelsen, P.J (2015) Intelligent Dispositions: Dewey, Habits and Inquiry in Teacher Education, *Journal of Teacher Education*. 66(1), 86 –97, <https://doi.org/10.1177/0022487114535267>
- Nelson Power, C., & Maclean, R. (2013). Lifelong learning: Meaning, Challenges, and Opportunities. In R. Maclean et al. (Eds.), *Skills Development for Inclusive and Sustainable Growth in Developing Asia-Pacific: Technical and Vocational Education and Training: Issues, Concerns and Prospects*, 19,

- [https://doi.org/10.1007/978-94-007-5937-4\\_2](https://doi.org/10.1007/978-94-007-5937-4_2)
- Nerbonne, J., & Lentz, R. (2003). Rooted in Grass: Challenging Patterns of Knowledge Exchange as a Means of Fostering Social Change in a Southeast Minnesota Farm Community. *Agriculture and Human Values*, 20(1), 65–78.  
<https://doi.org/10.1023/A:1022417608796>
- Neset, T. S., Wiréhn, L., Klein, N., Käyhkö, J., & Juhola, S. (2019b). Maladaptation in Nordic Agriculture. *Climate Risk Management*, 23, 78–87. <https://doi.org/10.1016/j.crm.2018.12.003>
- Neset, T. S., Wiréhn, L., Opach, T., Glaas, E., & Linnér, B.-O. (2019a). Evaluation of Indicators for Agricultural Vulnerability to Climate Change: The Case of Swedish Agriculture. *Ecological Indicators*, 105, 571–580.  
<https://doi.org/10.1016/j.ecolind.2018.05.042>
- Nespor, J. (2008). Education and Place: A Review Essay. *Educational Theory*, 58(4), 471–490.  
<https://doi.org/10.1111/j.1741-5446.2008.00301.x>
- Nettle, R., Major, J., Turner, L., & Harris, J. (2022) Selecting Methods of Agricultural Extension to Support Diverse Adoption Pathways: A Review and Case Studies, *Animal Production Science*, 64, AN22329, <https://doi.org/10.1071/AN22329>
- Nicholas-Davies, P., Fowler, S., Midmore, P., Coopmans, I., Draganova, M., Petitt, A., & Senni, S. (2021). Evidence of Resilience Capacity in Farmers’ Narratives: Accounts of Robustness, Adaptability and Transformability across Five different European Farming Systems. *Journal of Rural Studies*, 88, 388–399.  
<https://doi.org/10.1016/j.jrurstud.2021.07.027>
- Nitsch, U. (2009). *Bönder, myndigheter och naturbetesmarker*. Swedish University of Agricultural Sciences.
- Nordin, A. (2007). Lära för (arbets)livet? Om löften och begränsningar i diskurser om livslångt lärande. *Nordisk Pedagogik*, 28, 146–156.
- Nordlund, I., & Norrby, T. (2021). *AKIS and Advisory Services in Sweden*. Swedish University of Agricultural Sciences.
- Normark, P. (2024). *Forest and Forestry in Sweden*. Royal Swedish Academy of Agriculture and Forestry.
- Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic Analysis: Striving to Meet the Trustworthiness Criteria. *International Journal of Qualitative Methods*, 16(1), 1609406917733847.  
<https://doi.org/10.1177/1609406917733847>
- O’Neill, M., & Roberts, B. (2020). *Walking Methods: Research on the Move*. Routledge.

- Okoli, C. (2023) Inductive, Abductive and Deductive Theorising, *International Journal of Management Concepts and Philosophy*, 16(3), 302-316, <https://dx.doi.org/10.1504/IJMCP.2022.10052409>
- Okwu, O. J., & Daudu, S. (2011). Extension Communication Channels' Usage and Preference by Farmers in Benue State, Nigeria. *Journal of Agricultural Extension and Rural Development*, 3, 88–94.
- Olesen, J. E., Trnka, M., Kersebaum, K. C., Skjelvåg, A. O., Seguin, B., Peltonen-Sainio, P., Rossi, F., Kozyra, J., & Micale, F. (2011). Impacts and Adaptation of European Crop Production Systems to Climate Change. *European Journal of Agronomy*, 34(2), 96–112. <https://doi.org/10.1016/j.eja.2010.11.003>
- Olwig, K. R. (2002). *Landscape, Nature, and the Body Politic: From Britain's Renaissance to America's New World*. University of Wisconsin.
- Opdam, P. (2017). How Landscape Stewardship emerges out of Landscape Planning. In C. Bieling & T. Plieninger (Eds.), *The Science and Practice of Landscape Stewardship*, 331–346, Cambridge University Press. <https://doi.org/10.1017/9781316499016>
- Oppong, S. H. (2013). The Problem of Sampling in Qualitative Research. *Asian Journal of Management Sciences and Education*, 2(2), 202–210.
- Ord, J., & Leather, M. (2011). The Substance Beneath the Labels of Experiential Learning: The Importance of John Dewey for Outdoor Educators. *Journal of Outdoor and Environmental Education*, 15(2), 13–23. <https://doi.org/10.1007/bf03400924>
- Oreszczyn, S., Lane, A., & Carr, S. (2010). The Role of Networks of Practice and Webs of Influencers on Farmers' Engagement with and Learning about Agricultural Innovations. *Journal of Rural Studies*, 26(4), 404–417. <https://doi.org/10.1016/j.jrurstud.2010.03.003>
- Organisation for Economic Co-operation and Development. (OECD) (1996). *Lifelong Learning for All: Meeting of the Education Committee at Ministerial Level*.
- Organisation for Economic Co-operation and Development. (2018). *Innovation, Agricultural Productivity and Sustainability in Sweden*.
- Oropilla, C. T., & Ødegaard, E. E. (2021). Strengthening the Call for Intentional Intergenerational Programmes towards Sustainable Futures for Children and Families. *Sustainability*, 13(10), 5564. <https://doi.org/10.3390/su13105564>

