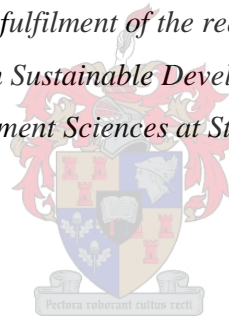


# Facilitating the development of Nature Connectedness

by

Michaela Leigh Geytenbeek

*Thesis presented in partial fulfilment of the requirements for the degree  
of Master of Philosophy in Sustainable Development in the Faculty of  
Economic and Management Sciences at Stellenbosch University*



March, 2023

Supervisor: Dr Cécile Feront

Co-supervisor: Dr Maike Hamann

## Declaration

By submitting this thesis electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the sole author thereof (save to the extent explicitly otherwise stated), that reproduction and publication thereof by Stellenbosch University will not infringe any third party rights and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

Date: March 2023

## Abstract

Amidst mounting environmental crises, there is pressing need to understand how pro-environmental behaviour develops and transforms into action. Yet, there is confusion as to how to encourage a sense of connection with nature, a concept often referred to as nature-connectedness. Drawing on existing research on nature connectedness and exploring what we know about how to encourage its development, my research aims to gain an understanding of nature connectedness *as a process*, in order to better understand how to facilitate its development with children. More specifically, this entails gaining an understanding of how the relationship between children and nature develops, which experiences promote its development, and what role(s) the nature experience facilitator can play to encourage this connection to develop.

My investigation is designed as a qualitative inquiry, combining participatory action research and grounded theory methodologies to gather and analyse data. Adopting a relational paradigm, I engage for a period of six months with a group of 36 children, their parents, and five nature experience facilitators at the Kinship Programme in Durban North, South Africa.

I identify five phases of nature connectedness – *afraid, comfortable, engaged, caring(self)* and *caring(activist)* – that children experience as they progress on their journey to a deeper sense of connection to nature. My study further identifies which phase-specific experiences encouraged children to progress on their journey of nature connectedness. Finally, my study reveals that children required different support from the nature experience facilitator depending on their phase of nature connectedness and so I identify the different roles that the nature experience facilitator plays – *protector, initiator, observer* and *navigator* - in alignment with the child's position on their nature connectedness journey.

My study makes several contributions to our understanding of how to facilitate the development of nature connectedness. Firstly, focusing on nature connectedness *as a process*, it complements existing frameworks of nature connectedness and offers a dynamic view of how children move from one phase to another; secondly, it highlights the importance of designing phase-specific experiences to support each child's progress in their journey of nature connectedness; and thirdly, it reconciles prior literature by defining the different phase- and transition-specific roles of the nature experience facilitator.

My findings provide guidance that can be practically applied in the daily facilitation of nature experiences, in the design of environmental education curricula, and in informing education policy. My findings show that it is possible to intentionally design experiences that promote the

development of nature connectedness, and provide phase-based guidelines to facilitators on how to do so.

## Opsomming

Te midde van toenemende omgewingskrisisse is daar 'n dringende behoefte om te verstaan hoe pro-omgewingsgedrag ontwikkel en in aksie omskep word. Tog is daar verwarring oor hoe om 'n gevoel van verbondenheid met die natuur, 'n konsep waarna dikwels as natuurverbondenheid verwys word, aan te moedig. Deur gebruik te maak van bestaande navorsing oor natuurverbondenheid en deur te ondersoek wat ons weet oor hoe om die ontwikkeling daarvan aan te moedig, het my navorsing ten doel om 'n begrip van natuurverbondenheid *as 'n proses* te verkry, om beter te verstaan hoe om die ontwikkeling daarvan met kinders te fasiliteer. Dit behels meer spesifiek begrip van hoe die verhouding tussen kinders en die natuur ontwikkel, watter ervarings die ontwikkeling daarvan bevorder en watter rol(le) die natuurervaringsfasiliteerder kan speel om die ontwikkeling van hierdie verbondenheid aan te moedig.

My ondersoek is ontwerp as 'n kwalitatiewe ondersoek, wat deelnemende aksie-navorsing en begronde teorie-metodologieë kombineer om data in te samel en te ontleed. Deur 'n relasionele paradigma te gebruik, is ek vir 'n tydperk van ses maande met 'n groep van 36 kinders, hul ouers en vyf natuurervaringsfasiliteerders by die Kinship-program in Durban-Noord, Suid-Afrika, betrokke.

Ek identifiseer vyf fases van natuurverbondenheid – *bang, gemaklik, ingeskakel, omgee(self) en omgee(aktiwis)* – wat kinders ervaar terwyl hulle vorder op hul reis na 'n dieper gevoel van verbondenheid met die natuur. My studie identifiseer verder watter fase-spesifieke ervarings kinders se vordering op hul reis van natuurverbondenheid aangemoedig het. Ten slotte onthul my studie dat kinders verskillende ondersteuning van die natuurervaringsfasiliteerder benodig het, afhangende van hul fase van natuurverbondenheid en dus identifiseer ek die verskillende rolle wat die natuurervaringsfasiliteerder speel – *beskermer, inisieerder, waarnemer en navigeerder* – in ooreenstemming met die kind se posisie op hul natuurverbondenheidsreis.

My studie lewer verskeie bydraes tot ons begrip van hoe om die ontwikkeling van natuurverbondenheid te fasiliteer. Eerstens, met die fokus op natuurverbondenheid *as 'n proses*, vul dit bestaande raamwerke van natuurverbondenheid aan en bied dit 'n dinamiese siening van hoe kinders van een fase na 'n ander beweeg; tweedens beklemtoon dit die belangrikheid van die ontwerp van fase-spesifieke ervarings om elke kind se vordering in hul natuurverbondenheidsreis te ondersteun; en derdens versoen dit voorafgaande literatuur deur die natuurervaringsfasiliteerder se verskillende fase- en oorgangspesifieke rolle te definieer.

My bevindinge bied riglyne wat prakties toegepas kan word in die daaglikse fasilitering van natuurervarings, in die ontwerp van omgewingsopvoedingskurrikulums en by die inligting van

onderwysbeleid. My bevindinge toon dat dit moontlik is om doelbewus ervarings te ontwerp wat die ontwikkeling van natuurverbondenheid bevorder, en fasegebaseerde riglyne aan fasiliteerders te verskaf oor hoe om dit te doen.

# Table of contents

Declaration .....	i
Abstract .....	ii
Opsomming .....	iv
Table of contents .....	vi
List of figures .....	ix
List of tables .....	x
List of acronyms .....	xi
List of abbreviations .....	xi
Acknowledgements .....	xii
Chapter 1: Introduction .....	1
1.1 Problem statement .....	1
1.2 Research objective and research question .....	2
1.3 Research setting .....	2
1.4 Research methodology .....	3
1.5 Key findings and contributions .....	3
1.6 Thesis plan .....	4
Chapter 2: Literature review .....	5
2.1 Why are humans becoming increasingly disconnected from nature? .....	5
2.1.1 How does this disconnect affect nature? .....	6
2.1.2 How does this disconnect affect humans? .....	6
2.1.3 The growing impetus to reconnect humans and nature .....	8
2.2 What is nature connectedness? .....	8
2.2.1 Dimensions of nature connectedness .....	8
2.2.2 Dynamics of nature connectedness .....	10
2.3 The development of nature connectedness .....	10

2.3.1 The phases of nature connectedness .....	11
2.3.2 The progression and timing of nature experiences .....	11
2.3.3 The design of nature experiences to encourage human-nature connection .....	12
2.3.4 The qualities of nature experiences.....	14
2.4 The dance of facilitating nature connectedness .....	17
2.4.1 The role of the facilitator .....	17
2.4.2 The attitude of the facilitator.....	18
Chapter 3: Methodology .....	20
3.1 Qualitative approach and relational paradigm .....	20
3.2 Research setting .....	21
3.3 Combining participatory action and grounded theory methodologies.....	22
3.3.1 Participatory action .....	22
3.3.2 Grounded theory .....	23
3.4 Research sample and scope.....	24
3.5 Research process .....	25
3.5.1 Co-designing and implementing nature experiences .....	26
3.5.2 Collecting data .....	30
3.5.3 Analysing data.....	36
3.6 Ethical considerations .....	42
3.7 Research reflexivity .....	43
3.8 Research validity.....	44
Chapter 4: Findings.....	45
4.1 Insight into the big picture .....	45
4.2 Illustrative stories of the children’s nature connectedness journey .....	46
4.2.1 Sneaky, the Dragon.....	47
4.2.2 Grace, the Warrior Child.....	49
4.3 The journey of nature connectedness: phases and transitions.....	52
4.3.1 Phases of nature connectedness .....	52



4.3.2 AFRAID to COMFORTABLE .....	53
4.3.3 COMFORTABLE to ENGAGED .....	55
4.3.4 ENGAGED to CARING .....	58
4.3.5 A shift in CARING .....	60
4.4 The role of deep immersion .....	62
4.5 Facilitating nature connectedness – from the outside .....	63
4.5.1 Pre-session preparation .....	63
4.5.2 Shift in facilitator role .....	64
4.6 Summary of findings.....	66
Chapter 5: Discussion and conclusion .....	67
5.1 How does the relationship between children and nature develop? .....	67
5.2 Which experiences encourage the development of nature connectedness? .....	71
5.2.1 Experiences that promote transitions between the phases .....	72
5.2.2 Child-led as an experience philosophy .....	72
5.2.3 The benefit of purposeful tasks .....	73
5.2.4 The importance of curating volunteering opportunities.....	73
5.3 What role does the nature experience facilitator play in encouraging the development of nature connectedness?.....	74
5.4 Practical implications .....	75
5.5 Research limitations .....	76
5.6 Future research.....	77
5.7 Conclusion .....	78
Reference List .....	79
Appendices.....	88
Appendix A: Child profile .....	88
Appendix B: Illustrative stories .....	89
Appendix C: Example of a bug hotel lesson plan.....	94

## List of figures

Figure 2.1 Qualities of nature that the children resonate with during each stage of nature connectedness (Giusti et al, 2018) .....	14
Figure 3.1 Timeline of research process .....	26
Figure 3.2 Memo from my first journal entry .....	27
Figure 3.3 A record of the iterative planning process.....	28
Figure 3.4 Data collection process .....	31
Figure 3.5 Illustrated inclusion of nature in self test (Kleespies et al, 2021).....	33
Figure 3.6 GANTT chart illustrating Sneaky’s relationship between time spent in nature and depth of connection.....	38
Figure 3.7 Memo highlighting my confusion about the children's interest in litter.....	40
Figure 4.1 Detailed illustration of the journey of nature connectedness with experiences and facilitation roles that promote phase-specific transitions.....	46
Figure 4.2 Journey of nature connectedness .....	53
Figure 4.3 Experiences that promote a transition from being afraid to comfortable in nature .....	54
Figure 4.4 Experiences that promote a transition from being comfortable to engaged in nature .....	55
Figure 4.5 Experiences that promote a transition from being engaged in to caring for nature.....	58
Figure 4.6 A shift in caring for nature .....	61
Figure 4.7 Different hats of the nature experience facilitator .....	64
Figure 5.1 Detailed illustration of the journey of nature connectedness with experiences and facilitation roles that promote phase-specific transitions.....	68
Figure 5.2 Process View of the journey of nature connectedness using, in-part, Giusti and colleagues' (2018) nomenclature.....	71
Figure A1 Sneaky's child profile.....	88
Figure B1 Tiger's journey of nature connectedness .....	89
Figure B2 Shy's journey of nature connectedness .....	90
Figure B3 Humangasaur's journey of nature connectedness .....	91
Figure B4 Eye of the Tiger's journey of nature connectedness .....	91
Figure B5 Flash's journey of nature connectedness .....	92
Figure B6 Flower's journey of nature connectedness .....	92
Figure B7 Little Bird's journey of nature connectedness.....	93
Figure B8 Ancient's journey of nature connectedness .....	93

## List of tables

Table 2.1 Abilities possessed by children during each phase of nature connectedness (adapted from Giusti et al, 2018).....	11
Table 3.1 Description of and children’s reaction to the different experience venues.....	29
Table 3.2 Summary of the data collection process .....	35
Table 3.3 Snippet of Sneaky's timeline.....	36
Table 3.4 Grouping of codes.....	37
Table 3.5 Snippet of Shy and Ancient's entries for transition experiences.....	39
Table 3.6 Grouping of experiences to form list of final experiences.....	39
Table 3.7 Identifying the role of the nature experience facilitator.....	41
Table 4.1 Experiences that promote/stunt a transition from being afraid to comfortable in nature as well as pointers that a transition is taking place.....	55
Table 4.2 Experiences that promote/stunt a transition from being comfortable to engaged in nature as well as pointers that a transition is taking place .....	57
Table 4.3 Experiences that promote a transition from being engaged in to caring for nature, as well as pointers that a transition is taking place .....	60
Table 4.4 Experiences that promote/stunt a transition from personally caring for nature to becoming an activist for nature as well as pointers that a transition is taking place .....	62
Table 5.1 Extension of Giusti and colleagues' (2018) findings on abilities possessed during the phases of nature connectedness.....	70

## List of acronyms

CROW Centre for the Rehabilitation of Wildlife

## List of abbreviations

m meters

## Acknowledgements

I would like to thank everyone that has helped me along my journey.

To my supervisor, Cecile Feront and co-supervisor, Maike Hamann. Cecile, I honestly cannot thank you enough for going out of your way to make my masters journey a seamless one. From preparing lists of literature recommendations and clear indicators on how to structure my thesis to your true interest in how my study was unfolding and flexibility throughout the process. I truly feel blessed to have been led by you on this journey. Maike, I am so grateful for all of the wisdom that you shared with me during my journey. For being eager and honest. And for helping provide me with direction throughout. You are both such incredible women and I have learnt so much from the pair of you.

To my Kinship Team. Thank you for holding the load when I couldn't, for your willingness to learn and grow and for walking this journey alongside me. I pray that what we do has a profoundly positive impact on the lives of the Kinship kiddies and their families.

To the Kinship children and their families. Thank you for trusting me and giving your time to my research. I feel so privileged to have been able to share in your journeys and learn from you.

I've had the pleasure of living my Masters. While this has been a wonderful dream for me, it has been taxing for some of the people closest to me. Thank you to my mom, stepdad and Scotty for being listening ears, providers of cups of coffee and my pillars of support when I've been too tired to stand alone. Your love and kindness has not gone unnoticed.

## Chapter 1: Introduction

Historically humans lived in close contact with the natural world, which promoted a sense of human belonging within a broader ecosystem and stimulated an understanding of the reciprocal relationship between humans and all natural beings (Mayer & Franz, 2004; Barkham, 2020). As a result of our increasingly urban and industrialised lifestyles this close contact and understanding has largely been lost, resulting in a widespread human-nature disconnect (Cumming, Buerkert, Hoffmann, Schlecht et al, 2014). This human-nature disconnect is believed to play a key role in our slow response and reluctant action to challenges such as climate change, deforestation and pollution (Barkham, 2020; Richardson, Dobson, Abson, Lumber, Hunt, Young & Moorhouse, 2020; Beery, Ingemar Jönsson & Elmberg, 2015; Ardoin & Bowers, 2020). If we are to address these environmental issues, we need to focus on the heart of the problem: the disconnect between humans and nature (Soga & Gaston, 2016; Pyle, 2003; Beery et al, 2015; Folke, Jansson, Rockström, Olsson et al, 2011).

The term nature connectedness refers to the relationship between an individual and nature and can be used as a measure to determine one's sense of connection to the natural world (Nisbet, Zelenski and Murphy, 2009). While there has been growing interest in nature connectedness and evidence that it is a predictor of pro-environmental behaviour (Wells & Lekies, 2006; Mullenbach, Andrejewski & Mowen, 2019; Nilsson, Baxter Butler & McAlpine, 2016), research results around the development of nature connectedness are fragmented, providing limited concrete guidance on how to facilitate the development of this relationship between humans and nature (Richardson et al, 2020).

### 1.1 Problem statement

My study considers how to facilitate the development of nature connectedness in children, with the intention that this developing relationship will lead them to champion conservation and sustainable development later in life. The foundation of one's identity is said to be most malleable and primarily develop before the age of eight (Ardoin & Bowers, 2020; Pritchard et al, 2020). Within this identity there is the potential for the formation of an "environmental identity" or "nature connectedness", which speaks to one's relationship with the natural world and sense of responsibility for caring for her (Lieflander, Bogner & Schultz, 2013; Ardoin & Bowers, 2020). This part of one's identity is proposed to develop out of intimate and repeated experiences in nature at a young age (Wilson, 2011; Nilsson et al, 2016). In our modern, primarily urban world, many

people have not had these intimate and repeated experiences and thus have not developed this relationship, leading to the widespread apathetic response to environmental crises (Wilson, 2011; Buchholtz, 2020; Chawla, 2020; Beery et al, 2015).

If we are to halt the mounting environmental crises, we need to encourage the formation of environmentally conscious people with a strong sense of nature connectedness (Soga & Gaston, 2016; Pyle, 2003; Beery et al, 2015; Folke, Jansson, Rockström, Olsson et al, 2011). My study can help in the formation of this populace by providing a set of guidelines that document how to encourage the development of nature connectedness (Richardson et al, 2020).

## **1.2 Research objective and research question**

The purpose of my research is to gain an understanding of nature connectedness *as a process*, in order to better understand how to facilitate its development with children.

My main research question is: How can the process of developing nature connectedness be supported in childhood?

This entails gaining an understanding of the following sub-questions:

- How does the relationship between children and nature develop?
- What experiences may promote its development?
- What role(s) can the nature experience facilitator play to encourage this connection to develop?

## **1.3 Research setting**

The Kinship Programme provided the setting for my research ([www.kinshipprogramme.com](http://www.kinshipprogramme.com)). The Programme facilitates immersive, inquiry-based learning for children aged three to eleven years in Durban, KwaZulu Natal, South Africa. I founded the Kinship Programme in 2020 to provide children growing up in an urban environment with the opportunity to spend time in and develop a relationship with the natural spaces around Durban. The hope is that this relationship will encourage them to champion conservation and sustainable development later in life. The programme takes place for two hours each afternoon (Monday to Friday) in different natural spaces in and around Durban North. Groups are capped at eight children per session and children attend once or twice a week, on a weekly basis. The Programme practices the Montessori philosophy of *Following the*

*Child* (MacDonald, 2015) - which means that most activities are child-led and directed according to the groups' interests.

## 1.4 Research methodology

To gain insights into how the process of nature connectedness can be supported, I engaged for a period of six months with a group of 36 children and facilitated nature experiences at the Kinship Programme. I designed my investigation as a qualitative inquiry, using grounded theory and a participatory research methodology to gather and analyse data. Applying a relational paradigm to my research, I focused my attention on understanding the developing relationship between each individual child and nature (Bohme, 2022). I gathered data using observations as well as informal conversations and semi-structured interviews with the children, their parents and the other facilitators. Key to my study, I critically reflected on my role as both a nature experience facilitator and observer to identify what the children required from me and how my actions influenced the formation of their individual nature connections (Davis, 2020; Bohme, 2022).

I applied an inductive reasoning process to identify patterns in the types of experiences that elicited connection (Bhandari, 2022). I then progressively moved onto an abductive reasoning process, consulting the literature alongside my observations (Gordon, 2022). Doing so, I noticed the applicability of a particular framework on phases of nature connectedness (Giusti, Svane, Raymond, & Berry, 2018) and engaged with this framework to build an understanding of how nature connectedness may be encouraged.

## 1.5 Key findings and contributions

My investigation led me to: first, identify five different phases along the nature connectedness journey, i.e. *afraid*, *comfortable*, *engaged*, *caring(self)* and *caring(activist)*; second, identify phase-specific nature experiences that encouraged a strengthening nature connection to develop; and third, identify the four main roles required of the nature experience facilitator during the journey of nature connectedness, i.e. *protector*, *initiator*, *observer* and *navigator*.

My study makes several contributions to the understanding of how to facilitate the development of nature connectedness. Firstly, focusing on nature connectedness *as a process*, it complements existing frameworks of nature connectedness (*sensu Giusti et al, 2018*) and offers a dynamic view of how children move from one phase to another; secondly, it highlights the importance of designing phase-specific experiences to support each child's progress in their journey of nature



connectedness; and thirdly, it reconciles prior literature by defining the different phase- and transition-specific roles of the nature experience facilitator. Integrating previously fragmented research, this phase-based guideline offers a clear pathway for action.

## **1.6 Thesis plan**

My dissertation proceeds as follows. In the literature review chapter I explore existing research on nature connectedness - focusing on the qualities of nature experiences that people connect to and the role of the nature experience facilitator. In my methodology chapter, I explain my selection of research framing and research process. I unpack my research process in two parts: first, the co-design and implementation of nature experiences and second, data collection and analysis. In my findings chapter I share illustrative stories of two children - Sneaky the Dragon and Grace the Warrior - that together provide a full mapping of the nature connectedness journey. I then unpack the experiences that promote transitions between the phases of nature connectedness and share my learnings on the role of the facilitator. In the discussion chapter I expand on the key contributions that my findings make to the understanding of developing nature connectedness, discuss the practical implications and limitations of my research and present several ideas for future research. My conclusion highlights the key implications of my study and my hope for its contribution to raising a generation of humans that share a desire to champion conservation and sustainable development.

## Chapter 2: Literature review

In this chapter, I explore existing research on nature connectedness. I first explore what we know about the current human-nature disconnect and its effect on both humans and nature. Second, I analyse existing research on nature connectedness and decompose it to obtain a personal understanding of how this relationship is formed. Third, I examine what we know about how to encourage the development of nature connectedness, specifically unpacking Giusti and colleagues' (2018) framework on phases of nature connectedness. Fourth and finally, I analyse the role that nature experience facilitators play in the development of nature connectedness.

### 2.1 Why are humans becoming increasingly disconnected from nature?

Historically humans were closely connected to the natural world. For millennia humans lived close to the land as hunter-gatherers and subsistence farmers (Barkham, 2020). This promoted a sense of human belonging within a broader natural world and stimulated an understanding of the reciprocal relationship between humans and all natural beings (Mayer & Franz, 2004; Barkham, 2020).

The urbanization and industrialization of lifestyles has contributed to increasingly disconnecting humanity from nature (Cumming et al, 2014). Urbanisation has resulted in 56.2% of the global population living in cities in 2020 (Buchholtz, 2020). This statistic is a reality for South Africa with 68% of our population living in cities in 2021 (O'Niell, 2021). With the rapid expansion and construction of cities, the importance of maintaining the presence of natural spaces has been neglected (Leonard & Allen, 2013; Giusti, Wang, & Marriott, 2020). Many urban green spaces have been in-filled or altered to provide housing (Pyle, 2003; Restall & Conrad, 2015). As a result, nature has become increasingly inaccessible and the sense of belonging within a broader natural world has been lost.

On an individual level, people are spending significantly less time outside or in nature (Moula, Palmer & Walshe, 2022; Barkham, 2021, Chawla, 2020). Globally, people spend 90% of their time indoors (Chaput, Tremblay, Katzmarzyk, Fogelholm et al, 2018). The move indoors extends to children, with South African children spending on average 85% of their time indoors (Chaput et al, 2018). This move indoors is the result of increased risk aversion and fear among parents, loss of space and opportunity for exploration, and the gravitation towards digital technology for play opportunities (Chawla, 2020; Moula et al 2022; Barkham, 2020). The Covid-19 pandemic and lockdown mandates also exacerbated the time spent indoors (Moula et al, 2022).

### **2.1.1 How does this disconnect affect nature?**

The Anthropocentric notion of human dominion over nature has contributed to the global environmental crises (Beery et al, 2015). Richardson and colleagues (2020) remark that capitalist societies often emphasise that nature is an object for utilitarian use. This has resulted in the overexploitation of many natural resources and surpassing of planetary boundaries (Steffen, Richardson, Rockström, Cornell et al, 2015). Deforestation, ozone depletion, ocean acidification, proliferate pollution and climate change are a few of the mounting environmental crises (Steffen et al, 2015). As a result, our ecosystems, biodiversity and general life on Earth is under extreme pressure (IPBES, 2019).

In response to this, there has been a great international effort to curb further deterioration through the institutionalisation of policies and protocol, such as the Sustainable Development Goals (United Nations, 2021). However, progress has been slow (Beery et al, 2015). Many researchers attribute the limited response to environmental crises – at least in part – to the disconnect between people and nature and the extinction of nature experience (Pyle, 2003; Richardson et al, 2020; Beery et al, 2015).

The theory of extinction of experience defines the long-term effects of humans not connecting with nature (Beery et al, 2015). It posits a cycle of disconnect, apathy for environmental concerns and progressive depletion. Simply put: our disconnect with nature is responsible for our slow response and reluctant action to challenges such as climate change, deforestation and pollution. Each generation that does not develop a relationship with nature, passes this disconnect on - in a sense causing connection to become extinct (O'Brien, 2009; Chawla, 2020).

The theory of extinction of experience thus explains how an initial disconnect evolves into a polycrisis of a disconnected cohort of apathetic humans who do not recognise the on-going environmental degradation as an issue for concern. For this reason, Pyle (2003), Soga and Gaston (2016), Chawla(2019), Ardoin and Bowers(2020) and many other researchers regard the reduction of ecological illiteracy and the reconnection of humans and nature as a pivotal pillar for a sustainable future.

### **2.1.2 How does this disconnect affect humans?**

While historically humans lived in close contact with the natural world and were deeply connected to her, there is contention over the historical human perception of nature. Pyle (2003) argues that historically, all people have actually been at odds with nature: sheltering from severe storms and competing with wildlife and pests for food. In many Western cultures the human-nature relationship has been romanticized (Zylstra, Knight, Esler & Le Grange, 2014). In Africa, however, this intrinsic

battle is ever present, especially in rural and peri-urban areas where the effects of catastrophic natural events are felt most severely (Johnson-Pynn, Johnson, Robert & Lugumya, 2014; Forbes-Genade & van Niekerk, 2017; Fekete, 2021).

Yet, the closeness between people and their environment has resulted in the worldview - prominent in many African contexts - that believes human beings are one with the natural world (Kelbessa, 2018). The Oromo people in Ethiopia believe that humans have been gifted the use of natural entities as a source of survival and that a great responsibility accompanies this usage (Kelbessa, 2018). The Igbo people from Nigeria recognize the unity and interaction of all beings, believing that animals have souls and spirits like human beings and therefore are to be respected (Kelbessa, 2018). These views of nature - an opponent on one hand, and a source of life on the other - stand in contrast to each other and yet co-exist within African cultures.

While there is some contention over the historical human relationship with and opinion of nature, current evidence shows that humans - and particularly children - are suffering the consequences of not interacting with nature. The Biophilia hypothesis expresses that humans have an innate need to affiliate with nature, and suffer if that affiliation is broken (Wilson, 1984; Pritchard, Richardson, Sheffield, & McEwan, 2020). There are growing concerns that reduced nature exposure leads to a lack of physical exercise, poor mental well-being and rising cases of attention deficit disorder and stress related illnesses in both children and adult (Seymour, 2016).

Similarly, studies have shown that green spaces and natural landscapes have a positive effect on children's psycho-social development, including emotional regulation, perceived self-worth, creativity, concentration, motivation and motor skills (Lopoukhine, Wheeler, Keenleyside, Charles, Koss & Nicoll, 2014; Rosa, Profice, & Collado, 2018). Children that engage immersively with nature have a better ability to assess risks and build confidence to confront challenges later in life (Lopoukhine et al, 2014). This may be the result of having a secure attachment during childhood, in which nature has presented as a holding space and reliable presence (Jordan, 2009). In urban settings, the brain is highly stimulated and remains in a state of constant alertness (Lopoukhine et al., 2014). In nature, however, the brain enters into a state of contemplative attention that is restorative and necessary for providing space for development (Lopoukhine et al., 2014). As a result, many psychosocial illnesses are being attributed to the reduced human contact with nature, termed the Nature Deficit Disorder (Turtle, Convery, & Convery, 2015).

### **2.1.3 The growing impetus to reconnect humans and nature**

There is growing interest in the benefits of nature experiences and connection for children and adults alike (Ardoin & Bowers, 2020). This interest is evident in the rapidly increasing literature discussing human nature connections (Barragan-Jason, de Mazancourt, Parmesan, Singer & Loreau, 2021). Despite the proliferation of Forest Schools and nature kindergartens (Ardoin & Bowers, 2020), Barragan-Jason and colleagues (2021) point out in a meta-analysis that most of the literature focuses on nature connections in adults in high-income, industrialised countries. Most research involving children has been restricted to the ages of three to six years (Ardoin & Bowers, 2020). Richardson and colleagues (2020) criticise the research for being fragmented around nature connectedness and providing limited concrete guidance on how to achieve societies that are connected to nature. It is important that inquiries into this are made in order to access the mutual benefits that the reconnection of humans and nature offers: providing for humanities' psychological needs and well-being (Richardson, Hamlin, Butler, Thomas & Hunt, 2022), as well as transforming human opinion and values around nature (Barragan-Jason et al, 2021), which may lead to pro-environmental behaviour (Moula et al, 2022).

## **2.2 What is nature connectedness?**

Several terms are used to capture the human connection with nature, such as “nature relatedness” and “emotional affinity towards nature” (Restall & Conrad, 2015). For the purpose of this dissertation, I will refer to it as “nature connectedness” and utilise Zylstra and colleagues' (2014: 126) definition: “a stable state of consciousness comprising symbiotic cognitive, affective and experiential traits that reflect, through consistent attitudes and behaviour, a sustained awareness of the interrelatedness between one's self and the rest of nature.” This section unpacks the dimensions and characteristics of nature connectedness - creating a base understanding from which an investigation into the development of nature connectedness can be launched.

### **2.2.1 Dimensions of nature connectedness**

There are three dimensions to nature connectedness: self-identity, experience and behaviour (Pritchard et al, 2020). The first two dimensions interact together to create internal values around nature and result in the third dimension: behaviour (Pritchard et al, 2020; Moula et al, 2022).

Connection to nature is believed to constitute a part of a person's self-identity (Moula et al, 2022). Lieflander and colleagues (2013) propose that one's identity contains an environmental identity. The construction of this environmental identity is rooted in tangible experiences in nature which

lead to the development of an emotional bond (Wilson, 2011; Nilsson et al, 2016). For one to develop a strong environmental identity, it is necessary that one has the opportunity to interact with nature at a young age (Ardoin & Bowers, 2020). Ardoin and Bowers (2020) state that the period between birth and eight years of age is a critical time for developing environmental identity. Türkoçglu (2019) supports this saying that the age of twelve may be too late to develop environmental identity.

Child development research has shown that children's experiences are fundamental in the development of their identity (Montessori Centre International, 2013). According to Montessori (2012) between birth and the age of six children are unconsciously (0-3years) and then consciously (3-6years) absorbing their environment; which they use to craft their personality. The profound knowing gained from interactions at a young age is sometimes referred to as heart knowledge (Forest School Canada, 2014). Heart knowledge is defined as something that is intrinsically known and has the potential to influence your identity and life's purpose. It is evident that there is an iterative process of experience fuelling our self-identity, which in turn predicts one's interests and further experiences (LaCapra, 2006).

Society and culture play a large role in the definition of one's experiences and thus self-identity. The Nyangi people, a clan of rainmakers in Kenya, are able to predict weather by interpreting small events in nature: the croak of a frog or movement of termites (Mail & Guardian, 2009). This interpretation occurs so naturally for them that they believe their skill to predict rain to be genetic. The Raramuri people, living in Chihuahua in Mexico, believe in "Iwigara" (Salmon, 2000). Iwigara explains the total interconnectedness and interaction of all life, physical and spiritual. This interconnectedness features at the heart of their culture and is exhibited in the way their language is structured. As a result, on an individual level, they feel this interconnection. Both the Nyangi and Raramuri people live their respective heart knowledge at an identity level, which is reflected in their culture.

One's behaviour towards the environment depends on one's connection to nature (Mundaca, Lazzaro-Salazar, Pujol-Cols & Muñoz-Quezada, 2021; Moula et al, 2020; Nilsson et al, 2016). If people have a strong connection to nature they are likely to practice environmentally responsible behaviour (Well & Lekies, 2006; Wilson, 2011; Mullenbach et al, 2019). Wells & Lekies (2006) and Rosa and colleagues (2018) found that adults who had meaningful interactions with nature as children, and thus have developed their environmental identity, tended to exhibit environmentally responsible behaviour. Mullenbach and colleagues (2019) emphasise the importance of these experiences being meaningful; stipulating that pro-environmental behaviour is not merely the result

of spending time outdoors but rather requires a deeper connection. This suggests that strong nature connectedness leads to better decision-making regarding the world and her resources.

### **2.2.2 Dynamics of nature connectedness**

Our understanding of the plasticity of nature connectedness has changed over time. At first, it was proposed that nature connectedness is trait-like and stable with time (Nisbet et al, 2009). More recently, authors like Zylstra and colleagues (2014) suggest that nature connectedness fluctuates and is progressively dynamic. Changes in nature connectedness are especially evident during transitions between the different cognitive, emotional, moral and physical phases of development (Lieflander et al., 2013). As children age, they develop an emotional autonomy which leads to an increased sense of independence (Lieflander et al, 2013). This autonomy leads to their separation from the environment. Psychometric testing to establish the level of nature connectedness in children and adolescents showed children aged ten and eleven years to be significantly more connected to the environment than university students (Lieflander et al., 2013). Richardson and colleagues (2020) refer to the variation of nature connectedness through one's lifespan and the general dip in nature connectedness between the ages of ten and 15. However, this dip is usually recovered around the age of 20 (Richardson et al, 2020). This recovery supports Wells & Lekies's (2006) findings of environmentally responsible behaviour in adults stemming from childhood experiences. Zylstra and colleagues (2014) emphasise that repeated and sustained commitment to nature is important to normalise fluctuations in nature connectedness. This is supported by the many calls for long-term nature interventions in education (Barragan-Jason et al, 2021; Moula et al, 2022). This evolving understanding of nature connectedness provides an insight into how the connection behaves.

## **2.3 The development of nature connectedness**

When mapping the development of nature connectedness, there are two important elements to consider: firstly, how we identify the state of development, and secondly, how we encourage further development. To address the first element, I unpack Giusti and colleagues' (2018) framework on the phases of nature connectedness. This framework provides definitive *abilities* that children possess at each *phase of connection*, thus making it possible to identify their current state of connection as well as map them along their journey. I speak to the second element by examining the *qualities* of nature or nature experiences that encourage human-nature connection in the different phases of nature connectedness.