- Ortiz, O., Garrett, K. A., Health, J. J., Orrego, R., & Nelson, R. J. (2004). Management of Potato Late Blight in the Peruvian Highlands: Evaluating the Benefits of Farmer Field Schools and Farmer Participatory Research. *Plant Disease*, 88(5), 565–571.
- Østergaard, E. (2017). Earth at Rest: Aesthetic Experience and Students' Grounding in Science Education. *Science & Education*, 26, 557–582. <https://doi.org/10.1007/s11191-017-9906-2>
- Palmberg, I. E., & Kuru, K. (2000). Outdoor Activities as a Basis for Environmental Responsibility. *The Journal of Environmental Education*, 31(4), 32–36. <https://doi.org/10.1080/00958960009598649>
- Parks, P. (2023). “Story Circles: A New Method of Narrative Research”. *American Journal of Qualitative Research*, 7(1), 58–72.
- Parr, D., & Trexler, C. J. (2011). Students’ Experiential Learning and Use of Student Farms in Sustainable Agriculture Education. *Journal of Natural Resources & Life Sciences Education*, 40, 172–180. <https://doi.org/10.4195/jnrlse.2009.0047u>
- Paudi, M.H., Din, R., & Othman, N. (2022) Agricultural Video as a Learning Medium for Young Farmer, *International Journal of Academic Research in Progressive Education and Development*, 11(1), 729–742. <https://doi.org/10.6007/IJARPED/v11-i1/12142>
- Patton, M. Q. (1999). Enhancing the Quality and Credibility of Qualitative Analysis. *Health Services Research*, 34(5), 1189.
- Payne, P. G., & Wattchow, B. (2009). Phenomenological Deconstruction, Slow Pedagogy, and the Corporeal Turn in Wild Environmental/Outdoor Education. *Canadian Journal of Environmental Education*, 14(1), 15–32.
- Peltonen-Sainio, P., Jauhiainen, L., Trnka, M., Olesen, J.E., Calanca, P., Eckersten, H., Eitzinger, J., Gobin, A., Kersebaum, K.C., Kozyra, J., Kumar, S., Marta, A.A., Micale, F., Schaap, B., Seguin, B., Skjelvåg, A.O., & Orlandini, S. (2010). Coincidence of Variation in Yield and Climate in Europe. *Agriculture, Ecosystems & Environment*, 139, 483–489. <https://doi.org/10.1016/j.agee.2010.09.006>
- Pena, G. P. (2011). The Epistemology of Ludwik Fleck and the Thought Community of Banff: Reflections on the Classification of the Renal Allograft Pathology. *American Journal of Transplantation*, 11(5), 907–910. <https://doi.org/10.1111/j.1600-6143.2011.03461.x>

- Phipps, L. J., Osborne, E. W., Dyer, J. E., & Ball, A. (2008). *Handbook on Agricultural Education in Public Schools*. Thomson Delmar Learning.
- Polkinghorne, D. E. (1995). "Narrative Configuration in Qualitative Analysis". *International Journal of Qualitative Studies in Education*, 8(1), 5-23.  
<https://doi.org/10.1080/0951839950080103>
- Polkinghorne, D. E. (2007). "Validity Issues in Narrative Research". *Qualitative Inquiry*, 13(4), 471-486.  
<https://doi.org/10.1177/1077800406297670>
- Portin, A., Barua, S., Clarke, M., Camargo, M., Viding, J., & Pekkanen, M. (2013). The Role of Forests in Climate Change: Nordic Experience. Nordic Council of Ministers.  
<https://doi.org/10.6027/tn2013-559>
- Pranka, M. (2020). The Walk-and-Talk Methodology: Researching Place and People. In *SHS Web of Conferences*, 85, 03007, EDP Sciences. <https://doi.org/10.1051/shsconf/20208503007>
- Priest, S. (1990). Everything You Always Wanted to Know about Judgment, but Were Afraid to Ask. *Journal of Adventure Education and Outdoor Leadership*, 7(3), 5-12.
- Primdahl, J., Kristensen, L. S., & Busck, A. G. (2013). The Farmer and Landscape Management: Different Roles, Different Policy Approaches. *Geography Compass*, 7(4), 300-314.  
<https://doi.org/10.1111/gec3.12040>
- Prins, A., & Wattchow, B. (2019). The Pedagogic Moment: Enskilment as Another Way of Being in Outdoor Education. *Journal of Adventure Education and Outdoor Learning*, 20(1), 81-91  
<https://doi.org/10.1080/14729679.2019.1599295>
- Proost, J., & Van Weperen, W. (2006). Creating Space for Change: Farmers' Learning Groups in the Netherlands. *Compass Magazine for Endogenous Development*, 10, 18-19.  
<https://edepot.wur.nl/16911>
- Pugh, K., Kriescher, D., Cropp, S., & Younis, M. (2020). Philosophical Groundings for a Theory of Transformative Experience. *Educational Theory*, 70(5), 539-560.  
<https://doi.org/10.1111/edth.12443>
- Quay, J. (2003). Experience and Participation: Relating Theories of Learning. *Journal of Experiential Education*, 26(2), 105-112.  
<https://doi.org/10.1177/105382590302600208>
- Quay, J. (2020). John Dewey's Conceptualization of Experience. In J. Parry & P. Allison (Eds.), *Experiential Learning and Outdoor Education: Traditions of Practice and Philosophical Perspectives*. Routledge.