### 2.3.1 The phases of nature connectedness

Giusti and colleagues (2018) designed a framework that describes different phases associated with children's developing relationship with nature from: being IN nature, to being WITH nature, to finally being FOR nature. During the IN nature phase, the child feels comfortable in and becomes curious about their natural surroundings. However, they are not yet able to act in the space. Reading natural spaces, acting in them, recalling memories about time spent in nature and the beginning of knowledge accumulation about nature are characteristic of the child entering the WITH nature phase. This is accompanied by a developing attachment to the natural space. During the FOR nature phase, this attachment is extended into a demonstration of care for nature and a true feeling of being one with the environment. Table 2.1 presents the abilities of children in the three distinct phases of nature connectedness, as described by Giusti and colleagues (2018).

**Table 2.1 Abilities possessed by children during each phase of nature connectedness (adapted from Giusti et al, 2018)**

<b>Being IN nature</b>	<b>Being WITH nature</b>	<b>Being FOR nature</b>
Feeling comfortable in natural spaces	Reading natural spaces	Taking care of nature
Being curious about nature	Acting in natural spaces	Caring about nature
	Feeling attached to natural spaces	Being one with nature
	Knowing about nature	
	Recalling memories with nature	

### 2.3.2 The progression and timing of nature experiences

While Giusti and colleagues' (2018) framework distinguishes between states of nature connectedness and provides valuable information about their different dimensions, the authors do not discuss how nature connectedness may develop over time. In this regard, Beer, Cook and Kantor (2018) conducted a research project with 36 learners in their local nature reserve, The Pines, over the course of five weeks. They found that many of their children who were initially resistant to being in nature and fearful of the environment quickly became more comfortable in the space, embracing "the bush". As they became comfortable, they requested to stay longer, referred to the Pines as their "home" and embraced their capacity for agency and independence (Beer et al, 2018). A timeline was not mentioned in the article, however, it is evident that the children's growing confidence developed over a period of weeks.

During repeated nature exposure, Turtle and colleagues (2015) suggest that the contact should occur at the same place because the child needs to develop a relationship with a specific place before they



feel comfortable. Only once this comfort is achieved, does nature connectedness develop and become spatially transferable (Turtle et al, 2015).

Other studies have shown that the development of nature connectedness is influenced by the duration and immersion of the nature experiences (Lieflander et al., 2013; Sellman & Bogner, 2013; Vroegop, 2015). For instance, Lieflander and colleagues (2013) found that sporadic, short-term exposures have an initial spike in nature connectedness (which is higher for younger children) that wanes relatively quickly afterwards (slower, the younger the child). Sellman & Bogner (2013) found that people's nature connectedness increased after a full day spent in nature but declined again with time. The inconclusive results on nature experience duration prompted Vroegop (2015) to test Collado and colleagues' (2013) proposition that spending a night immersed in nature has a sustained positive impact on the development of nature connectedness. After taking a group of Scouts on a seven-day winter camping experience, Vroegop (2015) concluded that being surrounded and reliant upon nature for an extended period of time (deeply immersed) was instrumental in increasing the participants' nature connectedness.

Overall, while deeply immersive experiences that last several days can have a catalytic effect on promoting the development of nature connectedness, it is more important that experiences are sustained. Ernst and Theimer (2011), who evaluated seven different environmental education programmes to assess their effect on the development of nature connectedness, concluded that the most important factor is that experiences are sustained over time. Lieflander (2013) and Barragan-Jason and colleagues (2021) support this calling for repeated nature experiences that allow children to form a bond with the environment.

### **2.3.3 The design of nature experiences to encourage human-nature connection**

In order to develop nature connectedness, people require intimate, direct experiences in nature as children (Beer et al, 2018; Chawla, 2020; Barthel, Belton, & Giusti, 2018; Mundaca et al., 2021). Hordyk, Dulude and Shem (2014), who observed children in a wilderness camp for five weeks, confirm that sensory immersion was the main agent for transforming the children from being newcomers in a wild environment into "natives". Leonard and Allen (2013) suggest that children should encounter nature on multiple levels, predominantly with their senses and emotions. Wilson (2011) suggests immersive, informal, self-initiated exploration and discovery.

However, simply providing the opportunity for children to be in nature – even if immersive – may not be sufficient for developing nature connectedness (Richardson et al, 2022; Mullenbach et al, 2019). Mullenbach and colleagues (2019) found that incorporating a direct educational experience encouraged children to interact with the environment, and thus form a connection. Richardson and

colleagues (2022)'s journal title "Actively noticing nature (not just time in nature) helps promote nature connectedness" illustrates their agreement. These recent findings stand in potential opposition to the original view that nature connectedness stems from informal, self-initiated exploration (Wilson, 2011).

In the context of educational systems, there is an on-going movement away from regimented environmental education programmes towards meaningful learning opportunities outdoors. Many traditional environmental education programmes focus on knowledge transfer, rather than meaningful learning, and are constrained by targets and timeframes (Forest School Canada, 2014). Yet Barrable and Booth (2020) found that nature connectedness is a stronger indicator for pro-environmental behaviour than environmental knowledge. As a result, there is a growing call for active and meaningful environmental learning that encourages the development of nature connectedness (Reddy, 2021; Beer et al, 2018).

One such alternative approach, called Forest Schooling, has recently gained momentum for pre-school pupils (Ardoin & Bowers, 2020). Lessons are conducted in natural spaces, and are back-planned, which means that the children lay the foundation for the lesson by actioning their interests (Forest School Canada, 2014). The teachers utilise their knowledge to provide insights and cues where they see fit - and to refrain, when open-ended, creative learning is naturally occurring.

Other approaches focus on nature-based education programmes within a more traditional schooling system. Beer and colleagues' (2018) Running Wild practice-led research project mentioned earlier, is an example of trialling creative, nature-based play within a school's traditional environmental education programme. The study involved introducing 36 Grade Six learners to their local nature reserve, The Pines. They conducted twelve visits over the course of five weeks. The nature experiences involved child-driven creative arts activities, such as building animal hide outs ('cubbies'), indigenous story-telling and western knowledge transfer (for example through having specialists share their knowledge with the learners during their walks). The children grew to enjoy these experiences, remarking on the usefulness of their leanings. Their ability to recall the stories about The Pines many weeks later suggests that the learning had an impact on them (Beer et al, 2018).

It is important that the environmental education experiences are developmentally appropriate for the children that they target (Türkoçlu, 2019). Free sensory-play (Wilson, 2011), art (Moula et al, 2022) and mindfulness (Barragan-Jason et al, 2021) have all been found to be instrumental in facilitating connections to nature. So has emotionally triggering experiences, such as witnessing habitat destruction (Wells & Lekies, 2006; Chawla, 2020). Children of different ages are in different developmental stages and possess different interests and abilities (Türkoçlu, 2019).

Younger children may be attracted to play-based experiences that incorporate movement and social interaction (Ardoin & Bowers, 2020) while older children may require more purposeful activities that result in making a positive impact (Barthel et al, 2018). As a result, some experiences may resonate with one age group but not another.

### 2.3.4 The qualities of nature experiences

While it is possible to encourage the development of nature connectedness through carefully designed interventions (Richardson et al, 2020; Barragan-Jason et al, 2021), Giusti and colleagues (2018) remind us that it is important that these experiences meet children where they are. In their framework, the authors (2018) linked the qualities of nature that resonate with children to the different phases of nature connectedness.

Figure 2.1 illustrates the qualities of nature identified by Giusti and colleagues (2018) and how they resonate with children in different stages of nature connectedness. The diagram shows that the qualities for connection are not mutually exclusive or applicable to only one phase of nature connectedness. Rather, they apply differently and in varying degrees to each phase of nature connectedness. In addition, Giusti and colleagues (2018) highlight that each child may be drawn to different aspects of nature at each phase depending on their personal background and interests.



**Figure 2.1** Qualities of nature that the children are drawn to during each stage of nature connectedness (Giusti et al, 2018)

Insights into the qualities of nature that are applicable to each phase provide valuable information to guide the design of nature experiences. To help children become comfortable IN nature, the environmental educators that Giusti and colleagues (2018) consulted posited that experiences should be child-driven and engage all their senses. Similarly, Beer and colleagues (2018) conveyed

the importance of child-led experiences by linking intrinsic motivation to a “highly enjoyable psychological state of engagement” (p14). During child-led activities, intimate or personal experiences are created. These experiences by definition allow “a personal experience with nature” (Giusti et al, 2018: 7). Active manipulation of the environment helps children find their place in it (Beer et al., 2018; Giusti et al, 2018). Beer and colleagues (2018) found supportive evidence for this when the children created cubbies (shelters). Several of the children were initially tentative in the wilderness, but this activity encouraged them to fully engage with their space. This engagement would have contributed to their developing comfort in nature (Beer et al, 2018).

Giusti and colleagues (2018) also highlight the importance for children in the IN nature stage to develop a sense of wonder about the environment. Experiences that render the children awe-inspired or surprised (Giusti et al, 2018) capture their imagination and interest. A sense of wonder is also developed by the involvement of animals in experiences (Giusti et al, 2018). Activities that are entertaining promote the conceptualisation that nature is a joyful and wondrous place to share in (Giusti et al, 2018) and promote their desire to spend time in nature.

Children in the WITH nature phase begin to express themselves in the natural space, enjoying physical and creative activities. As a result, experiences that are child-driven and engage the senses are likely to still play a prominent role as the children use their new-found confidence to act in the environment and make it their own (Giusti et al, 2018). Their self-directed play often involves movement and social-interaction (Ardoin & Bowers, 2020). Challenges that extend the children, both physically and psychologically, encourage them to engage and promote a deep feeling of happiness and achievement (Pritchard, 2020; Giusti et al, 2018). Moula and colleagues (2022) found that art plays an important role in the development of nature connectedness. As the children are now comfortable to manipulate the environment (Giusti et al, 2018), creative expression comes to the fore.

Storytelling and acting can extend to play opportunities for the children and encourage connections (Giusti et al, 2018; Beer et al, 2015). Sills (2018) and Beer and colleagues (2018) stipulate that storytelling promotes environmental stewardship and connection by providing meaningful information about an area or topic. This knowledge can stimulate imaginary play. In *Running Wild* (Beer et al, 2018), the children were encouraged to impersonate different animals. In their impersonations the children surpassed self-imposed boundaries to connection, leading to a deeper connection.

For children in the FOR nature phase, there is a shift in attraction from action-oriented to thought-provoking and mindful experiences (Giusti et al, 2018). Children enjoy experiences that allow them to self-restore and practice mindfulness (Giusti et al, 2018). Barragan-Jason and colleagues (2021)

found that incorporating mindfulness in experiences had the clearest effect on improving human nature connections. These mindful activities involved “focusing one’s attention on one’s inner self and one’s environment in the present moment” (Barragan-Jason et al, 2021: 3). They define human-nature connection as the “extent to which humans see themselves as a part of nature” (Barragan-Jason et al, 2021:2). This recognition occurs during the FOR phase of nature connectedness (Giusti et al, 2018), suggesting that mindfulness may be most applicable to this phase.

In order to develop environmentally responsible behaviour - an emerging behaviour from the FOR phase - children require the necessary knowledge, skills, attitudes and values (Türkoçglu, 2019; Lieflander et al, 2013). Boeve-de Pauw and van Petegem (2012) explain this concept well by dividing knowledge into two components: procedural knowledge and impact knowledge. Procedural knowledge consists of factual information concerning the environment, why we need to conserve her, and how to do so. Impact knowledge consists of environmental values and attitudes, which includes nature connectedness, and is propelled by experiences in nature, as well as the witnessing of negative environmental events (Wells & Lekies, 2006; Beer et al, 2018; Chawla, 2020). Wells and Lekies (2006) propose that procedural knowledge may be instrumental in forming the values and attitudes that underlie behaviour. Johson-Pynn and colleagues (2014) found both knowledge components to be necessary when conducting a study on students in Uganda. They found that many students were aware of the current adverse environmental state but were unsure why this was the case and what they could do to improve it.

As a result, children in the FOR phase gravitate to structured initiatives to develop their skills and understanding (Giusti et al, 2018). They look to mentors or facilitators to gather new information and cultivate new ideas, attitudes and values (Türkoçglu, 2019). Role-modelling environmental awareness and consciousness becomes important to promote pro-environmental values and attitudes in children (Türkoçglu, 2019). Mentors can foster an interest in nature through illustrating new ways of being in nature. Still, emphasising the importance of child-led experiences, Loupokhine and colleagues (2014) argue that it remains important to allow children the freedom to develop and lead their own initiatives.

Prior studies thus provide invaluable knowledge on what the different states or phases of nature connectedness look like and what we need to consider when designing nature experiences so that they are applicable to and resonate with each phase. In particular, they emphasise the importance of facilitating child-led experiences. Yet, there is limited knowledge on nature connectedness as an *unfolding process* and limited empirical evidence evaluating which experiences actually supports the progression of this process (Richardson et al, 2020; Mullenbach et al, 2019; Riechers, Pătru-

Duşe & Balázsi, 2021). While adults facilitating child-led learning may have a significant influence on the development of nature connectedness, more guidance on how to facilitate its development along each stage of the process may be useful.

## **2.4 The dance of facilitating nature connectedness**

In child-led learning environments, the adult facilitating nature experiences has a profound impact on the child (Lapierre, 2017; Reddy, 2021). This section discusses the different roles of the facilitator as observer, guide and active playmaker. It also details the important role that preparation and reflection have on conducting effective nature experiences and creating a space of trust for children in nature.

### **2.4.1 The role of the facilitator**

In child-led learning, the role of the facilitator is to observe and gently guide the children in their experiences of nature (Lapierre, 2017; Bilton, nd). The child is allowed the freedom and space to absorb their environment and take responsibility for their learning. Murphy (2003) and Hunter, Syversen, Graces and Steiner (2019) suggest that the adult in the environment is responsible for observing the children and enhancing the naturally unfolding experiences by offering insights, posing questions and providing materials that will further stimulate the child's experience. Montessori speaks to this in her call for facilitators to follow the child: to utilise scientific observation to be able to anticipate what the children may need and provide only that (MacDonald, 2015). By observing the children working, the facilitator is able to enhance experiences and guide the children to development.

It is important that the adult does not overpower the child (Lapierre, 2017) but rather embodies a serene strength (Montessori Northwest, 2008). We often have preconceived opinions about risks or fears that we unintentionally impart to children (Barkham, 2020). Sometimes the adult may do too much to try and protect the children, thereby hampering their opportunity to test new skills and develop appropriately (Lapierre, 2017). It is possible to control risks and hazards by preparing the environment before the children arrive (Barkham, 2020). In this preparation "the child is set free from undue adult intervention and can live its life according to the law of development." (Murphy, 2003: 4). Forest School Canada (2014: 17) supports this approach, stating that the adult ought to know "when to get out of the way".

On the other hand, the facilitator can also fill the role of active learning ally (Bilton, nd). Hunter and colleagues (2019) argue for the incorporation of teacher-led learning. Julie (2011) supports this

saying that the adult should rediscover the wonder of the wild alongside the child. The facilitator should be engaged, attentive and enthusiastic - participating in play and collaborating with the children. This embodiment is referred to as “playworking” (Bilton, nd).

There is a definite dance between active involvement and retreat into observation. It is believed that as the child grows in the space, the facilitator steps back making way for independent thought and action (Hunter et al, 2019). Seemingly contradictory is the fact that, as the children develop in the space, they often require more structured initiatives, which in turn require an increased adult presence (Rosa et al., 2018).

#### **2.4.2 The attitude of the facilitator**

Regardless of the approach that the facilitator adopts, it is important that they understand the children in their care and have a desire to encourage their development (MacDonald, 2015; Julie, 2011). The facilitator should be interested in the children and inquisitive about their learnership (Neaum, 2016). An understanding of the unique relationship that each child has with the environment will allow the facilitator to tailor their approach for each child (MacDonald, 2015). MacDonald (2015) states that the facilitator should believe in the innate potential of each child. Patience, creativity and flexibility in approach can help unlock this potential (Bilton, nd).

An attitude of warmth and open responsiveness is beneficial for creating a space of safety for the children (National Community Development Institute, 2006). Through two-way facilitation that incorporates the children in the planning and executing of nature experiences, a form of community is created (Bilton, nd; National Community Development Institute, 2006). This community is beneficial when the child experiences emotional turmoil (Chawla, 2020). In a world with evident environmental decay and habitat destruction, it is inevitable that the child will be exposed to something that brings about sadness, frustration, anger or worry (Chawla, 2020). Most spaces try to shelter children from these disturbing experiences; however Chawla (2020) suggests that children should be taught how to cope with and respond to these critical emotions.

A facilitator’s support and belief in the child’s cause can encourage them to champion conservation and sustainable development, characteristic of the FOR nature phase. Human responses are socially embedded, modelled from those around us, and so if there is a strong community of active role models, the child may be encouraged to transform these critical emotions into a source of agency (Feront, 2021; Chawla, 2020). The facilitator’s role is to help the child embrace these emotions, provide them with a vision of a better future, an awareness of pathways to achieving it and the tools themselves (Grain & Lund, 2016).

As a role model, the facilitator should practice the values and attitudes that are necessary for encouraging pro-environmental behaviour (Türkoğlu, 2019). The child is subconsciously absorbing the way that the facilitator behaves and using these actions as indicators of how they personally should interact with nature (Montessori Northwest, 2008; Bilton, nd). It is important that the facilitator is mindful of this and reflects on their own behaviour to ensure that they are acting in an environmentally conscious manner (Türkoğlu, 2019; Bilton, nd).

Despite the complex and impactful role that the facilitator plays in conducting nature experiences, there is limited training or guidance available (Reddy, 2021). Currently, many teacher training curricula neglect training on environmental education (Reddy, 2021). It is important that educational resources are developed to train teachers how to awaken an environmental awareness and nature connectedness in children (Tukogolu, 2019; Ardoin & Bowers, 2020; Barragan-Jason et al, 2021). As a result, my dissertation seeks to provide much-needed guidance on how to facilitate the development of nature connectedness.



## Chapter 3: Methodology

This section discusses both the stance that I take in my research and the processes involved in reaching my findings. First, I explain my choice of a relational research paradigm and qualitative approach, attesting to their relevance for my research. Second, I explain my research setting, and third, my choice of using a participatory action methodology. Fourth, I discuss my sample definition and research scope. Fifth, I explain my research process which consisted of co-designing and implementing nature experiences, collecting data and analysing data. Sixth, I unpack the ethical considerations of my research. Seventh, I explain the role that reflexivity played in improving my research. And lastly, I address the validity of my research.

### 3.1 Qualitative approach and relational paradigm

As my aim was to gain a deep understanding of how the nature connectedness journey unfolds, I selected a qualitative research approach (Bryman, Bell & Hirschson, 2014). A qualitative approach focuses on gaining a thorough understanding of behaviour patterns, beliefs and attitudes by focusing on a relatively small sample size (Bryman et al, 2014). Using this approach allowed me to focus on a set of children, observe them carefully and capture the slight nuances and alterations in the manner in which they interacted with nature. A quantitative approach would have required a larger sample and would have only grazed an understanding of the unfolding nature connectedness journey through applying somewhat abstracted or pre-determined indicators. Therefore, a qualitative approach was better suited to gaining insight into my study topic.

A qualitative approach also allowed the flexibility for me to use observations combined with informal interviews, conversations, and semi-structured interviews (Darbyshire, Macdougall & Schiller, 2005). These methods of investigation provided deep insights into the relationship that was developing between each child and nature (Darbyshire et al, 2005). All of these methods were also very child-friendly and engaging. They ensured that the children participated voluntarily and were not left feeling that research had been conducted on them (Darbyshire et al, 2005).

As my study aimed to gain an understanding of the relationship between a human and nature, I adopted a relational research paradigm (Bohme, 2022). A relational paradigm acknowledges the holistic interconnectedness of all living systems and the emergence of additional constituents as a result of these interactions (Bohme, 2022). This is applicable to my study, since my unit of analysis,

the relationship between humans and nature (which I refer to as nature connectedness), has been evidenced to emerge as a result of interaction between humans and nature (Pritchard et al, 2020).

Relational research paradigms have recently been suggested for application in sustainability science, particularly for their ability to capture the complexity of human-nature connections (West, Haider, Stålhammar & Woroniecki, 2021). The paradigm understands that “humans are and become with their environment” (Bohme, 2022, p6). This aligns with the process of developing nature connectedness, which evolves through the iterative process of experience fuelling identity and behaviour (Pritchard et al, 2020). Consequently, a relational paradigm captures the complexity of my research.

As an active member in my research and in line with the relational paradigm I adopted, it was important that I applied relational accountability (West et al, 2021). Relational accountability describes the concept that in all research, the researcher needs to account for their role in shaping knowledge (West et al, 2021). This is something that I had to consider on a continual basis, since I was directly involved in my study. Every action I took influenced the children and how their connection with nature did or did not develop. I used journaling and post-session reflections to practice relational accountability.

### **3.2 Research setting**

In 2020, I founded the Kinship Programme ([www.kinshipprogramme.com](http://www.kinshipprogramme.com)) to provide children with the opportunity to spend time in and develop a relationship with the natural spaces around Durban. The intended outcome of the Programme is that this relationship will encourage the children to champion conservation and sustainable development later in life. The programme takes place for two hours each afternoon (Monday to Friday) in different natural spaces in and around Durban North. Individual children attend once or twice a week, on a weekly basis, for as long as they like. There is a sessional fee of R200/session and most of the parents pay for their children to attend. However, we have several pro deo children that attend at no cost. Each afternoon, a group of maximum eight children is under the care of one lead facilitator and one assistant. The children are grouped according to age (four to six years and then six to eight years). Some of the children knew each other prior to enrolling while others did not. Sessions are designed to encourage the children to engage with the environment in an immersive way that utilizes all of their senses. Each session has a specific aim that is achieved through a different activity. For example, by building a “bug hotel”, the children begin to engage with the environment: collecting leaves, bark, twigs and sand. This

purposeful activity incorporates a tactile experience of the environment as well as necessitates that the children observe their environment, searching for such items.

The Programme practices the Montessori philosophy of *following the child*, which encourages facilitators to alter activities depending on the group's interests and needs. As a result, sessions are back-planned: with the initial interest fuelling activity. We have a team of six nature experience facilitators and established relationships with several other environmental education providers in the area. I was blessed to be able to use the Programme as my vessel for enquiry. Prior to beginning my observations, I was diligent about training my team so that I would be able to be a bystander in some of the sessions that I observed. As a result, I was able to collect observations both when fulfilling the role of experience facilitator and when acting purely as an observer.

Most of the nature experiences were conducted in semi-wild, natural spaces within the urban and peri-urban environment of Durban. The city of Durban is a metropolitan area with a population of 3.1million situated within a sub-tropical, coastal habitat (Galal, 2022). Initially, all experiences were held in the greenbelt in The Gardens Complex, La Lucia. This was done so that the children could learn the space and develop a sense of comfort there before assessing the transferability of this comfort. Over time, additional venues were included: Umhlanga Nature Reserve, Virginia Bush, Shongweni Nature Reserve, Kenneth Stainbank Reserve and the Beachwood Mangroves.

### **3.3 Combining participatory action and grounded theory methodologies**

I decided to combine a participatory action research with grounded theory methodology to gather and analyse data. Both participatory action and grounded theory methodologies lie within the interpretivist/constructivist paradigm, which speaks to people constructing their own understanding and knowledge of the world (Adom, Yeboah & Ankrah, 2016; Canlas & Karpudewan, 2020). Participatory action ensured that the research participants were deeply involved in the construction of this understanding, while grounded theory offered an enhanced rigour and credibility to this developing understanding (Teram, Schachter & Stalker, 2005).

#### **3.3.1 Participatory action**

As both I and the other nature experience facilitators were actively involved in the research I adopted a participatory action methodology (Vaughn & Jacquez, 2020). Participatory action methodology encompasses three partitions: active participation of participants, emerging research and a resulting action (Allen, 2016).

In the context of my study, active participation of participants meant that the children and other facilitators helped co-design the nature experiences in which they participated. Designing the nature experiences involved a self-reflexive cycle of planning, acting, observing, reflecting and re-planning - characteristic of a participatory action methodology (Walter, 2009). This iterative process occurred daily with each nature experience being altered and back-planned in the moment depending on the actions and reactions of each child. It was also applied at a higher scale. For instance, after each individual nature experience, I documented my observations. These observations as well as the other facilitators' observations were utilised to evaluate the plan for the following experience and alter the plan if need be. This process, which is discussed in detail in section 3.5.2, ensured that both I and the other facilitators were active participants in the crafting of the experiences, and thus were involved at the core of the research - meeting the requirement for participatory action research to be co-created (Darbyshire et al, 2005).

In terms of emerging research and resulting action, I wanted our experiments around designing nature experiences to guide our conceptualisation and action in facilitating the development of nature connectedness. The purpose was ultimately to apply emergent learnings in the Kinship Programme. Through the research I have identified what type of nature experiences will encourage children to develop a relationship with nature – depending on their phase of nature connectedness – as well as different phase-specific facilitation techniques. We are using these findings as a guideline for designing and implementing our future nature experiences – thereby meeting the requirement for the research to have both emerging research and resulting action (Allen, 2016).

### **3.3.2 Grounded theory**

I applied grounded theory as my underlying approach to data collection and analysis (Charmaz, 2011). Grounded theory uses initial insights gained from the data collected to focus and guide further data collection (Charmaz, 2011). In line with a grounded theory approach, I elected to initially use an inductive process for data collection that then evolved into an abductive research process (Charmaz, 2011; Vila-Henninger, Dupuy, Van Ingelgom, Caprioli et al, 2022). An inductive research process allows the researcher to immerse themselves in the data, which allows the analysis to emerge from the field (Vila-Henninger et al, 2022). Findings are data-driven, which enriches the analysis process and promotes the cultivation of generating novel and creative insights (Vila-Henninger et al, 2022). An abductive process compares and contrasts these novel insights to existing theory and uses the theory as tentative explanations for the insights (Vila-Henninger et al, 2022). The process of collecting data, analysing the data, developing potential explanations and comparing these explanations to existing theory occurs iteratively, thereby refining the theory that is generated (Charmaz, 2011).

My research process proceeded as follows: I observed the children with the intention of determining which experiences encouraged them to connect with the environment. I noticed that the children interacted with nature differently depending on how comfortable they felt in the space. This observation informed how I coded the data and ensured that, in line with an inductive approach, the codes were data-driven (Vila-Henninger et al, 2022). I progressively noticed that certain experiences were related to distinct phases of nature connection (Vila-Henninger et al, 2022). At this point I noticed the applicability of Giusti and colleagues' (2018) framework on nature connectedness to what I was seeing in different children. This shifted my study into an abductive research process and I began evaluating the applicability of phases of nature connectedness in my research setting. However, while Giusti and colleagues' (2018) framework identifies three phases of nature connectedness - IN, WITH and FOR nature – it did not fully apply to what I was seeing, and provided limited insights into how the children moved from one phase to another. In other words, it did not explain nature connectedness *as a process*. As a result, I continued coding with the five phases of nature connectedness that I had initially identified – *afraid*, *comfortable*, *engaged*, *caring(self)* and *caring(activist)*, looking specifically for experiences that connected or helped to bridge each phase. I then progressively re-engaged with literature, comparing and contrasting it to my findings, to make sense of what I was seeing. All the while, I used my initial insights on phases of nature connectedness to refine my sample and further data collection (Charmaz, 2011).

### **3.4 Research sample and scope**

As my unit of analysis was the development of nature connectedness in children, my sample included children at the Kinship Programme, the children's parents and other facilitators.

My sample children all attended the Kinship Programme in Durban, South Africa, for a period of six months. At the start of my data collection period there was a cluster of 36 children between the ages of four and eight years. As a result, I set these ages as my parameter for investigation. My sample was representative of urban, upper-class children - amongst whom the nature disconnect is prevalent (Barkham, 2020; Chawla, 2020; Beery et al, 2015). As they lived in an urban area, they were most familiar with controlled natural environments, such as playgrounds. While there was a large range in family dynamics and prioritisation of time spent in nature, every family was aware of the importance of nature and felt that they did not spend sufficient time in nature with their children. The time the children spent outdoors varied from 30 minutes to six hours per day. As a result of their individual upbringing, each child had a unique starting point for their nature connectedness journey. Through consistent and thorough informal conversations with parents, I was able to gain an

understanding of what life was like for each child outside of the Kinship Programme and hold this in mind while analysing my observations.

In line with my application of a qualitative research approach, I progressively refined my focus to ten children and their unfolding nature relationships. The narrowing of my focus occurred in two stages. After three months, I narrowed the sample from 36 to 20 children. I selected the children based on their current and evolving phases of nature connectedness. After another three months, I further narrowed my sample to ten children so that I could focus more intently on a smaller sub-set. I selected children that appeared to be in a variety of phases of nature connectedness and most clearly exhibited their relationship to nature and how they transitioned between different phases of nature connectedness. I did this to ensure that I could fully illustrate the vast differences in nature connections and the way that this connection develops. This process of narrowing down my focus is discussed in detail in section 3.5.2. Each child selected their own pseudonym for the study, such as “Sneaky the Dragon”, “Flash” and “Shy”, and has been referred to as such throughout the dissertation.

Each child’s parent(s) formed part of the sample, as I engaged with them continuously throughout the research process. As I narrowed my sample of children over time, the sample of parents mirrored this narrowing.

There were five other nature experience facilitators that constitute the Kinship Programme Team and were responsible for leading the nature experiences. These five facilitators also formed part of my sample and were instrumental in providing insight into my findings on how to *facilitate* nature connectedness. The facilitators had a range of backgrounds and prior experience. Two of the facilitators were studying teaching (mainstream and Montessori), one was a qualified Montessori Directress, one facilitator was a qualified environmental scientist and the other a psychologist. They were all from middle to upper economic backgrounds and four of the five facilitators grew up in Durban and were very familiar with our natural spaces.

### **3.5 Research process**

After having obtained consent to observe and speak with the children (see section 3.6), the research process was structured around three main elements, namely co-designing and implementing nature experiences, collecting data, and analyzing the data. Before engaging in data collection, I designed several preliminary nature experiences that I planned to action as the Kinship Programme sessions. Throughout the six months of my study period, I re-evaluated the plans for the nature experiences and engaged in an iterative process of co-designing and implementing these nature experiences. I

used feedback and requests from the children and facilitators to design the experiences, thereby ensuring that they were co-created. During this time, I simultaneously collected data through observations of the children during nature experiences, as well as informal conversations and semi-formal interviews. Concurrently, I analysed the emerging data, identifying different phases of nature connectedness and evaluating the influence of different experiences on these phases, and used my analysis to refine my sample and my data collection approach. I then engaged in further data analysis which led to the identification of the experiences that promote transitions between the phases and phase-specific facilitation techniques. The research process is illustrated in Figure 3.1.

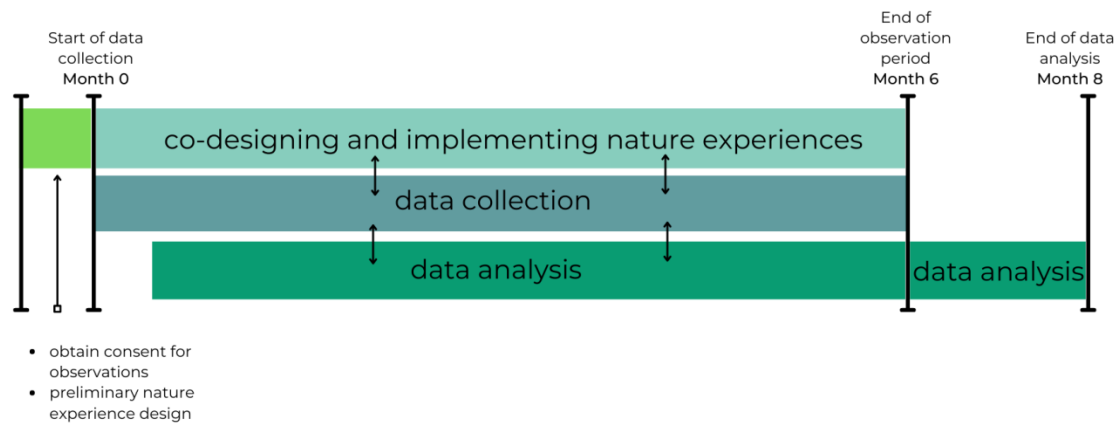


Figure 3.1 Timeline of research process

First, I discuss the co-designing and implementation of nature experiences. Second, I explain the process of data collection and data analysis.

### 3.5.1 Co-designing and implementing nature experiences

The intention for the nature experiences was to capture the children's interests and encourage them to interact with the natural environment. In order to do so, I had to make sure that the session aims were aligned with the children's interests. I achieved this by engaging the children in the co-designing of the sessions. I asked them what they would like to learn, requested feedback on what they enjoyed and disliked in the sessions, and observed their interest during the different activities. This provided a preliminary plan for the sessions. However, this plan was also refined and altered during each session by practicing the Montessori philosophy of *Following the Child*.

#### *The first experience: free to flow*

Research suggests that nature connectedness develops from child-led and immersive experiences (Beer et al, 2018; Chawla, 2020; Barthel et al, 2018; Mundaca et al., 2021; Wilson, 2011). I applied this suggestion to the design of my first experience. The lesson plan included three basic sensory

activities for one hour and left the following hour for free play. My journal entry at the end of the session is shown in Figure 3.2 below, and highlights the children's initial inability to engage with the environment and need for greater adult-led facilitation:

*I was eager to allow as much as possible to be child-led. However, I quickly learnt that at the beginning this is not possible. The adult needs to lead the play until the children feel comfortable in their environment. I think their senses were overwhelmed and when I asked them to collect items like leaves, they didn't know exactly which leaf to pick up and so didn't pick up any. They needed one-on-one facilitation for this... I need to start easing them into the forest gradually- and set things up in the forest that attract their interest. We will begin our sessions with a circle time at the entrance to the trail rather and use that as our 'base' camp.*

**Figure 3.2 Memo from my first journal entry**

#### ***First iteration: addition of structure***

Building on the learnings from the first experience, I redesigned the session structure. This new structure clarified intentions and organised the session around a main activity that was perceived as fun, and encouraged gradual sensory immersion. This activity usually took one hour and was followed by a series of back-up activities that could be offered to the children if and when needed during the second hour. This worked really well, with me recording that the second session “*was a complete turnaround.*” The increased structure of the session provided the children with guidance on how to interact with the space.