- Quay, J., & Seaman, J. (2013). *John Dewey and Education Outdoors: Making Sense of the "Educational Situation" through more than a Century of Progressive Reforms*. Sense.
- Quinn, C. E., & Halfacre, A. C. (2014). Place Matters: An Investigation of Farmers' Attachment to their Land. *Human Ecology Review*, 20(2), 117–132.  
<https://doi.org/10.22459/her.20.02.2014.06>
- Randall, R. R. (2012). Go Outside to Learn: The Value of Outdoor Learning Environments. *Educational Facility Planner*, 46(2–3), 18–23.
- Regmi, K. (2015). Lifelong Learning: Foundational Models, Underlying Assumptions and Critiques. *International Review of Education*, 61, 133–151. <https://www.jstor.org/stable/24636952>
- Reidsma, P., Ewert, F., Lansink, A. O., & Leemans, R. (2010). Adaptation to Climate Change and Climate Variability in European Agriculture: The Importance of Farm-Level Responses. *European Journal of Agronomy*, 32, 91–102.  
<https://doi.org/10.1016/j.eja.2009.06.003>
- Relph, E. (1976). *Place and Placelessness*. Pion.
- Rhemtulla, J. M., & Mladenoff, D. J. (2007). Why History Matters in Landscape Ecology. *Landscape Ecology*, 22, 1–3.  
<https://doi.org/10.1007/s10980-007-9163-x>
- Richards, L. (2015). *Handling Qualitative Data: A Practical Guide*. Sage Publications.
- Rickinson, M. (2001). Learners and Learning in Environmental Education: A Critical Review of the Evidence. *Environmental Education Research*, 7(3), 207–320.  
<https://doi.org/10.1080/13504620120065230>
- Rickinson, M., Lundholm, C., & Hopwood, N. (2009). *Environmental Learning: Insights from Research into the Student Experience*. Springer. <https://doi.org/10.1007/978-90-481-2956-0>
- Riga, F. (2020). Pragmatism – John Dewey. In B. Akpan & T. Kennedy (Eds.), *Science Education in Theory and Practice*, 265–280, Springer.  
[https://doi.org/10.1007/978-3-030-43620-9\\_16](https://doi.org/10.1007/978-3-030-43620-9_16)
- Rivera, M., Knickel, K., De Los Rios, I., Ashkenazy, A., Pears, D. Q., Chebach, T., & Šūmane, S. (2018). Rethinking the Connections between Agricultural Change and Rural Prosperity: A Discussion of Insights derived from Case Studies in Seven Countries. *Journal of Rural Studies*, 59, 242–251.  
<https://doi.org/10.1016/j.jrurstud.2017.07.006>
- Roberts, J. (2011). *Beyond Learning by Doing: Theoretical Currents in Experiential Education*. Routledge.

- Roberts, T. G. (2006). A Philosophical Examination of Experiential Learning Theory for Agricultural Educators. *Journal of Agricultural Education*, 47(1), 17–29. <https://doi.org/10.5032/jae.2006.01017>
- Rodgers, C. (2002). Defining Reflection: Another Look at John Dewey and Reflective Thinking. *Teachers College Record*, 104(4), 842–866. <https://doi.org/10.1111/1467-9620.00181>
- Rogers, R. (2018). Coding and Writing Analytic Memos on Qualitative Data: A Review of Johnny Saldaña’s *The Coding Manual for Qualitative Researchers*. *Qualitative Report*, 23(4), 889–899. <http://dx.doi.org/10.46743/2160-3715/2018.3459>
- Röös, E., Sandin, P., & Brunius, C. (2016). *Hållbart jordbruk i Norrbotten: Rapport från ett scenarioarbete. Framtidens lantbruk: djur, växter och markanvändning*. Swedish University of Agricultural Sciences
- Rosenwald, G. C., & Ochberg, R. L. (Eds.). (1992). *Storied Lives: The Cultural Politics of Self-Understanding*. Yale University Press.
- Roth, W.-M., & Jornet, A. (2014). Toward a Theory of Experience. *Science Education*, 98(1), 106–126. <https://doi.org/10.1002/sce.21085>
- Rötter, R. P., Höhn, J. G., & Fronzek, S. (2012). Projections of Climate Change Impacts on Crop Production: A Global and a Nordic Perspective. *Acta Agriculturae Scandinavica*, 62(4), 166–180. <https://doi.org/10.1080/09064702.2013.793735>
- Rubenson, K. (2009). Lifelong Learning: Between Humanism and Global Capitalism. In P. Jarvis (Ed.), *The Routledge International Handbook of Lifelong Learning*, 411–422, Routledge.
- Rubenson, K. (2013). Towards Lifelong Learning for All in Europe: Understanding the Fundamental Role Popular Education could Play in the European Commission’s Strategy. In Laginder, A-M, Nordvall, H, & Crowther, J (eds). *Popular Education, Power and Democracy*, 14-34. NIACE
- Rubenson, K., & Desjardins, R. (2009). The Impact of Welfare State Regimes on Barriers to Participation in Adult Education: A Bounded Agency Model. *Adult Education Quarterly*, 59(3), 187-207. <https://doi.org/10.1177/0741713609331548>
- Rubin, D. C., & Schulkind, M. D. (1997). The Distribution of Autobiographical Memories across the Lifespan. *Memory & Cognition*, 25(6), 859–866. <https://doi.org/10.3758/BF03211330>
- Rubin, D. C., Rahhal, T. A., & Poon, L. W. (1998). Things Learned in Early Adulthood are Remembered Best. *Memory & Cognition*, 26(1), 3–19. <https://doi.org/10.3758/BF03211366>

- Russell, L., & Barley, R. (2020). Ethnography, Ethics, and Ownership of Data. *Ethnography*, 21(1), 5–25.  
<https://doi.org/10.1177/1466138119859386>
- Rutakumwa, R., Mugisha, J. O., Bernays, S., Kabunga, E., Tumwekwase, G., Mbonye, M., & Seeley, J. (2020). Conducting In-Depth Interviews With and Without Voice Recorders: A Comparative Analysis. *Qualitative Research*, 20(5), 565–581.  
<https://doi.org/10.1177/1468794119884806>
- Sack, R. D. (1973). A Concept of Physical Space in Geography. *Geographical Analysis*, 5(1), 16–34.  
<https://doi.org/10.1111/j.1538-4632.1973.tb00994.x>
- Sack, R. D. (1977). *Homo Geographicus*. Johns Hopkins University.
- Sady, W. (2021). Ludwik Fleck. *Stanford Encyclopedia of Philosophy*. <https://plato.stanford.edu/entries/fleck/>
- Sandelowski, M., & Barroso, J. (2003). Classifying the Findings in Qualitative Studies. *Qualitative Health Research*, 13(7), 905–923. <https://doi.org/10.1177/1049732303253488>
- Sanga, C., Mlozi, M., Haug, R., & Tumbo, S. (2016) Mobile Learning Bridging the Gap in Agricultural Extension Service Delivery: Experiences from Sokoine University of Agriculture, Tanzania, *International Journal of Education and Development using Information and Communication Technology*, 12(3), 108-127.
- Sanglestsawai, S., Rejesus, R. M., & Yorobe, J. M. (2015). Economic Impacts of Integrated Pest Management (IPM) Farmer Field Schools (FFS): Evidence from Onion Farmers in the Philippines. *Agricultural Economics*, 46(2), 149–162.  
<https://doi.org/10.1111/agec.12147>
- Savage, J. (2000). One Voice, Different Tunes: Issues Raised by Dual Analysis of a Segment of Qualitative Data. *Journal of Advanced Nursing*, 31(6), 1493–1500.  
<https://doi.org/10.1046/j.1365-2648.2000.01432.x>
- Sayre, L., & Clark, S. (Eds.). (2011). *Fields of Learning: The Student Farm Movement in North America*. The University Press of Kentucky.
- Schenck, J., & Cruickshank, J. (2015). Evolving Kolb: Experiential Education in the Age of Neuroscience. *Journal of Experiential Education*, 38(1), 73–95.  
<https://doi.org/10.1177/1053825914547153>
- Schindler, L., & Schäfer, H. (2021). Practices of Writing in Ethnographic Work. *Journal of Contemporary Ethnography*, 50(1), 11–32. <https://doi.org/10.1177/0891241620923396>