#### ***Second iteration: acknowledging continuous iteration***

The design of each session entailed researching lesson ideas, observing the children, journaling their reactions, discussing their interests with them, consulting with the other facilitators and finally designing a plan for the session. Each week the nature experiences had to be considered and redesigned according to newly emerging interests and recent reactions. As I gained a better understanding of the unfolding process of nature connectedness in practice, I was better able to anticipate whether a lesson plan would be applicable for a group or not (Gordon, 2022). Yet, despite having prepared a clear lesson plan before the session, I often wouldn't use it - opting to follow the group's interest while searching for in-the-moment meaningful learning opportunities. As a result, the sessions were prepared on two separate levels: both before the session and through back-planning during the session. The snippet of this iterative process is illustrated in Figure 3.3 below.



**Feedback from session 7:** the children remarked that they would like to learn how to use a compass.

As a result, I created the following Lesson plan for session 8:

**Aim:** Navigation with a compass

**Activity:** draw a map of the area and navigate from one place to another using a compass

**How session 8 unfolded:** We arrived at Thompson's Bay and the beach was littered with dead crabs. The groups' interest was immediately drawn to the crabs and I realised that I wouldn't be able to bring their attention to drawing maps. So instead, I encouraged them to collect all of the crab skeletons and build graves for them scattered around the beach. The children then decided to decorate the graves. I then saw an opportunity to bring in a lesson on navigation and so we mapped the graves on the beach and then navigated from one grave to the next.

Figure 3.3 A record of the iterative planning process

This snippet provides an example of how the initial lesson plan was not suitable in the moment and how I flowed with the group's interest and then brought the lesson back into the session in a revised way that was in line with their current interest.

Through observing the responses of the children and facilitators, and listening to their requests I navigated my way through a constant cycle of designing, actioning, altering and reflecting on nature experiences.

### *Planning the session venues*

Planning the venue for the experiences also required iterative consideration. As mentioned previously, initially all experiences were held in the greenbelt in The Gardens Complex, La Lucia. The Gardens is a private access controlled housing estate with trails and paths through common nature areas. This was done so that the children could learn the space and develop a sense of comfort there. With time and a developing sense of comfort we ventured deeper into the greenbelt and began our sessions from different starting points. We then went on our first excursion to a different forest, before hosting more sessions at The Gardens. This began a cycle of visiting all

different venues. These venues were selected depending on the children's state of comfort in the environment and in nature as well as their requests.

Table 3.1 below shows the venues that were used in temporal order alongside a description of the location that highlights the manicured/wild state of the space and the children's reaction to the space.

**Table 3.1 Description of and children's reaction to the different experience venues**

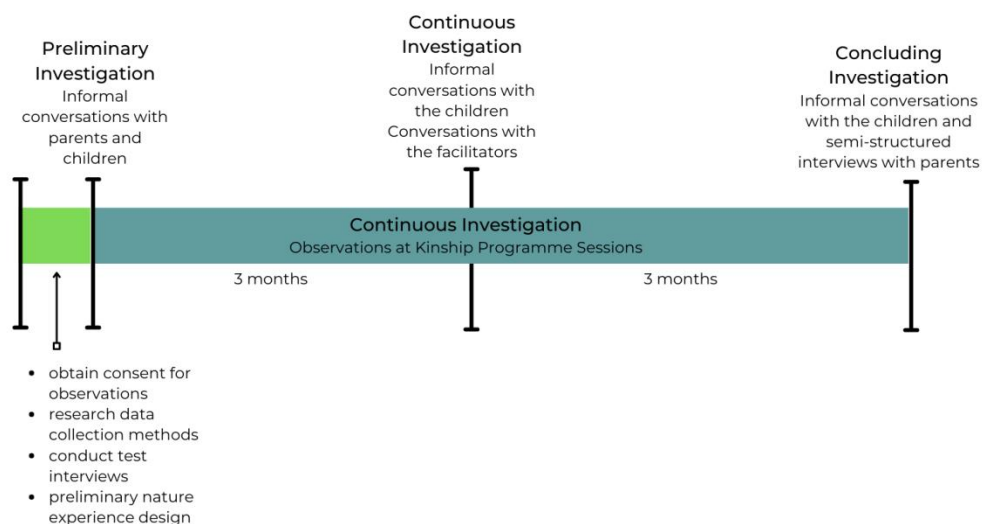
	<b>Venue</b>	<b>Description</b>	<b>Reaction</b>
<b>First experience</b>	Upper portion of The Garden's greenbelt	There are winding paths through tall trees. Bushes and shrubs run alongside the paths. The trees' canopies fall above one's head and one has a sense of being inside a forest. The area is wild but manicured.	Several of the children were frightened and so I decided to begin the experiences at a less wild location.
<b>Continuous starting point for six weeks</b>	Lower portion of The Garden's greenbelt	The path begins at an open field. It is relatively open with trees to climb. The path then enters the forest but the trees and shrubs are smaller here and one can still see the sky above when one looks up. This area is well manicured.	The children appeared to be more comfortable here and we conducted continuous trips into the forest from our base camp. The children continuously requested to move deeper into the forest.
<b>Varying starting point</b>	Upper portion of The Garden's greenbelt	There are winding paths through tall trees. Bushes and shrubs run alongside the paths. The trees canopies fall above one's head and one has a sense of being inside a forest. The area is wild but manicured.	The children were excited to enter into the larger forest.
<b>First venture to a different forest</b>	Umhlanga Nature Reserve	This Reserve hosts large trees and canopies overhead. There is a 300m long bridge over a lagoon as well as smaller tributaries. The floor is littered with leaves and one feels	The children were extremely excited to visit a new space and relished having water nearby.

		that they are in a forest.	
<b>Returning home</b>	The Garden's Greenbelt	We hosted experiences from both the manicured lower portion of the greenbelt and the wilder upper portion.	The children enjoyed being back in the space they knew but also began requesting to visit other new spaces.
<b>Venturing out</b>	Shongweni Nature Reserve  Kenneth Stainbank Reserve  Virginia Bush  Beachwood Mangroves  Beach	These are larger reserves but share the same element of wild as the upper portion of The Garden's Greenbelt and Umhlanga Nature Reserve. Shongweni Nature Reserve has a large dam to paddle on as well as crags to rock climb. Kenneth Stainbank has manicured lawns, large trees to climb, dams and thick bush. Virginia Bush is the least manicured of the venues with large trees, continuous canopies and eroded paths. The Beachwood Mangroves have raised walking paths and restrictions of where one may venture. It is well manicured. We also visited beaches with Tidal Pools and lagoons to swim in.	The children were excited to visit new spaces but also enjoyed having sessions at The Gardens.

### 3.5.2 Collecting data

I conducted my research over a period of six months. During this time, I engaged in a continuous investigation, observing three groups of eight children and two groups of six once a week for a two-hour Kinship session in a natural environment, and consulting with facilitators to gather their experiences and feedback. I complemented these continuous observations with informal conversations and semi-structured interviews: during a preliminary investigation, in the middle of my continuous investigation and in a concluding investigation. I held informal conversations with the children at the start of the research period, three months into observations and at the end of the observation period. I spoke informally with the parents at the start of the observation period and

interviewed them at the end of the observation period. My consultation with the facilitators formed part of my continuous investigation. The data collection timeline is illustrated in Figure 3.4.



**Figure 3.4 Data collection process**

I obtained permission to observe and interview *all* 36 children participating in the Kinship Programme and obtained consent to interview 36 parents. Initially, I was not sure which children would present the most interesting nature connectedness journeys. Also, as a facilitator, I would naturally observe all children in the beginning, which meant that I had to obtain consent to observe the whole group. The parents signed three separate consent forms: one pertaining to me observing the children, one that requested permission for me to conduct informal interviews with the children, and one requesting permission for me to interview them, the parents. At this point, the children gave verbal assent and decided on their pseudonyms for the study. I also obtained consent from the six facilitators that were participating in the research too.

Prior to conducting data collection, I considered how best to minimize the effects of my leading the nature experiences on the research generated. I wrote memos about how I would present experiences and observe simultaneously. I researched observation techniques, with the intent of minimising my interference with the observed situations (Davis, 2020). My Montessori experience and science background, both of which place an emphasis on the importance of objective/scientific observation (MacDonald, 2015), were advantageous, as I felt comfortable with the concept of stepping back and following the children to inform decisions and thus allow the data to unfold with less subjective tampering. I also researched techniques for conducting informal conversations and informal interviews (Adams, 2015; Peterson & Elam, 2021; Swain & King, 2022). I performed three test interviews with children as well. As I grew up working with children, I felt comfortable having conversations with them and conducting their nature experiences.

### 3.5.2.1 Preliminary investigation

The aim of my preliminary investigation was to gain an understanding of the initial relationship that each child had with nature. I obtained this information by having a conversation with the parents and children individually (Swain & King, 2022). While interviews can be daunting for people, especially children (Swain & King, 2022), informal conversations create a “greater ease of communication and often produce more naturalistic data” (Swain & King, 2022, p1). Using this method allowed the discussions to take place in a comfortable, easy setting and unfold naturally.

I considered the effects of my active involvement as experience facilitator on obtaining truthful data from the children and their parents. I was concerned that my involvement in crafting and executing the nature experiences would affect the information that the children, and especially the parents, would share with me. During the preliminary informal conversation I explained this concern to the parents, highlighting that my research aim was to gain insight into the experiences that resonated with the children and that it would entail a process of experimentation - which would probably yield both favourable and unfavourable experiences.

From speaking to the parents I gained an understanding of the amount of time the children spent outside, the general presence of nature in the child’s home life, as well as any notable experiences that the children may have had. From speaking to the children, I was able to gain an understanding of their individual perception of nature.

Initially I had intended to incorporate the “Illustrated Inclusion of Nature in Self” test in the study during the preliminary and concluding conversations with the children (Kleespies Braun, Dierkes & Wenzel, 2021). This test presents 5 Venn Diagrams that have a varying overlap of a “human” and “nature”, as illustrated in Figure 3.5. These diagrams signify different amounts that the human feels connected to nature. The test requires one to select the diagram that they feel best represents their relationship with nature. However, during the preliminary conversations, the children struggled to conceptualise what the test was truly asking. “I want to be all the natures” said Sneaky while Little Bird pointed at B remarking “This one looks pretty.” As a result I discarded this method, deeming it inappropriate for my sample group.

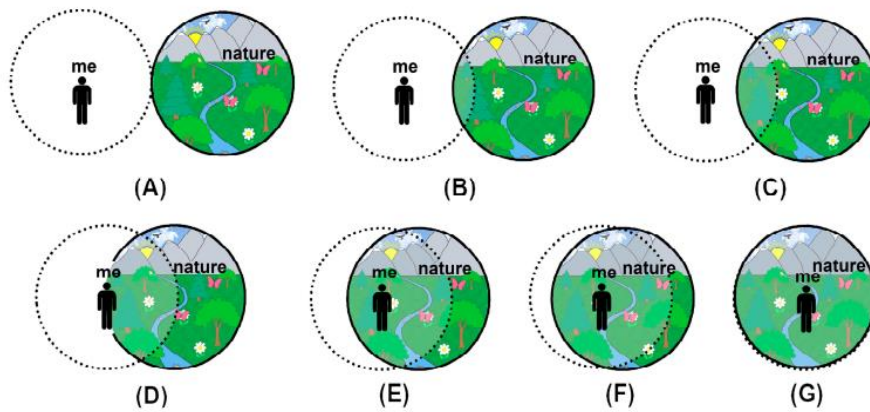


Figure 3.5 Illustrated inclusion of nature in self test (Kleespies et al, 2021)

### 3.5.2.2 Continuous investigation

As I aimed to gain an in-depth understanding of developing nature connections, I acted as a direct observer during nature experiences (Taylor-Powell & Steele, 1996). Observation allowed me to witness and document unfolding human-nature connections and capture slight nuances in the manner in which the children interacted with the environment (Peterson & Elam, 2021). During these observations, I engaged in additional child-friendly methods such as informal conversation (Swain & King, 2022). I could action these conversations in the moment and gain insight into why a child was acting in a particular manner. These conversations also allowed me to gain an understanding of the child's life in nature outside of my observation time. However, it is pertinent to note that most often the time that the children spent in untamed nature was confined to the Kinship nature experiences. As a result, I was able to capture most of their unfolding relationship with nature.

I had an observation book at each session and wrote down key points to remember. At the end of each session, I reflected on the session and wrote detailed journal entries about the day (Taylor-Powell & Steele, 1996). I also reflected on my role in the unfolding data collection process. I paid careful attention to the slightest changes in the manner in which each child interacted with the environment and any reaction to specific activities.

At the end of each session I consulted the other facilitators. I spoke to them about the flow of the session, whether there was anything that they noticed or would have changed and what they felt the children required from them.

I maintained a close relationship with the parents and provided them with feedback from my observations. A critical part of this feedback was divulging and discussing the experiences that the children did not enjoy. I noticed that this honest disclosure from my side encouraged the same from them.

During the first three months, I tried to include as many of the children as possible in my sample set. However, I noticed that inevitably my attention would be drawn towards a few children who tended to exemplify the developing relationship with nature. I selected these 20 children for the second round of informal conversations. These conversations aimed to assess whether the child's perception of nature had changed and whether there was a particular experience or quality of nature that resonated with them. The children were brutally honest - and I received comments like "No, I don't really like nature." I felt that the data collected from the children benefited from my active involvement. Since I had developed a deep personal relationship with them, they felt comfortable to speak freely with me. This resulted in many valuable conversations that were held in informal settings such as sitting in trees or hiding in dens.

Over the subsequent three months, I refined my sample further. I considered the children and tried to determine which phase of nature connectedness they were in. I selected ten children - two from each group - who exhibited a range of states of connection and transitions. Some children had exhibited little to no change in nature connectedness, while others exhibited large changes. Refining my sample to ten children allowed me to dedicate a full hour of observation per session to each child. Having a small but diverse sample allowed me to zoom in on each phase of nature connectedness and develop a deep understanding of both how a child behaves while in that phase, and which qualities of nature draw them into a closer connection.

### **3.5.2.3 Concluding investigation**

At the close of the research period, I had informal conversations with each of the ten children. The aim of these conversations was to gain an understanding of what nature now meant to each child. Using these responses, and comparing and contrasting them to their initial responses allowed me to gain insight into how their understanding of nature had changed. I also conducted ten semi-structured interviews with the parents. As I had several defined questions that I wanted to ask the parents - many of which required elaboration - I selected to conduct semi-structured interviews instead of informal conversations (Adams, 2015). This method created the time and space for the necessary dedicated concentration and elaboration on the topic, while ensuring that the conversation still flowed rather freely (Adams, 2015). By this stage, I also had an established relationship with the parents, which hopefully would have eased any anxiety that accompanies interviews. The aim of these semi-structured interviews was to assess whether the parents had noticed a change in the manner in which their child interacted with nature and if there was a particular quality or experience that their child had verbalized as resonating with them. These data collection stages and their particular intentions are summarised in Table 3.2.

Table 3.2 Summary of the data collection process

Timeline	Data Source	Quantity	Intention
<b>Preliminary Investigation</b>			
July 2021	Initial conversations with parents	36 informal conversations	To gain an understanding of the presence of nature in the child's life as well as any notable experiences that they may have had up to this point.
July 2021	Initial conversations with children	36 informal conversations	To gain insight into the child's perception of nature and current relationship with the wild environment.
<b>Continuous Investigation</b>			
July - December 2021	Observations	Observation of 36 children, filtering focus over time	To notice even the slightest change in the manner in which each child interacted with the environment and whether there was a particular quality of nature or experience that supported their nature connectedness journey
July - December 2021	Conversations	Informal conversations with the other facilitators	To gain insight into how they felt while facilitating the nature experiences and what they felt the children required from them.
End of September 2021	<i>Sample refinement: I refined the sample of 36 children to 20 children. I selected the children based on their exhibition of interesting interactions with nature. Refining the sample allowed me to focus more intently on the children during observations.</i>		
End of September 2021	Round 2 conversation with children	20 informal conversations	To assess whether the child's perception of nature had changed and whether there was a particular experience or quality that resonated with them.
<b>Concluding Investigation</b>			
September - December 2021	<i>Sample refinement: I refined the sample of 20 children to 10 children. I selected ten children that exhibited a range of states of connection and transitions to nature. Selecting a small but diverse sample allowed me to zoom in on each phase of nature connectedness and develop a deep understanding of both how a child behaves while in that phase and which qualities of nature draw them into a closer connection.</i>		
December 2021	Final conversations with children	10 informal conversations	To assess whether the child's perception of nature had changed and whether there was a particular experience or quality that resonated with them.
December 2021	Final interviews with parents	10 semi-structured interviews	To assess whether each parent had noticed a change in the manner in which their child interacted with nature, and if their child had expressed a particular resonance with a nature quality or experience.



### 3.5.3 Analysing data

Data analysis occurred in three definite stages. First, I conducted an inductive, data-driven analysis of my observations. Coding my observations led to the identification of five different *phases of nature connectedness*. Noticing the applicability of Giusti and colleagues' (2018) framework on phases of nature connectedness shifted my research approach to an abductive one where I iteratively re-engaged with my emerging data and existing theories. This process continued throughout the data collection period. Second, at the close of the data collection period I conducted a secondary analysis of my observations, conversations and semi-structured interviews. The intention of my coding was to identify which *experiences encouraged phase transitions*. Third, I re-engaged with my data with the intention of identifying what *role the nature experience facilitator played* in encouraging the development of nature connectedness.

#### 3.5.3.1 Discovering the phases of nature connectedness

During this stage, I used my daily journal entries and conversations to build individual child profiles that mapped their individual journeys of nature connectedness. First, I converted my daily journal entries, which contained information about all of the children at the session, into individual timelines for each child. These timelines highlighted how the children interacted with nature at each session, detailing any remarks they made, activities they engaged deeply with, or seemingly notable interactions. Second, I coded these actions and remarks to determine what they implied about the child's relationship with nature. For example, if a child said that they were scared, I allocated a code of "afraid of nature". Table 3.3. illustrates a snippet of Sneaky's timeline.