- Schlottmann, C. (2005). Introduction: Place-Based and Environmental Education. *Ethics, Place and Environment*, 8(3), 257–259. <https://doi.org/10.1080/13668790500348174>
- Schneider, F., Ledermann, T., Rist, S., & Fry, P. (2009). Social Learning Processes in Swiss Soil Protection: The “From Farmer-to-Farmer” Project. *Human Ecology*, 37(4), 475–489. <https://doi.org/10.1007/s10745-009-9262-1>
- Schön, D. A. (1983). *The Reflective Practitioner: How Professionals Think in Action*. Routledge.
- Schön, D. A. (1987). *Educating the Reflective Practitioner*. Jossey-Bass.
- Scott, W., & Gough, S. (2003). *Sustainable Development and Learning: Framing the Issues*. Routledge.
- Seaman, J. (2008). Experience, Reflect, Critique: The End of the 'Learning Cycles' Era. *Journal of Experiential Education*, 31(1), 3–18. <https://doi.org/10.1177/105382590803100103>
- Seaman, J. (2019). Restoring Culture and History in Outdoor Education Research: Dewey’s Theory of Experience as a Methodology. *Journal of Outdoor Recreation, Education, and Leadership*, 11(4), 335–351. <https://doi.org/10.18666/JOREL-2019-V11-I4-9582>
- Seaman, J., Brown, M., & Quay, J. (2017). The Evolution of Experiential Learning Theory: Tracing Lines of Research in the JEE. *Journal of Experiential Education*, 40(4), 1–21. <https://doi.org/10.1177/1053825916689268>
- Seamon, D. (2018). *Life Takes Place: Phenomenology, Lifeworlds, and Place Making*. Routledge. <https://doi.org/10.4324/9781351212519>
- Seamon, D. (2023). *Phenomenological Perspectives on Place, Lifeworlds, and Lived Emplacement*. Routledge.
- Sen, N., & Durak, H. Y. (2022). Examining the Relationships between English Teachers’ Lifelong Learning Tendencies with Professional Competencies and Technology Integrating Self-Efficacy. *Education and Information Technologies*, 27(5), 5953–5988. <https://doi.org/10.1007/s10639-021-10867-8>
- SFS 2003:460. Lag om etikprövning av forskning som avser människor. (Swedish Ethical Review Act), [https://www.riksdagen.se/sv/dokument-och-lagar/dokument/svensk-forfattningssamling/lag-2003460-om-etikprovning-av-forskning-som\\_sfs-2003-460/](https://www.riksdagen.se/sv/dokument-och-lagar/dokument/svensk-forfattningssamling/lag-2003460-om-etikprovning-av-forskning-som_sfs-2003-460/)
- Shamoo, A. E., & Resnik, D. B. (2009). *Responsible Conduct of Research*. Oxford University Press

- Shannon, D. (2017). Teaching on the Farm: Farm as Place in the Sociology of Food and Sustainability. In D. Shannon & J. Galle (Eds.), *Interdisciplinary Approaches to Pedagogy and Place-Based Education*, 15–34, Palgrave Macmillan.  
[https://doi.org/10.1007/978-3-319-50621-0\\_2](https://doi.org/10.1007/978-3-319-50621-0_2)
- Shikuku, K. M., & Melesse, M. B. (2020). Networks, Incentives, and Technology Adoption: Evidence from a Randomized Experiment in Uganda. *European Review of Agricultural Economics*, 47(5), 1740–1775. <https://doi.org/10.1093/erae/jbaa009>
- Shin, Y.-S., & Jun, J. (2019). The Hierarchical Effects of Individual and Organizational Variables on Elementary School Teachers' Lifelong Learning Competence. *International Electronic Journal of Elementary Education*, 12(2), 205–212.  
<https://doi.org/10.26822/iejee.2019257668>
- Shuman, A. (2015). Story Ownership and Entitlement. In A. De Fina & A. Georgakopoulou (Eds.), *The Handbook of Narrative Analysis*, 19–33, Wiley.  
<https://doi.org/10.1002/9781118458204.ch2>
- Shutaleva, A. (2023). Experiential Learning as Principle of Environmental Education. *E3S Web of Conferences*, 420, 10010.  
<https://doi.org/10.1051/e3sconf/202342010010>
- Shyman, E. (2011). A Comparison of the Concepts of Democracy and Experience in a Sample of Major Works by Dewey and Freire. *Educational Philosophy and Theory*, 43(10), 1035–1046.  
<https://doi.org/10.1111/j.1469-5812.2009.00625.x>
- Simmons, S. R. (2006). “A Moving Force”: A Memoir of Experiential Learning. *Journal of Natural Resources Life Science Education*, 35, 132–139. <https://doi.org/10.2134/jnrlse2006.0132>
- Simpson, L. B. (2014). Land as Pedagogy: Nishnaabeg Intelligence and Rebellious Transformation. *Decolonization: Indigeneity, Education & Society*, 3(3), 1–25.
- Sjögren, P., & Arntzen, J. E. (2013). Agricultural Practices in Arctic Norway during the First Millennium BC. *Vegetation History and Archaeobotany*, 22, 1–15.  
<https://doi.org/10.1007/s00334-012-0346-2>
- Skaalsveen, K., Ingram, J., & Urquhart, J. (2020). The Role of Farmers' Social Networks in the Implementation of No-till Farming Practices. *Agricultural Systems*, 181, 102824.  
<https://doi.org/10.1016/j.agsy.2020.102824>
- Sligo, F. X., & Massey, C. (2007). Risk, Trust, and Knowledge Networks in Farmers' Learning. *Journal of Rural Studies*, 23(2), 170–182. <https://doi.org/10.1016/j.jrurstud.2006.06.001>