Table 3.3 Snippet of Sneaky's timeline

Session	Occurrences	Implied relationship with nature
1	Screamed and cried Petrified of the forest and the dark "I'm scared of the forest" Not engaged	Afraid of nature.  Not able to use nature/interact with it
2	Could enter the "light" forest Scared of imaginary dragon Concentrated on building bug hotel Could pick up leaves and twigs Refused to leave path	Slight comfort  Able to use nature/interact with it

I then grouped these codes according to what they explained about the implied relationship. I found five definite groupings and then named them according to an overarching noun that explained the relationship. These groups emerged in my study as the different phases of nature connectedness. Table 3.4. shows the grouping of the different codes.

**Table 3.4 Grouping of codes**

<b>Implied relationship with nature</b>	<b>Group name</b>
Not comfortable in nature Afraid of nature Not able to use/interact with nature	Afraid
Comfortable in nature Willing to explore with assistance	Comfortable
Notices nature Able to use/interact with nature Expresses a liking for nature Confident in nature Desire to explore nature	Engaged
Cares for animals and plants Speaks about nature in a caring tone One with nature	Caring (self)
Advocates for nature	Caring (activist)

At this point I noticed the applicability of Giusti and colleagues' (2018) framework on different phases of nature connectedness. However, I noticed that my findings deviated from their framework in that I had children that were not yet in the IN nature phase as well as children that had moved seemingly past the FOR nature phase. As a result, I continued to use the codes that I had developed.

I iteratively engaged with the abilities of the nature connectedness phases identified in Giusti and colleagues' (2018) framework and compared and contrasted these with the "implied relationship with nature" codes that I had identified. While observing the children I held both in mind, but was careful to ensure that I only documented the abilities that I noticed in action and not necessarily all of the abilities that Giusti and colleagues'(2018) had identified.

During this iterative re-engagement, I realised that the children were not necessarily confined to a particular phase of nature connectedness, but rather existed in a space of transition between phases.

For ease of coding, I coded actions according to the phase that they were illustrative of – yet, I was very cognisant of the fact that there were some areas of flux.

I also noticed that there appeared to be certain *pointers* that a transition between phases was taking place. For example, a child often asked if they could take their shoes off as they became more comfortable in nature. As a result this request appeared to symbolise their movement from the *afraid* to *comfortable* phase. I re-read the journal entries with the intention of identifying possible phase transition pointers and created a list of them.

I then mapped each child’s timeline onto separate GANTT charts; grouping the activities by phase of nature connectedness. These charts illustrated that while a child is not necessarily constrained to being in one phase of nature connectedness at a time, there is a form of linear pattern to the development of nature connectedness. Figure 3.6 below illustrates this semi-linear development.

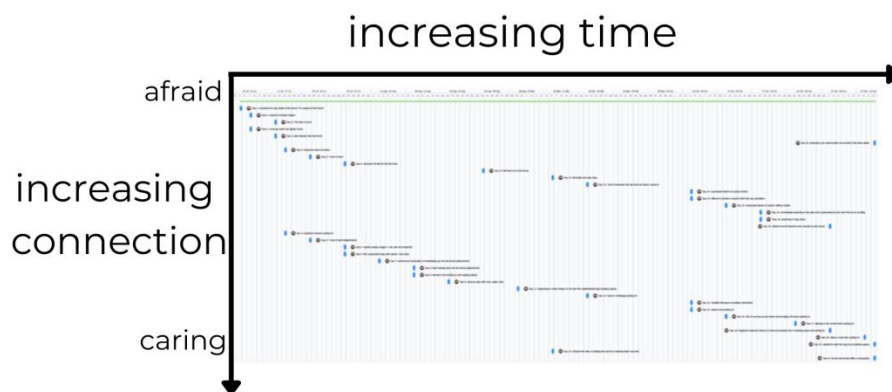


Figure 3.6 GANTT chart illustrating Sneaky’s relationship between time spent in nature and depth of connection.

Using the GANTT charts I obtained an indication of each child’s initial and final state of nature connectedness. As each phase is in reality inseparable, I assessed which phase the different actions clustered around at the beginning and towards the end of the research period. I represented this graphically for each child. I used this together with insights from drawings by the children and the information that I obtained during the conversations with the parents and children to form each child profile. An example of these profiles is attached in Appendix A.

### 3.5.3.2 Discovering which experiences led to phase transitions

I then summarized the child profiles in a combined table that looked at phase transitions, experiences/elements that promoted the transition, elements that illustrated a transition was taking place, additional comments on how nature influenced the development of nature connectedness and

stand out experiences at both Kinship and externally. For the definition of experiences that appeared to encourage a transition, I considered which phase of nature connectedness the child was in when the experience/element occurred and wrote the phase in brackets next to the contribution. I highlighted each phase a different colour. At this point, I noticed the re-occurrence of certain types of elements/experiences and their applicability to a specific phase. Table 3.5 shows a snippet of two children’s entries for transition experiences: Shy and Ancient’s. The experiences indicative of the *afraid* phase (and beneficial for departing this phase) are highlighted in green, while the experiences indicative of the *comfortable* phase (and beneficial for departing this phase) are highlighted in yellow.

**Table 3.5 Snippet of Shy and Ancient's entries for transition experiences**

	<b>Shy</b>	<b>Ancient</b>
<b>Experiences that appeared to encourage a transition</b>	<p>Learning about insects (afraid)</p> <p>Repeated exposure (afraid)</p> <p>Bushman storytelling (comfortable)</p> <p>Building a den (comfortable)</p> <p>Building spider web (comfortable)</p>	<p>Learning about trees (afraid)</p> <p>Shown how to climb bank (comfortable)</p> <p>Finding bushman dens (comfortable)</p> <p>Making bug hotel (comfortable)</p>

I then selected the experiences for phase transitions and listed them. Through coding, I reduced these lists into the phase-specific experiences explained in the Findings chapter. I sized the stepping stones (illustrated in Figures 4.3 – 4.6) based on the number of times the experience/element reappeared in the table. Table 3.6 uses the content of Table 3.5 to demonstrate this step.

**Table 3.6 Grouping of experiences to form list of final experiences**

<b>Phase they are departing from</b>	<b>Experiences that promote a phase transition</b>	<b>Reduced list (reoccurrence)</b>
Afraid	<p>Learning about insects</p> <p>Repeated exposure</p> <p>Learning about trees</p>	<p>Knowledge (2)</p> <p>Repeated exposure (1)</p>
comfortable	<p>Bushman storytelling</p> <p>Building a den</p> <p>Building spider web</p>	<p>Storytelling (2)</p> <p>Purposeful tasks (3)</p> <p>Sensory experience (1)</p>

	Shown how to climb a tree	
	Finding bushman dens	
	Making bug hotels	

Throughout this process, I was careful to include every applicable item from the initial timelines that I created. I did this to ensure that I did not lose any potential findings through coding too early. This process ensured that the code emerged from the patterns I observed. Furthermore, several of the findings surprised me and emerged from memos written during data collection. For me, this surprise symbolized that I hadn't passed judgement on them, and that they had naturally emerged. Figure 3.7 shows a snippet of my memo that highlights my confusion about the children's interest in and activism about litter.

*During my interviews with the parents, 8 parents mentioned how intent their children have become about litter. I can't quite place my finger on why. All I know is that whenever I walk past litter I remark on it and pick it up. Only Eye of the Tiger, Flower, Grace and Flash were at our intentional beach clean-up session. Humangasaur, Little Bird, Ancient and Sneaky were not there and yet it is a highlight of Kinship for them. Perhaps it is because of my small action during sessions? Perhaps the role that the role model plays?*

**Figure 3.7 Memo highlighting my confusion about the children's interest in litter**

### 3.5.3.3 Identifying the role of the facilitator

By mapping my journal entries, speaking to the other facilitators and considering the different role that I had to play in facilitating the experiences, I was able to identify the multiple roles of the facilitator. I read through my journal entries and each time I came across a reflection about what the children had required from me, I underlined it. I then allocated a highlighting colour to each phase and phase transition and revisited the journal entries. I considered each underlined statement and assessed which phase or phase transition the child that had required that action was in. I highlighted the statement in the corresponding colour. I then summarised the highlighted statements in a table, grouping them according to phase of nature connectedness. From this table, a snippet of which is

illustrated in Table 3.7, I deduced code names to describe the role that the children required me to play during each phase.

**Table 3.7 Identifying the role of the nature experience facilitator**

<b>Phase</b>	<b>Phase transition</b>	<b>What the children required from me</b>	<b>My role</b>
Afraid	Afraid to comfortable	Hand to hold Trust: fulfilling my promise Verbal encouragement	Protector
comfortable	Comfortable to engaged	Standing a little back Show them how to play (playmaker) Actively and verbally observe surroundings Pose lots of questions Conscious of my reactions	Initiator

I was very aware of the subjectivity of these findings and so I frequently journaled about the role that I was playing in the children's unfolding nature connectedness journeys - specifically probing myself with questions, such as "*Am I fulfilling my role as a facilitator?*". I also discussed this role with the other facilitators during our daily check-ins and our dedicated Kinship Team meetings. We have Team meetings every three weeks and the discussion of our role as a nature experience facilitator is always on the agenda. During these meetings I shared my hunches about phases of nature connectedness with the facilitators and would discuss potential placement of the children on their journey of nature connectedness and what they had needed from us. Our opinions were often similar, which provided me with encouragement that my findings were not totally subjective.

Nevertheless, I acknowledge the subjectivity of my findings on facilitating nature experiences. These findings are personal in nature and emerged largely from my experience with the children. However, emerging findings were thoroughly discussed with other nature experience facilitators and I actively assessed my experience against theories, such as the role of observer and playmaker (Lapierre, 2017; Bilton, nd). These discussions and readings allowed me to rationalize my experiences and ensure that what I was reporting was not entirely personal.

### 3.6 Ethical considerations

My observations and interviews were conducted in agreement with Stellenbosch University's code of ethics. After receiving ethical clearance from Stellenbosch University, I obtained written permission from the children's parents to observe them at the Kinship Programme sessions, have informal conversations with the children, and interview the parents. These consent forms promised that the information about the children would be kept anonymous and confidential. It also stated that the participants had the right to withdraw from the research at any point in time if they wished. Participation in the study was completely voluntary and no incentives were offered. Processes were also in place to ensure that the children whose parents did not want them to participate, did not feel left out. I also obtained verbal assent from the children, specifying if they were willing to be observed, interviewed, photographed and included in a "true story." I only included the children in the study if I received consent from both the parent(s) and the child. During early individual, private conversations with the children, they decided on their pseudonyms. These pseudonyms were used to ensure anonymity and confidentiality. All observation and interview notes were saved in a coded form and locked in a file on my laptop. I followed the same rigorous process for all other written and audio documents. Access to these files was restricted by password and only my supervisor and I had access to them.

The Kinship Programme has a Protection of Personal Information Act Policy and the parents sign a consent form for this.

I also received written consent from five nature experience facilitators stating that they were willing to participate in the research. They were informed that participation was completely voluntary, that they could withdraw at any time and that their identities would remain anonymous.

I was very careful to ensure that the research was conducted with the children. Often research is criticized for being conducted *on* children instead of *with* them (Darbyshire et al, 2005). Many research methods are specifically designed for adults and our ideals are imposed on children (Barker & Weller, 2003). This brings a power relation to the fore, which can be frightening for children. In all my dealing with the children, I ensured that I truly listened to them and approached them with respect. I listened to their feedback and requests for nature experiences and actioned their wishes to the best of my ability. As a result, they felt that they had a say in determining their experiences and thus the research process.

### 3.7 Research reflexivity

Research reflexivity is important for improving the trustworthiness and credibility of qualitative data (Davis, 2020). During the process of reflexivity, the researcher acknowledges and accepts the role that they play in shaping their results (Smith, 2006; Davis, 2020; Behrens, Rosen, McLoed Rogers & Taylor, 2007). Each researcher has particular beliefs and tendencies of practice that affect their judgement of the data collected and methods employed to identify patterns and analyse the data (Behrens et al, 2007; Davis, 2020). By reflexing on practices and embracing personal judgements, the researcher can identify any potential bias and ensure that they choose the best practices possible to mitigate their personal impact (Davis, 2020). I remained conscious of my role in shaping my research and employed reflexivity throughout my research process.

I applied reflexivity by first identifying which of my beliefs may have affected the research (Davis, 2020; Behrens, 2007). I have a deep love of nature and practice and advocate for pro-environmental behaviour. I have had to consider whether everyone should indeed have a respect for nature and possess a desire to protect her - or whether this is just me trying to impose my belief system on others. Through research, I realized that there is a pressing call for people to reconnect with our natural world in an attempt to promote pro-environmental behaviour. During the research process I was very cognisant of my stance and constantly reflected on it to ensure that I used the voice of theoretically substantiated research to form my arguments instead of my own.

A relational paradigm encourages relational accountability - which like reflexivity - calls on the researcher to acknowledge their role in shaping the research (West et al, 2021). Since I was using a participatory action methodology, I knew that I would be actively involved in both data collection and analysis. It was important that I acknowledged this role, and by selecting a relational paradigm, reflexivity was embedded at the core of my research process.

Prior to conducting data collection, I considered how best to minimize the effects of my leading the nature experiences on the research generated. I wrote memos about how I would present experiences and observe simultaneously, and made note that I would continuously reflect on this issue.

Throughout the data collection process, I reflected on my role as an active researcher (Davis, 2020). In my daily journal entries I included notes on how I facilitated and what effect this may have had on the experience. I wrote dedicated memos answering questions such as “Am I fulfilling my role as a researcher?” I discussed these personal concerns with other nature experience facilitators (without divulging any information about the children), fellow MPhil students and my supervisor.



### 3.8 Research validity

It is possible to assess the validity of qualitative research by considering Lincoln, Lynham and Guba's (2011: 121) question: "How do we know when we have specific social inquiries that are *faithful enough* to some human construction that we may *feel safe* in acting on them, or more important, that member in the community in which the research is conducted *may act on them*?" I will speak to three elements of this statement. First, the issue of whether the research is faithful through speaking to the fairness and bias/subjectivity of the research (Lincoln et al, 2011). Second, whether the research is safe by commenting on the robustness and trustworthiness of the research (Lincoln et al, 2011). And third, whether the research can be acted on.

I was conscious to ensure that my research was fair. When observing the children I remained objective. I completed my observations in a scientific manner without including any emotion. I valued each child's individual story for the insights that it provided and did not portray one story as better than another. As I was aiming to map the entire journey of nature connectedness, each child's story played a vital role in the discovery of it and could be valued accordingly.

By consulting the children, their parents and the other facilitators, I was able to gain insight into the research from many different perspectives. This ensured that my findings were cross-validated and therefore not only subjective.

Triangulation improved the robustness and trustworthiness of my findings (Carter, Bryant-Lukosius, DiCenso, Blythe & Neville, 2014). Triangulation is used to develop a comprehensive understanding of phenomena and is achieved through applying information from different sources to a point of convergence (Carter et al, 2014). I used observation, informal conversations and semi-structured interviews to gather data from different sources and viewpoints. I then iteratively engaged with existing research and peers to compare and contrast my findings (Charmaz, 2011). This allowed me to check my understanding of what was unfolding and validate it against prior literature.

Throughout the data collection period, I acted on my findings to re-assess and refine them. As my understanding of nature connectedness developed and I identified the different phase-specific experiences and facilitation techniques, I developed a guideline for facilitating Kinship sessions. We have used this guideline in practice for the past year now and have found it to be applicable and valuable.

## Chapter 4: Findings

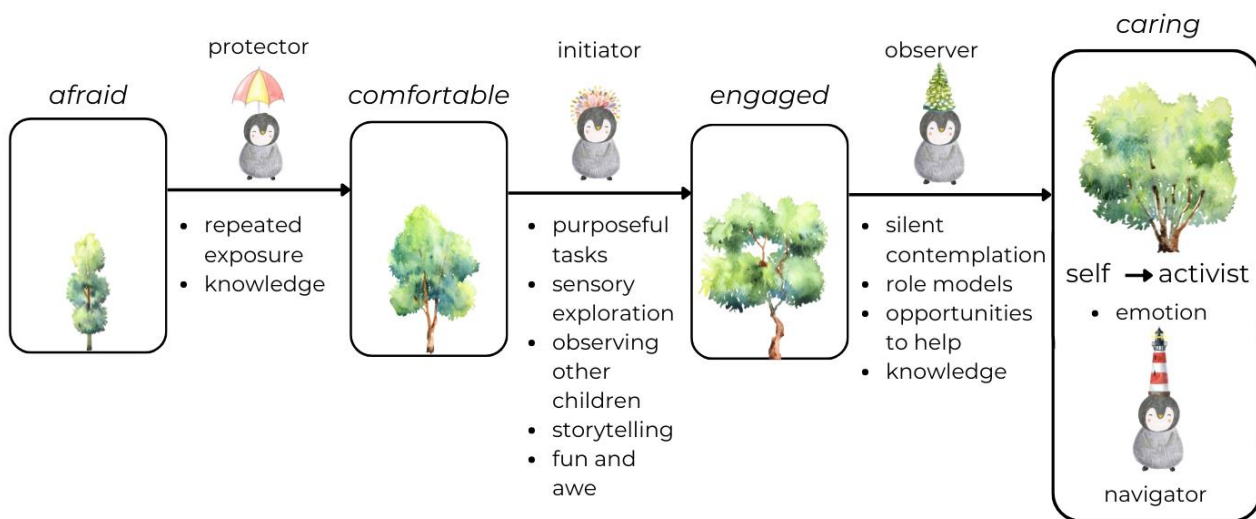
In this chapter, I share what I learnt during my observations, informal conversations, and semi-structured interviews at the Kinship Programme. My research goal was to gain an understanding of nature connectedness *as a process*, in order to better understand how to facilitate its development with children. This entailed gaining an understanding of how the relationship between children and nature develops, which experiences promote its development and the role that the nature experience facilitator plays in encouraging this connection to develop.