- Sligo, F. X., Massey, C., & Lewis, K. (2005). Informational Benefits via Knowledge Networks among Farmers. *Journal of Workplace Learning, 17*(7), 452–466.  
<http://dx.doi.org/10.1108/13665620510620034>
- Slimi, C., Prost, M., Cerf, M., & Prost, L. (2021). Exchanges among Farmers' Collectives in Support of Sustainable Agriculture: From Review to Reconceptualization. *Journal of Rural Studies, 83*, 268–278. <https://doi.org/10.1016/j.jrurstud.2021.01.019>
- Smeds, P. (2017). *Farm Education: Sustainability, Food and Education*, Doctoral Dissertation, University of Oulu
- Smeds, P., Jeronen, E., & Kurppa, S. (2015a). Farm Education and the Effect of a Farm Visit on Children's Conception of Agriculture. *European Journal of Educational Research, 4*(1), 1–13.  
<https://doi.org/10.12973/eu-jer.4.1.1>
- Smeds, P., Jeronen, E., & Kurppa, S. (2015b). Farm Education and the Value of Learning in an Authentic Learning Environment. *International Journal of Environmental and Science Education, 10*(3), 381–404.  
<https://doi.org/10.12973/ijese.2015.251a>
- Smeds, P., Jeronen, E., Kurppa, S., & Vieraankivi, M.-L. (2011). Rural Camp School Eco Learn: Outdoor Education in Rural Settings. *International Journal of Environmental and Science Education, 6*, 267–291.
- Smith, K. L., & Rayfield, J. (2017). A Quasi-Experimental Examination: Cognitive Sequencing of Instruction Using Experiential Learning Theory for STEM Concepts in Agricultural Education. *Journal of Agricultural Education, 58*(4), 175–191.  
<https://doi.org/10.5032/jae.2017.04175>
- Smythe, W. E., & Murray, M. J. (2000). Owning the Story: Ethical Considerations in Narrative Research. *Ethics & Behavior, 10*(4), 311–336. [https://doi.org/10.1207/s15327019eb1004\\_1](https://doi.org/10.1207/s15327019eb1004_1)
- Snape, D., & Spencer, L. (2003). The Foundations of Qualitative Research. In J. Ritchie & J. Lewis (Eds.), *Qualitative Research Practice: A Guide for Social Science Students and Researchers*. Sage Publications.
- Song, C., Liu, R., Oxley, L., & Ma, H. (2018). The Adoption and Impact of Engineering-Type Measures to Address Climate Change: Evidence from the Major Grain-Producing Areas in China. *Australian Journal of Agricultural and Resource Economics, 62*(4), 608–635.  
<https://doi.org/10.1111/1467-8489.12269>
- Spiteri, J. (2020). "Too Young to Know?" A Multiple Case Study of Child-to-Parent Intergenerational Learning in Relation to

- Environmental Sustainability. *Journal of Education for Sustainable Development*, 14(1), 61–77.  
<https://doi.org/10.1177/0973408220934649>
- Spiteri, J. (2023). Environmental Learning across Generations: Spontaneous Encounters and Interactions between Young Children, Mothers, and Teachers. *Children's Geographies*, 21(5), 993–1009. <https://doi.org/10.1080/14733285.2023.2170747>
- Squire, C., Andrews, M., Davis, M., Esin, C., Harrison, B., Hydén, L. C., & Hydén, M. (2014). *What is Narrative Research?*. Bloomsbury Academic. <https://doi.org/10.5040/9781472545220>
- Starasts, A.M.T (2005) *Battling the Knowledge Factor: A Study of Farmers' Use of the Internet to Support Information Seeking, Learning and Knowledge Processes in Queensland*. Doctoral Dissertation. University of Queensland.
- Starasts, A.M.T. (2015) Unearthing Farmers' Information Seeking Contexts and Challenges in Digital, Local and Industry Environments. *Library and Information Science Research* 37(2), 156–163. <https://doi.org/10.1016/j.lisr.2015.02.004>
- Stedman, R. C. (2000). *Up North: A Social Psychology of Place*. Doctoral Dissertation, University of Wisconsin-Madison.
- Stedman, R. C. (2003a). Sense of Place and Forest Science: Toward a Program of Quantitative Research. *Forest Science*, 49(6), 822–829. <https://doi.org/10.1093/forestscience/49.6.822>
- Stedman, R. C. (2003b). Is it Really Just a Social Construction? The Contribution of the Physical Environment to Sense of Place. *Society and Natural Resources*, 16(7), 671–685.  
<https://doi.org/10.1080/08941920309189>
- Steinert, Y. (2025). Learning from Experience: From Workplace Learning to Communities of Practice. In Steinert, Y (eds) *Faculty Development in the Health Professions: A Focus on Research and Practice*, 151-171, Springer.  
<https://doi.org/10.1007/978-981-97-9372-3>
- Stelma, J. H., & Cameron, L. J. (2007). Intonation Units in Spoken Interaction: Developing Transcription Skills. *Text & Talk*, 27(3), 361–393. <https://doi.org/10.1515/text.2007.015>
- Stevenson, R. B., Brody, M., Dillon, J., & Wals, A. E. J. (Eds.). (2013). *International Handbook of Research on Environmental Education*. Routledge.
- Strand, K., Arnould, E., & Press, M. (2014). Tillage Practices and Identity Formation in High Plains Farming. *Journal of Material Culture*, 19(4), 355–373.  
<https://doi.org/10.1177/1359183514552240>

- Styres, S. D. (2011). Land as First Teacher: A Philosophical Journey-ing. *Reflective Practice*, 12(6), 717–731.  
<https://doi.org/10.1080/14623943.2011.601083>
- Suárez-Ortega, M. (2013). Performance, Reflexivity, and Learning through Biographical-Narrative Research. *Qualitative Inquiry*, 19(3), 189-200. <http://dx.doi.org/10.1177/1077800412466223>
- Sullivan S (2001) *Living Through and Across Skins: Transactional Bodies, Pragmatism and Feminism*. Indiana University Press.
- Sulaiman, V. R., Hall, A., Kalaivani, A., Dorai, K. & Reddy, T.V (2012) Necessary, but Not Sufficient: Critiquing the Role of Information and Communication Technology in Putting Knowledge into Use. *The Journal of Agricultural Education and Extension*, 18(4), 331–346.  
<https://doi.org/10.1080/1389224X.2012.691782>
- Šūmane, S., Kunda, I., Knickel, K., Strauss, A., Tisenkopfs, T., Rios, I., Rivera, M., Chebach, T., & Ashkenazy, A. (2018). Local and Farmers' Knowledge Matters! How Integrating Informal and Formal Knowledge Enhances Sustainable and Resilient Agriculture. *Journal of Rural Studies*, 59, 232–241.  
<https://doi.org/10.1016/j.jrurstud.2017.01.020>
- Sun, Y., Chan, R. C. K., & Chen, H. (2016). Learning with Geographical Sensitivity: Place-Based Education and its Praxis. *The Professional Geographer*, 68(4), 574–583.  
<https://doi.org/10.1080/00330124.2015.1121835>
- Sutherland, L. A., & Marchand, F. (2021). On-farm Demonstration: Enabling Peer-to-Peer Learning. *Journal of Agricultural Education and Extension*, 27(5), 573–590.  
<https://doi.org/10.1080/1389224x.2021.1959716>
- Sutherland, L. A., Madureira, L., Dirimanova, V., Bogusz, M., Kania, J., Vinohradnik, K., Creaney, R., Duckett, D., Koehnen, T., & Knierim, A. (2017). New Knowledge Networks of Small-Scale Farmers in Europe's Periphery. *Land Use Policy*, 63, 428–439.  
<https://doi.org/10.1016/j.landusepol.2017.01.028>
- Swedish Research Council. (2024). *Good Research Practice*.
- Szczepanski, A (2025) *Kunskap i landskap: Ut (i)från ett utomhuspedagogiskt och didaktiskt sammanhang*, Doctoral Dissertation, Linköping University
- Talento, K., Amado, M., & Kullberg, J. C. (2019). Landscape: A Review with a European Perspective. *Land*, 8(6), 85.  
<https://doi.org/10.3390/land8060085>
- Tam, M. (2018). Lifelong Learning for Older Adults: Culture and Confucianism. In M. Milana et al. (Eds.), *The Palgrave*

- International Handbook on Adult and Lifelong Education and Learning*. [https://doi.org/10.1057/978-1-137-55783-4\\_44](https://doi.org/10.1057/978-1-137-55783-4_44)
- Tappeiner, U., Leitinger, G., Zariņa, A., & Bürgi, M. (2021). How to Consider History in Landscape Ecology: Patterns, Processes, and Pathways. *Landscape Ecology*, 36, 2317–2328. <https://doi.org/10.1007/s10980-020-01163-w>
- Tauger, M. B. (2021). *Agriculture in World History*. Routledge. <https://doi.org/10.4324/9780367821739>
- Taylor, M., & Bhasme, S. (2018) Model Farmers, Extension Networks and the Politics of Agricultural Knowledge Transfer, *Journal of Rural Studies*, 64, 1-10, <https://doi.org/10.1016/j.jrurstud.2018.09.015>
- Taylor, E. W., Duveskog, D., & Friis-Hansen, E. (2012). Fostering Transformative Learning in Non-formal Settings: Farmer-Field Schools in East Africa. *International Journal of Lifelong Education*, 31(6), 725–742. <https://doi.org/10.1080/02601370.2012.713035>
- Thomas, D. R. (2006). A General Inductive Approach for Analyzing Qualitative Evaluation Data. *American Journal of Evaluation*, 27(2), 237–246. <https://doi.org/10.1177/1098214005283748>
- Thomas, E., Riley, M., & Spees, J. (2020). Knowledge Flows: Farmers' Social Relations and Knowledge Sharing Practices in Catchment Sensitive Farming. *Land Use Policy*, 90, 104254. <https://doi.org/10.1016/j.landusepol.2019.104254>
- Tierney, W. (1998). Life History's History: Subjects Foretold. *Qualitative Inquiry*, 4(1), 49–70. <https://doi.org/10.1177/107780049800400104>
- Tomai, E., & Forbus, K. (2007). *Narrative Presentation and Meaning*. American Association for Artificial Intelligence.
- Tuan, Y. F. (1977). *Space and Place: The Perspective of Experience*. University of Minnesota Press.
- Tuijnman, A., & Boström, A. K. (2002). Changing Notions of Lifelong Education and Lifelong Learning. *International Review of Education*, 48(1/2), 93–110. <https://doi.org/10.1023/A:1015601909731>
- Tuparevska, E., Santibáñez, R., & Solabarrieta, J. (2020a). Equity and Social Exclusion Measures in EU Lifelong Learning Policies. *International Journal of Lifelong Education*, 39(1), 5-17. <https://doi.org/10.1080/02601370.2019.1689435>
- Tuparevska, E., Santibáñez, R., & Solabarrieta, J. (2020b). Social Exclusion in EU Lifelong Learning Policies: Prevalence and Definitions. *International Journal of Lifelong Education*, 39(2), 179-190.