For the purpose of clarity, I first provide a high-level summary of my findings. Second, I tell the story of two children who exemplify two very different nature connectedness journeys. Third, I unpack the stepwise transition of nature connectedness, highlighting the experiences that encouraged phase transitions as well as pointers that suggest a transition is taking place. Fourth and finally, I discuss the ever-changing role of the facilitator.

### 4.1 Insight into the big picture

When I started observing the children in nature, I noticed that there was a variation in their level of comfort in the environment and willingness to engage immersively in the space. Children that were newcomers to a natural space were often initially uncomfortable and afraid. Yet, with repeated exposure they became increasingly comfortable and willing to engage in the space. As their relationship deepened, they began to care about nature. In this Findings Chapter, I refer to these states of nature connectedness as *phases*. During each phase, the children appeared to relate more with certain types of experiences as well as different facilitation techniques.

Figure 4.1 summarises my findings. Each box represents a phase of nature connectedness. The size of the tree inside each box is symbolic of the growing connection. The arrow symbolises the transition process to the next phase of nature connectedness, and the bullet points below speak to the experiences that promote a transition between the specific phases. Above the arrow, the little penguins represent the changing role of the facilitator in curating the child's experiences in nature and supporting the development of this relationship.



**Figure 4.1 Detailed illustration of the journey of nature connectedness with experiences and facilitation roles that promote phase-specific transitions**

Reading from the left, the diagram highlights how some children start their journey to nature connectedness by being *afraid* of nature. With repeated exposure and increasing knowledge about nature, the children transition to the next phase and become *comfortable* in nature. Purposeful tasks, sensory experiences, observing other children and storytelling encourage the children to *engage* in their natural environment. A *caring* for nature can be encouraged through silent contemplation, role models, fun and awe, opportunities to help and knowledge transfer. Children shift from personally caring for nature (*self*) to becoming an *activist* for pro-environmental behaviour after experiencing emotionally tumultuous events. The nature experience facilitator plays a different role during each of these phases and the subsequent phase transition: acting as *protector* during the afraid to comfortable transition; *initiator* during the comfortable to engaged transition; *observer* during the engaged to caring transition; and *navigator* while children move from a personal (*self*) sense of care to activist.

## 4.2 Illustrative stories of the children's nature connectedness journey

This section follows the story of two children that attended the Kinship Programme, and each exemplify different elements of the nature connectedness journey. Sneaky was initially uncomfortable and afraid in nature. It was his journey that really inspired me to map the progress of nature connectedness. Over the six month period he moved from being a completely uncomfortable newcomer to a leader in natural spaces. Grace on the other hand, began her journey in a more

comfortable space. She was able to lightly interact with the environment. Over the six months she developed a deep care for nature and became a vocal advocate for pro-environmental behaviour.

#### 4.2.1 Sneaky, the Dragon



Meet Sneaky Dragon, a five-year-old boy with an active imagination and boundless energy. Sneaky arrived bouncily at the forest on day one with sparkling eyes. As we headed into the forest and the trees rose above our heads, Sneaky became petrified, screaming “I’m scared of the forest” repeatedly. I tried to pacify him with stories and activities but he wasn’t able to be engaged. It seemed as if his sensory system was overloaded by the colours, smells and textures around him. The forest floor was scattered with leaves and I asked him to pick up a leaf. He responded with “I can’t see any leaves.” After a few minutes, I walked him out of the forest and back to our open field where he spent the remainder of the session drawing and running around. At collection time, I was amazed when he cried that he did not want to leave. Learning from this session, I planned the following session to begin outside of the forest and venture into the forest for purposeful trips. Sneaky was able to walk a little distance into the light forest (the section that did not have trees covering the sun), albeit a little timidly while holding my hand. When we got a little deeper into the forest, he again remarked that he was afraid. One of the other boys invented our first forest creature: the Sneaky Dragon who sits on the tree stump and has a nest in the vines. Sneaky was petrified of this imaginary dragon and asked to leave the forest. While on the field, he was able to engage in our group activity of building a bug hotel. These first two sessions epitomised his discomfort in our wild space.

Session three began his transition from being *afraid* to *comfortable* in nature. Sneaky started venturing further into the forest. However, once it became “too dark in there” he turned our group around. We erected a tent in the lighter forest and Sneaky retreated into the tent whenever the wind blew. However, he didn’t ask for a hand to hold this session. He also remarked on the Sneaky Dragon when we walked past his den - inquisitive and anxious of his whereabouts.

During session four Sneaky appeared to reach a place of comfort. For the first time he asked if he could please take his shoes off. He threw them on the ground and ran to a big pile of leaves, which he started jumping on. The group spent ample time throwing the leaves in the air while giggling wildly. On day five in the forest, Sneaky announced: “I love it here.” He became more relaxed and

began to initiate his own natural play with his friends. He still remarked about the Sneaky Dragon, but with more excitement - even imagining that he could see his footprints.

The following week, Sneaky began to *engage* with nature: running along the forest trails for the first time, and even venturing off path into the overgrowth to source unusual objects for his nature art. He played cooperatively with his peers, making elaborate mud cakes. I found this surprising as he had previously been averse to tactile engagement and had been upset if he touched anything slimy. Day seven saw him arriving and immediately asking to go into the forest. This was the beginning of a succession of trips into the forest during our sessions. On day nine we went on an outing to a different forest. Sneaky gravitated towards the flowing streams, hopping off the boardwalk, fully clothed, to play in the water. He spent the rest of the session feeling bark, leaves and making mud. On day ten we built intricate woollen spider webs in the forest that Sneaky spent the day playing in. The following week, he noticed a spider web on his own for the first time. He also pointed out fungi on tree bark. As time progressed, he became increasingly *engaged* in our natural spaces.

On day eleven we happened upon a pond that was riddled with water hyacinth. I explained the detrimental effect of hyacinth on pond life. Although Sneaky wasn't very perturbed about the effect it has on the pond, he was vigorously involved in removing the hyacinth. Within minutes he was in the water, black with mud, fishing it out with his hands. His engagement with this experience appeared to be sensorially driven and not from a place of care or concern for nature.

After our short holiday, Sneaky was eager to return to the forest. One of the little girls was afraid and he offered: "I'll protect you from all of the predators. You will be fine." He spent time climbing overgrown banks barefoot, while calmly warning the other children about thorns. He decided to go on a snake hunt and crawled a 500m distance in a 0.5m - 1m gap beneath a boardwalk. On this day we were only allowed in a portion of the forest and Sneaky expressed a great desire to explore deeper where we were not allowed to go. While walking around the forest he started to recall the activities that we had done there before, such as digging for dinosaur bones. The next week, along with Tiger, he expressed a desire to explore without adults. Without the knowledge that I was watching them from a tree: they walked a little way around the corner and sat discussing the forest and playing with sticks.

His confidence in the environment continued to grow. Our next session was held in the evening: a night frog hunt. In order to reach the reed frogs we had to walk through overgrown reeds and through thick mud. Sneaky was unperturbed by the mud or reeds and explored happily. Many of the other children were afraid and cried. Despite this, Sneaky remained positive, often remarking that "This is so exciting!"

On day 17, Sneaky opted not to help remove the water hyacinth at the pond. Instead, he played with his friends in the tent, imagining that this was his forever home. He was emerging as a leader in play scenarios and on day 18 assumed the role of intrepid explorer: jumping into large holes and walking through rivers instead of along the path. He helped the other children along the way. His actions illustrated that he began to feel confident enough in the space to lead others. I understood this to be a coming to feel at home in the environment - a being one with the space.

At our final session, my intuition was confirmed when we conducted a bug hunt. Sneaky was eager to lead the search and found a dead spider and centipede that he was very protective of. One of the children found a very large spider, but Sneaky refused to hold it. Instead, he sat cradling his dead spider. This was the first large act of *care* for nature that Sneaky demonstrated.

Over the six months, Sneaky's understanding of nature developed from being "I don't know" to "In nature there are so many trees with beautiful flowers to see. Nature means to see how nice it is and how good it is and smell the air." During a concluding conversation he mentioned that he feels he is one with the environment and that he loves it very much. His mom echoed that he is more willing to get dirty and has developed an appreciation for nature. This is evident by his increased eagerness to visit wild spaces with his family. She stated that his environmental awareness had also grown, particularly concerning recycling.

#### 4.2.2 Grace, the Warrior Child



Meet Grace, an eight-year-old girl with curious eyes and strong sense of will. She arrived at her first session a little tentative but quickly formed a bond with Ki, a young girl her age. Together they walked around the forest barefoot. Grace's willingness to walk barefoot but uncertainty to act independently in the space suggested that she was *comfortable* in nature, but not yet able to engage with nature.

The next week we arrived at a giant mud patch, and both Ki and Grace were very uncertain about walking through the mud. After much prompting from the other children, Grace ventured into the mud. When we arrived at the beach she rushed into the sea, proclaiming it her happy place. This experience illustrated that children can be comfortable with certain aspects of nature and not others, highlighting that their position on the nature connection journey differs for each element of nature.

Grace's confidence in the forest was growing. At the following session, Grace ventured off path for the first time as she tried to track the giraffe that roamed the nature reserve we were in. Giraffe are her mom's favourite animals and she remarked that this experience was very sentimental for her. We happened upon a herd of zebra and Grace spent 20 minutes naming them. She had to find the perfect name for each creature. Her independent engagement signified that she was beginning to *engage* with natural spaces.

However, deeper in the forest the following week, Grace resumed the role of follower. She followed Ki while making a nature documentary, often repeating what Ki had just said. Despite this, she seemed to possess a genuine concern for the health of our natural ecosystems. While she was not yet engaging fully with the environment, she was beginning to demonstrate signs of caring for the environment. This illustrated a non-linearity to the nature connectedness journey.

During session five, Grace was encouraged to *engage* with nature by the other children. It was extremely windy and the trees were thrust back and forth above our heads. When branches crunched, Grace visibly shuddered. I could tell she was afraid. The boys that she was with were unperturbed and had found a "Tarzan Vine" to swing on. After watching the boys for a few minutes, Grace decided that it was her turn. She launched herself off the bank, hanging onto the vine. Her face lit up instantly and she was much calmer and at peace for the rest of our session. We crossed a bridge that has steep banks leading down to a dry riverbed. The boys immediately wanted to see if they could climb down and up. Grace decided to join in. However, she was a bit nervous so I climbed behind her acting as a shield.

The following week her fear seemed to diminish as she embraced the environment. We went rock climbing at Shongweni Dam and Grace was beyond exciting to head up the rock wall. She appeared comfortable on the rocks and relished in swimming in the dam afterwards. She recalled the giraffe and zebra from her previous visit and spent a while searching for them. She remarked that this was "The best Kinship ever! I love this place." Session seven revolved around ancient creatures and she was awestruck by how old cycads are. She was determined to find the oldest object in the area and protect it. She spent lots of time climbing trees and looking for little creatures.

During a visit to the Centre for Rehabilitation of Wildlife (CROW) Grace began to exhibit a deep *caring* for nature. The team at CROW spoke about what they do and Grace was eager to help. She asked the management if she could please become a volunteer and when she could start. They replied that they only accepted volunteers that are 16 years and older. She completely deflated and spent the car drive home questioning why they wouldn't accept her help. This broke my heart.

At subsequent sessions, Grace spent time in silent contemplation. She quietly observed a gecko that one of the boys had found for about 20 minutes and then spent time sitting and drawing in a tree. She nonchalantly passed the comment that she likes just being in nature; and especially wallowing in the ocean or sitting in trees as that is when she feels part of nature.

Grace began to exhibit her *care* for nature more frequently and with a greater zest. In July, there was a period of social unrest in Durban, and a building that housed chemicals had been partially destroyed. The chemicals spilled into the Umhlanga River which leads to the Umhlanga Lagoon. Many fish died and the reserve was closed. A few months later, we gained special access to the reserve to help repaint a dilapidated building. While there, Grace expressed concern for whether the recent chemical spill had affected the trees and animals outside of the ocean. She was deeply hurt by the thought that human action had caused such environmental destruction. The following week we visited the Beachwood Mangroves which are notoriously waste-filled. When she was asked what we were going to spend the session doing, she was adamant that “We are here to help the earth and sea.” She actively cleaned the area with Ki until she found some giant seed pods. When we returned to the base, Ki and Grace made a waste awareness poster without being instructed to. She was beginning to advocate for pro-environmental behaviour.

As time progressed, Grace became more vocal about the environment and protecting it. While passing a sign that read “Throw your litter in the bin”, she pointed at the sign and announced: “You tell them sign! We need to keep our city clean!” One of the children mentioned that a lady on the radio had called snakes disgusting and Grace expressed her wish to go and teach the people at the radio about nature and how snakes are so important because they keep our ecosystem in balance.

The following week I was again reminded that the journey of nature connectedness is complex and non-linear. Grace engaged in planting seeds for our vegetable garden and was awed by the colour of the seeds. However, she kept wiping her hands clean and seemed to not enjoy the feeling of the soil. This suggested that although she really cared about nature, she was not yet comfortable to engage directly with natural objects. Some children are sensory seeking while others are sensory averse, which is independent to nature connection (Zahra, 2020). It became evident that we cannot judge the “achievement” of a nature connectedness phase based on a predetermined list of criteria.

Her *caring* actions towards nature continued: while walking she moved a centipede out of the path so that it would be safer and cared for a snail that had its shell crushed by another child. On the latter occasion, she also verbally expressed her concern that a child could have so unwittingly stood on a snail. During another session she expressed a desire to live somewhere rural where there aren't many buildings - just lots of nature. At another, she told me that she wanted to do my job one day: she wants to teach people how to treat nature.



Over the six months, Grace said she “learnt how to treat nature at Kinship. You have to treat it kindly because it is our world and if you destroy it we won’t have nature to play in for millions of years.” She grew more confident in wild spaces and more conscious of life around her. Her mom explained her growth in awareness and action, emphasizing her vocalization about protecting the environment. During our concluding conversation Grace stated that she feels that she is one with nature, and referred to nature as “life.”

### **4.3 The journey of nature connectedness: phases and transitions**

While analysing each of the ten children’s individual journey of nature connectedness patterns started to emerge. There appeared to be definite phases of nature connectedness. In saying this, it is very difficult to contain a child to being in a particular phase of nature connectedness as their relationship with the environment is dynamic and ever changing. As a result, I consider them as existing in transition spaces from one phase to another. There also appeared to be a correlation in the experiences/elements that encouraged children to transition through these phases of nature connectedness. For example, there were five evident elements that helped a child that was comfortable in nature to begin to engage with it. I also noticed that there were potential experiences that could stunt a transition. Looking deeper, there also appeared to be different pointers that illustrated that a transition was taking place. In this section, I unpack these discoveries in a stepwise fashion, using specific instances to illustrate the experiences in action. It is important to remember that these experiences/qualities are bigger than the anecdotes that I present; with frequent and differing reoccurrence throughout the six month observation period.

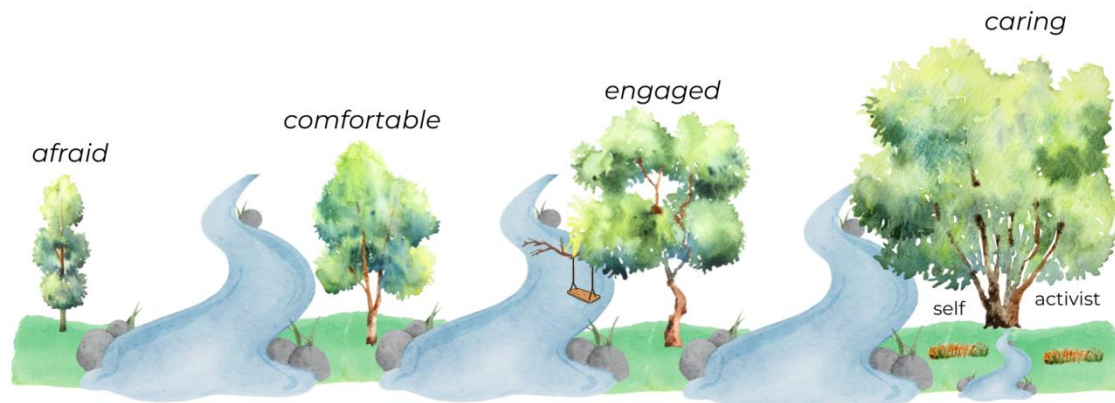
#### **4.3.1 Phases of nature connectedness**

While observing the children, I noticed that their level of engagement with nature differed. If we consider Sneaky: he was initially afraid of nature. After about three sessions he began to feel comfortable in the space. But he wasn’t yet able to engage with nature. This ability only emerged later.

If we consider Grace, she entered the natural space tentatively but comfortably. At the beginning, she also wasn’t able to engage with the space. This ability developed later along with her care for nature. Her care for nature was initially personal and then developed into a form of activism.