- <https://doi.org/10.1080/02601370.2020.1728404>  
Uhrmacher, P. B. (2009). Toward a Theory of Aesthetic Learning Experiences. *Curriculum Inquiry*, 39(5), 613–636.  
<https://doi.org/10.1111/j.1467-873x.2009.00462.x>
- Uleberg, E., Hanssen-Bauer, I., Van Oort, B., & Dalmannsdottir, S. (2014). Impact of Climate Change on Agriculture in Northern Norway and Potential Strategies for Adaptation. *Climatic Change*, 122, 27–39.  
<https://doi.org/10.1007/s10584-013-0983-1>
- Unc, A., Altdorff, D., Abakumov, E., Adl, S., Baldursson, S., Bechtold, M., Cattani, D. J., Firbank, L. G., Grand, S., Guðjónsdóttir, M., Kallenbach, C., Kedir, A. J., Li, P., McKenzie, D. B., Misra, D., Nagano, H., Neher, D. A., Niemi, J., Oelbermann, M., Overgård Lehmann, J., Parsons, D., Quideau, S., Sharkhuu, A., Smreczak, B., Sorvali, J., Vallotton, J. D., Whalen, J. K., Young, E. H., Zhang, M., & Borchard, N. (2021). Expansion of Agriculture in Northern Cold-Climate Regions: A Cross-Sectoral Perspective on Opportunities and Challenges. *Frontiers in Sustainable Food Systems*, 5, 663448.  
<https://doi.org/10.3389/fsufs.2021.663448>
- United Nations (2012). *The Future We Want: Outcome Document of the United Nations Conference on Sustainable Development*.
- Valley, W., Wittman, H., Jordan, N., Ahmed, S., & Galt, R. (2017) An Emerging Signature Pedagogy for Sustainable Food Systems Education, *Renewable Agriculture and Food Systems*, 33(5), 467–480, <https://doi.org/10.1017/S1742170517000199>
- Valliant, J. C., Ruhf, K. Z., Gibson, K. D., Brooks, J. R., & Farmer, J. R. (2019). Fostering Farm Transfers from Farm Owners to Unrelated, New Farmers: A Qualitative Assessment of Farm Link Services. *Land Use Policy*, 86, 438–447.  
<https://doi.org/10.1016/j.landusepol.2019.05.004>
- Van Eijck, M., & Roth, W. M. (2010). Towards a Chronotopic Theory of “Place” in Place-Based Education. *Cultural Studies in Science Education*, 5, 869–898.  
<https://doi.org/10.1007/s11422-010-9278-2>
- Van Maanen, J. (2011). *Tales of the Field: On Writing Ethnography*. University of Chicago Press.
- Vander Ark, T., Liebttag, E., & McClennen, N. (2020). *The Power of Place: Authentic Learning through Place-Based Education*. ASCD.
- Waddington, D. I., & Weeth Feinstein, N. (2016). Beyond the Search for Truth: Dewey’s Humble and Humanistic Vision of Science Education. *Educational Theory*, 66(1), 111–124.

- <https://doi.org/10.1111/edth.12157>
- Wain, K. (2008). Lifelong Learning and Philosophy. In P. Jarvis (Ed.), *The Routledge International Handbook of Lifelong Learning*, 390–400, Routledge.
- Waldenström, C. (2022). Institutional Erosion and New Strategies: Changing Contexts for Learning in Agriculture in Northern Sweden. *Sociologia Ruralis*, 63, 751–770.  
<https://doi.org/10.1111/soru.12409>
- Wals, A. E. J., & Benavot, A. (2017). Can We Meet the Sustainability Challenges? The Role of Education and Lifelong Learning. *European Journal of Education*, 52(4), 404–413.  
<https://doi.org/10.1111/ejed.12250>
- Wattchow, B., & Brown, M. (2011). *A Pedagogy of Place: Outdoor Education for a Changing World*. Monash University.
- Webster, L., & Mertova, P. (2007). *Using Narrative Inquiry as a Research Method: An Introduction to Critical Event Narrative Analysis on Learning and Teaching*. Routledge.  
<https://doi.org/10.4324/9780203946268>
- Wenger, E. (1998). Communities of Practice: Learning as a Social System. *Systems Thinker*, 9(5), 2–3.
- Wenger, E. (2000). Communities of Practice and Social Learning Systems. *Organization*, 7(2), 225–246.
- Wheaton, M., Ardoin, N., Bowers, A. W., & Kannan, A. (2024). Sociocultural Learning Theories for Social-Ecological Change. *Environmental Education Research*, 30(8), 1193–1210.  
<https://doi.org/10.1080/13504622.2024.2347888>
- White, B. (2013). Pay Attention, Pay Attention, Pay Attention. In B. White & T. Constantino (Eds.), *Aesthetics, Empathy and Education*, 99–116, Peter Lang.
- Widgren, M. (2004). Can Landscapes be Read? In H. Palang, H. Sooväli, M. Antrop, & G. Setten (Eds.), *European Rural Landscapes: Persistence and Change in a Globalising Environment*. Springer. [https://doi.org/10.1007/978-0-306-48512-1\\_28](https://doi.org/10.1007/978-0-306-48512-1_28)
- Wildcat, M., McDonald, M., Irlbacher-Fox, S., & Coulthard, G. (2014). Learning from the Land: Indigenous Land-Based Pedagogy and DeColonization. *Decolonization: Indigeneity, Education & Society*, 3(3), 1–15.
- Wills, J. (2007). *Foundations of Qualitative Research: Interpretive and Critical Approaches*. Sage.
- Wilson, R. (2007). *Nature and Young Children: Encouraging Creative Play and Learning in Natural Environments*. Routledge.

- Wiréhn, L. (2018). Nordic Agriculture under Climate Change: A Systematic Review of Challenges, Opportunities, and Adaptation Strategies for Crop Production. *Land Use Policy*, 77, 63–74. <https://doi.org/10.1016/j.landusepol.2018.04.059>
- Wivstad, M. (2010). *Klimatförändringarna: En utmaning för jordbruket och giftfri miljö*. Naturvårdsverket.
- Wójcik, M., Jeziorska-Biel, P., & Czapiewski, K. (2019). Between Words: A Generational Discussion about Farming Knowledge Sources. *Journal of Rural Studies*, 67, 130–141. <https://doi.org/10.1016/j.jrurstud.2019.04.003>
- Wong, D., Pugh, K., & Dewey Ideas Group at Michigan State University. (2001). Learning Science: A Deweyan Perspective. *Journal of Research in Science Teaching*, 38(3), 317–336. [https://doi.org/10.1002/1098-2736\(200103\)38:3<317::AID-TEA1008>3.0.CO;2-9](https://doi.org/10.1002/1098-2736(200103)38:3<317::AID-TEA1008>3.0.CO;2-9)
- Wood, B. A., Blair, H. T., Gray, D. I., Kemp, P. D., Kenyon, P. R., Morris, S. T., & Sewell, A. M. (2014). Agricultural Science in the Wild: A Social Network Analysis of Farmer Knowledge Exchange. *PLOS ONE*, 9(8), e105203. <https://doi.org/10.1371/journal.pone.0105203>
- World Bank. (2003). *Lifelong Learning in the Global Knowledge Economy: Challenges for Developing*.
- World Bank. (2011). *Learning for All: Investing in People's Knowledge and Skills to Promote Development*.
- Wu, J. (2010). Landscape of Culture and Culture of Landscape: Does Landscape Ecology Need Culture? *Landscape Ecology*, 25, 1147–1150. <https://doi.org/10.1007/s10980-010-9524-8>
- Yemini, M., Engel, L., & Simon, A. B. (2023). Place-Based Education: A Systematic Review of Literature. *Educational Review*. <https://doi.org/10.1080/00131911.2023.2177260>
- Zagata, L., & Sutherland, L. A. (2015). Deconstructing the ‘Young Farmer Problem’ in Europe: Towards a Research Agenda. *Journal of Rural Studies*, 38, 39–51. <https://doi.org/10.1016/j.jrurstud.2015.01.003>
- Zheng, H., Ma, W., & Li, G. (2020). Learning from Neighboring Farmers: Does Spatial Dependence Affect Adoption of Drought-Tolerant Wheat Varieties in China? *Canadian Journal of Agricultural Economics*, 69, 519–537. <https://doi.org/10.1111/cjag.12294>

# APPENDIX

Theme	Sensing the Land	
Subtheme	Sensing Systematically	Sensing Slowly and Attentively
<p>Example Excerpt from the Empirical Data</p> <p>Semantic and latent codes are illustrated with parentheses including bold and italic text</p>	<p>Without your hands, you cannot digest your learning. <b>(sensory understanding through touch)</b> You may be able to measure things with your computer, but you get something more if you touch and experience your lands with your body <b>(understanding through sensory engagement)</b>. You learn them more intimately. They take root in you. You simply get a sense of who they are and how they are doing. <b>(sensory understanding)</b> It is about being consistently attentive to what is, so that you may see when it shifts and changes. <b>(systematic and sustained sensory engagement)</b> Sometimes, it may take years before you notice something, <b>(emerging understanding by sustained sensory engagement)</b> but when you do, you want to know. You must be persistent! <b>(systematic and sustained sensory engagement)</b></p>	<p>When I drive over my fields with the tractor, I first do a visual inspection of them and think about why they look as they do. <b>(sensory engagement through sight, reflection on sensory impressions)</b> Then I go out and sense the ground. <b>(sensory engagement through touch)</b> I notice how the soil moves and feels. <b>(sensory engagement through touch)</b> One time, I remember that I noticed that the tractor was floating over a particular spot on one of my fields, <b>(sensory impression, breach of preunderstanding)</b> and it turned out that there was water lying underneath the surface, since a blockage had built up in the French drain a few meters away. And that is an awareness that you must acquire as a farmer. <b>(sensory attentiveness)</b> You must constantly gather information when you are out on the land. <b>(systematic and sustained sensory engagement)</b> You cannot simply sit in the tractor and just ride along. <b>(sensory attentiveness)</b></p>

Theme	Storying the Land	
Subtheme	Storying across Generations	Storying across Communities
<p>Example Excerpt from the Empirical Data</p> <p>Semantic and latent codes are illustrated with parentheses including bold and italic text</p>	<p>He knew which fields handled drought better than others, and which needed rain. <b><i>(intimate knowledge and experience of the land)</i></b> That comes from living with these lands, understanding the soil, and knowing how the landscape varies. <b><i>(intimate knowledge and experience of the land)</i></b> That is not something that you simply can read your way into. That comes from the experiences that you share and acquire over time. <b><i>(learning by experience)</i></b> As a farmer, you must remember what you have done and seen, <b><i>(positioning to history)</i></b> and think about why some fields yield well, while others do not. <b><i>(reflection on change and effect)</i></b> And that is something I feel very blessed to have learned from my grandfather. <b><i>(intergenerational learning)</i></b> He was always there for us when we had questions, and it was always rewarding to discuss with him and hear his point of view on the daily operation. <b><i>(intergenerational learning, social reflection)</i></b> For me, that has been important. Without our conversations, I would not have known these lands in the same way. <b><i>(intergenerational learning, social reflection)</i></b></p>	<p>But when I began to work as a farmer <b><i>(beginning of farming career)</i></b>, I especially gained a lot of knowledge from all the other, older farmers around here <b><i>(intergenerational learning, intercommunal learning)</i></b>. My parents were, of course, a big part of that, <b><i>(intergenerational learning)</i></b> but the other farmers who lived here in the village were also of great help. <b><i>(intercommunal learning)</i></b> They had received their knowledge from previous generations and then, by themselves, advanced it further. <b><i>(intergenerational learning)</i></b> And they then passed it on to me, <b><i>(intergenerational learning, intercommunal learning, knowledge transfer)</i></b> which early on helped me see how my farmlands are connected and how I should take care of them. <b><i>(landscape connectedness)</i></b> It is important to know how your fields have been worked previously, and how their timings differ, <b><i>(positioning to history)</i></b> and by thinking and talking with the old timers, I learned to know what to look for. <b><i>(intergenerational learning, intercommunal learning)</i></b></p>

Theme	Shaping the Land	
Subtheme	Shaping Systematically	Shaping Collectively
<p>Example Excerpt from the Empirical Data</p> <p>Semantic and latent codes are illustrated with parentheses including bold and italic text</p>	<p>Normally, in a traditional crop rotation, you usually till the soil every five years. <b>(agricultural cycle)</b> But you cannot do that with former bogs since you will destroy the root systems and deplete them of their strength. <b>(agricultural insight)</b> Hence, we then naturally began to experiment, seeking to find different ways that we could enhance the stability of the land. <b>(agricultural experimentation)</b> We sowed seeds and tried to instil many different plants in the soil. <b>(agricultural interventions)</b> And after a long process, we got the experience of how to do it. <b>(sustained and systematic agricultural experimentation)</b> You know, we had to ask the land what it needed by experimenting. <b>(agricultural experimentation)</b> But you may not get your answers right away, so we learned that you must be attentive to how it responds. <b>(sustained and systematic agricultural experimentation)</b></p>	<p>I cannot tell you how many times we have come together to try something out here on the farmstead. <b>(collective agricultural experimentation)</b> When the land is not producing as expected, <b>(breach of pre-understanding)</b> it can be a great resource to try things with the more experienced to figure out what works. <b>(collective agricultural experimentation, experience is valued)</b> They have the experience of the land and often know what a good way of proceeding can be and how you should and should not think about what is happening. <b>(collective agricultural experimentation, experience is valued)</b></p>



Department of Health, Education and Technology  
Division of Education and Languages

---

ISSN 1402-1544

ISBN 978-91-8142-050-0 (print)

ISBN 978-91-8142-051-7 (pdf)

Luleå University of Technology 2026