Most of the children followed similar but individualized journeys in their developing relationships of nature connectedness, snippets of which can be found in Appendix B. The reoccurrence of similar features encouraged me to code the different phases along their journey: from being *afraid*

to *comfortable*, to *engaged* and then *caring* (*self* and *activist*). Figure 4.2 illustrates the journey of nature connectedness with each phase being represented by a tree. The trees increase in size with a state of being afraid of nature having the smallest tree (smallest connection to nature) and caring for nature the more developed tree (largest connection to nature).



**Figure 4.2 Journey of nature connectedness**

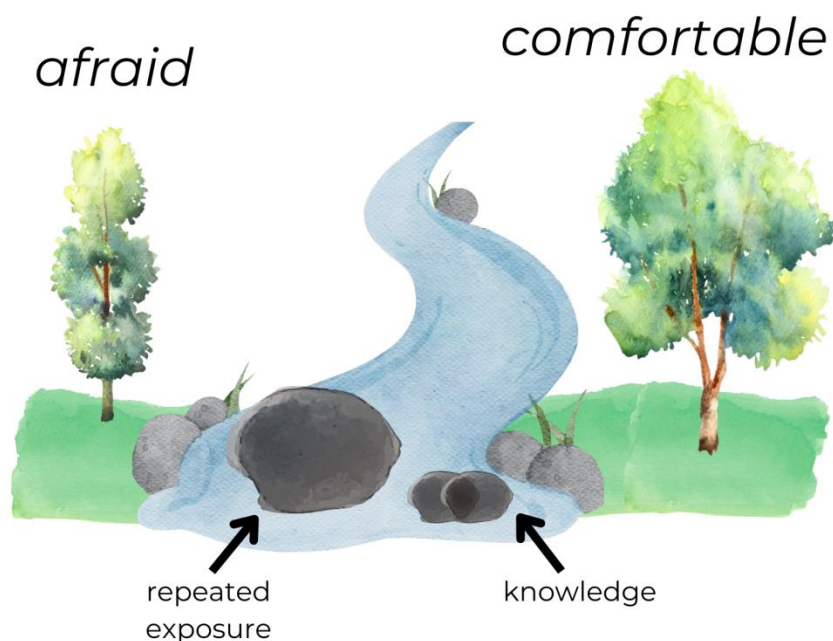
Although I present the journey as linear, in reality it is more winding, with specific milestones being reached at differing depths and in different rhythms. There is a messiness in the individuality of each child's journey - with their surroundings, group dynamics and personal background feeding into their interactions and perceptions of nature. Some children may connect easily with certain aspects of nature and yet shy away from other aspects entirely. For example, they may be comfortable at the beach building sandcastles and rolling down banks yet anxious in a forest.

Another element to consider is the psychological and emotional state of the child each day: as humans our biorhythms are dynamic. Some days the children may have been tired and prone to sensitivity while on other days they may have felt more confident. We cannot assume that their relationship with the environment was the only factor that was affecting their ability and desire to connect. When applying this context and considering each child individually, the presented framework can be understood on a deeper level and utilized to both measure the child's dynamic connection to nature and encourage them to gain a deeper connection through presenting the appropriate experiences.

#### **4.3.2 AFRAID to COMFORTABLE**

As illustrated in Figure 4.3, children who were newcomers to a natural environment benefited from repeated exposure at the same location and gaining knowledge about the place. The stepping stones in Figure 4.3 are sized to represent the number of times that each experience presented itself during

the coding process. Repeated exposure allowed them the time and space to become familiar with the environment. Sneaky's slow acceptance of the forest provided a beautiful linear mapping of building confidence and comfort, with him being able to move deeper into the forest each week. As he moved from a place of comfort into a place of unknown he would instinctively search for a hand to hold. This was symbolic of his willingness to proceed in connection but simultaneous anxiety.



**Figure 4.3 Experiences that promote a transition from being afraid to comfortable in nature**

For many children the forest was a place with overpowering smells, encroaching branches, peculiar sounds and chaotic look. This could have resulted in a sensory overload that drove the child to stress. As a result, during this process it was important to observe the child closely to see that they were not becoming too stressed, but rather were the ones prompting the further exploration. When they signalled that it was time to retreat, it was important that we listened to them and brought them back into their space of comfort. I noticed that during this process the children became willing to explore more, no longer searched for a hand to hold and began asking to take off their shoes.

Knowledge helped bridge the gap to connection. For instance, two children who participated in the programme, Ancient and Shy, found it easier to feel comfortable in spaces that they knew facts about. While Ancient did not climb many trees, he was able to identify different trees and share their uses with the group. Shy had similar experiences when topics around butterflies, bees and bugs were discussed. Although she was opposed to touching insects at first, she was comforted by her vast knowledge of them. In a way, knowledge appeared to provide a pseudo-comfort and increased confidence that promoted the children on their journey to comfort.

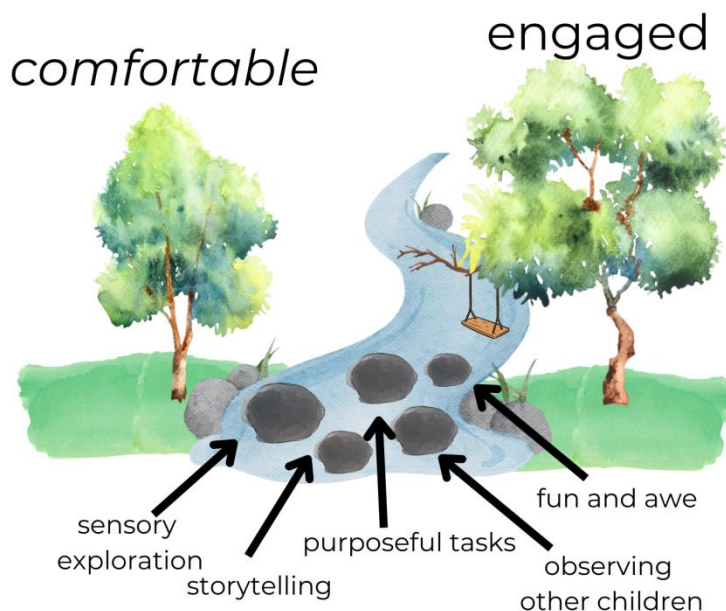
Table 4.1 summarizes the experiences that promote a transition from afraid to becoming comfortable in nature and pointers that such a transition is taking place.

**Table 4.1 Experiences that promote/stunt a transition from being afraid to comfortable in nature as well as pointers that a transition is taking place**

<b>Experiences/elements that promote transition</b>	<b>Experiences that stunt a transition</b>	<b>Pointers that a transition is taking place</b>
Repeated exposure at same location	Sensory overload	Ask to take off shoes
Knowledge		Willing to explore more
		No longer search for hand to hold

### 4.3.3 COMFORTABLE to ENGAGED

As the children became comfortable in the environment, they became willing to engage with it. Purposeful activities and storytelling were beneficial in encouraging the children to engage sensorially and independently with the environment. As illustrated in Figure 4.4, witnessing other children acting in the space also encouraged the newly comfortable to engage in activities.



**Figure 4.4 Experiences that promote a transition from being comfortable to engaged in nature**

One of the first signs that the children were comfortable in the environment was their willingness to engage sensorially with it. This involved touching bark, crunching dead leaves, admiring fungi and

making mud. I noticed the importance of phasing this engagement in. For instance, Sneaky, Shy and Little Bird were initially averse to touching mud. Little Bird walked on her toes on wet grass. However, slowly they each engaged a little more. Little Bird moved from refusing to touch mud, to mixing it and then needing to wash her hands immediately, to eventually caking her body in mud and waiting for it to harden. Shy would burst into tears if she got dirty or anyone touched her with mud. This happened with Flower too, another little girl on the programme, signifying that it was imperative that this sensory engagement was accepted and initiated by the child moving into this phase. If it was not, the child often retreated into themselves, building a defence against engaging.

During this transition it also became apparent that purposeful tasks helped the children engage with the environment. For example: building a bug hotel. When discussing the various homes of different insects, seemingly mundane objects gained meaning. Bark become the home for millipedes, dead wood the home for beetles, hay the home for pray mantes and dead leaves the home for ladybugs. When children entered the forest with the purpose of collecting these items they actively searched for these objects and forgot their uncertainty to touch them - thereby bridging the gap to immersing themselves in the environment. Sensory hunts were also beneficial here – for example, completing simple activities like trying to find objects of different colours. One of the boys, Ancient, was absolutely awestruck at the realization that leaves are green. This awe can be completely consuming and encourage the children to explore their surrounds with more vigour. As the children began to purposefully immerse themselves in this newly meaningful space, they began to identify objects around them: spotting little fungi and spider webs. They began to run along the trails, sporadically screeching in pure joy. They also developed the impetus and growing confidence to venture off the path, which acted as a catalyst for more immersive experiences.

I noticed that fun and awe-filled activities encouraged the children to develop an appreciation for the space and a feeling of attachment to it. For instance, Tiger and Sneaky would often go and check on the bug hotel they had created and many of the children started referring to different locations in the forest by made up names. We would have to visit the Dragon's Den, the Playground, Mudpatch, Spider Web and Sneaky's Seat. This attachment gave deep personal meaning to the forest and symbolized part of their relationship to the space.

For children to engage freely with the environment, they required an understanding of the potential manners in which they could interact with and use the environment. It became apparent that observation was fundamental for children to build these mental imageries. For instance, while Humangasaur and Sneaky appeared to have similar initial starting points for their nature connectedness journey, Humangasaur transitioned into a more comfortable being quicker than Sneaky. This was because the children that were in his group were more confident and active in the

environment and seemingly pulled him along with them. He would see his peers jumping in leaves while cackling joyfully and be encouraged to join in the experience. Sneaky however, was in a more tentative group of newcomers that relied on me to embody the role that the other children were playing in the other groups: searching for hide-outs and rolling down banks. Storytelling also played an important role in building these mental imageries for the children. An example of this was our “bushman” session, where we made paints from natural materials, spoke about the caves that people used to live in, and the activities that they would have busied themselves with. Prior to this session, Shy had not engaged in any free play. However, during the next session she called a group together and initiated building a fire, identified a place to sleep and tasked children with locating berries. This experience illustrated how storytelling stimulates relatability. These beneficial experiences are summarised in Table 4.2, along with the pointers that a transition to being engaged is taking place.

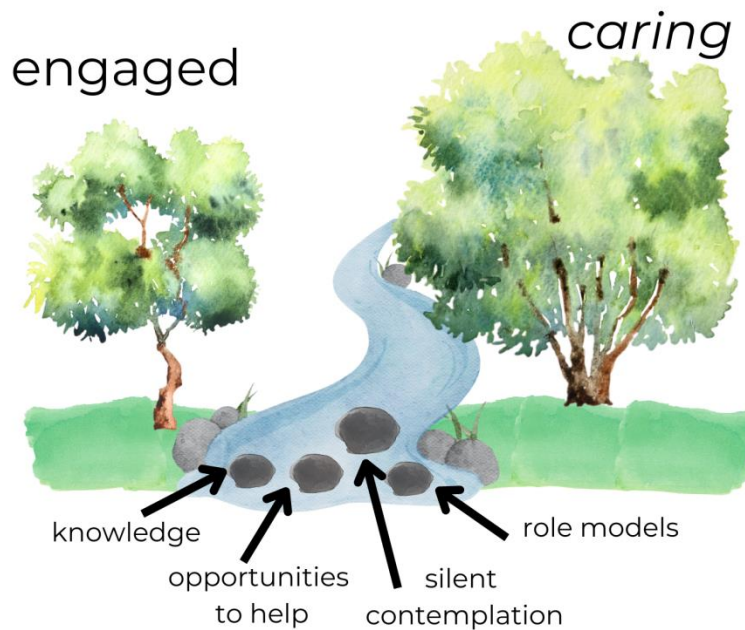
As the children began to engage with the environment, they learnt new skills and gained further confidence in their ability to act in the environment: climbing trees, bouldering on rocks and venturing into the overgrowth. As a result, the children became more comfortable in their space. This reinforcement of comfort through engagement is illustrated in Figure 4.4 by the swing that transports the child to a flourishing, *comfortable* and *engaged* phase.

**Table 4.2 Experiences that promote/stunt a transition from being comfortable to engaged in nature as well as pointers that a transition is taking place**

<b>Experiences/elements that promote transition</b>	<b>Experiences that stunt a transition</b>	<b>Pointers that a transition is taking place</b>
Phasing of sensory engagement	Too much sensory engagement - especially if it isn't on the child's terms	Begin venturing off trail
Fun and awe-filled activities encourage the formation of attachment		Begin running
Purposeful tasks or something that catches interest		Start spotting things on own in nature
Witnessing other children acting in the environment		Participate in free play
Storytelling stimulates relatability		

#### 4.3.4 ENGAGED to CARING

As illustrated in Figure 4.5 a sense of care for nature was encouraged during silent contemplation, knowledge acquisition, observation of role models and participation in activities that help our environment.



**Figure 4.5 Experiences that promote a transition from being engaged in to caring for nature**

Knowledge featured as an important element for encouraging a developing sense of care for nature. Often the children possessed a desire to help and began to action it by helping small bugs across the path or by watering plants. However, in order to move to greater action, the children required an awareness of what potential elements pose a threat to the environment, as well as the skills to counteract these threats. For example, we visited an environment that has a pond in the centre. One day the children remarked that there were new green plants growing on the pond and that it looked very pretty. These plants were in fact water hyacinth: a very invasive alien species that clogs pond ecosystems, starving life below water of sunlight and nutrients. I shared this information with them and Tiger, Flower and Sneaky immediately took off their bags and waded into the water to remove the hyacinth. If I hadn't shared this knowledge with the children, they would have been oblivious to the effect that the hyacinth was having on the environment and thus would not have been prompted to act.

At this time, it appeared important that the children had environmentally conscious role models, who they could observe caring for the environment. During my interviews with the children's parents, Sneaky, Grace, Shy, Humangasaur, Eye of the Tiger, Flash and Flower's mothers all

remarked that the children had developed a greater awareness of litter in the environment. Humangasaur passed comments such as “At Kinship we pick up litter too.” This came as a surprise to me as we had only held one dedicated litter clean up - and not all the children attended it. Upon reflecting, I realized that when I walked through the forest with the children I made a remark every time we passed litter and picked it up. This subtle action seemed to have had a profound effect on them and their impetus to clean their space.

It now became important that the children had opportunities to volunteer their help. It seemed that these opportunities could range from simple alien invasive eradication events and litter clean-ups to the writing of letters to corporate waste producers. The children appeared to be extremely content with tasks that may appear like work to adults - such as collecting litter. For instance, Eye of the Tiger, Flash and Grace collected litter with vigour and without complaint for 90 minutes. I realised that these experiences need to be carefully curated to ensure that the child can achieve the goal that they set out to achieve. We visited CROW, where Grace was adamant that she wanted to volunteer. Their response that she was too young visibly deflated her. This could have caused her to retreat me debriefing her and explaining that we could still help in our own way. This then necessitated me finding achievable volunteering options for her. Another example presented itself when Shell was planning to conduct ecologically damaging seismic surveys just off the Wild Coast of South Africa. The children were devastated and wanted to write to Shell. I had to explain to them that their letters would likely not reach Shell and that they should not get their hopes up, while also conveying that they were adding their voices to a larger protest movement, which was significant. If the children’s willingness had been rebuked or contained, it could have subsided - which was the exact opposite of what I was trying to achieve.

As the children started caring for their environment, they began to feel part of it. During separate informal conversations with the children I asked them if they felt part of nature and what made them feel so. Many of the responses were linked to caring actions: for instance, Flower said that she felt part of nature when she feeds her plants, Flash when he removes weeds and Tiger when caring for all his plants.

Mindfulness was another common feature of experiences that promoted a feeling of oneness. This was observed when the children gently stroked the trees, looked for quiet spaces and peacefully observed geckos. Flash said he enjoys climbing high into the tree canopy where he feels calm and no one can reach him. Grace said she feels most at peace when she sits and draws pictures in trees. Wildlife plays a pivotal role in bringing the children to peace. Even the busiest bodies stilled to watch the goslings walk around the dam and stood still in the fishpond waiting to see if the fish would swim into them. These moments of intent allowed the children the time to subconsciously



absorb their environment and connect with it on a deeper level. They appeared to enter a contemplative state where they were more aware of both their surroundings and their actions. Occasionally this encouraged environmentally friendly behaviour. For instance, a group of children were observing the geese and their goslings eating little pellets when Little Bird observed that the goslings couldn't fit the pellets into their mouths. She instantly went to fetch a rock and began crushing the pellets into crumbs that they would be able to consume. If we hadn't allowed the space for the children to observe their environment, this observation may have been missed, and the act of kindness never forged. Table 4.3 summarises these beneficial experiences and highlights the pointers that a transition is taking place.

**Table 4.3 Experiences that promote a transition from being engaged in to caring for nature, as well as pointers that a transition is taking place**

<b>Experiences/elements that promote transition</b>	<b>that</b>	<b>Experiences that stunt a transition</b>	<b>Pointers that a transition is taking place</b>
Knowledge			Release bugs
Opportunity to help			Rescues bugs by moving them from places of potential danger
Silent contemplation and mindfulness			Collecting litter
Observe good role models caring for environment			

#### **4.3.5 A shift in CARING**

Once the children reached a state of being aware of their environment and caring for it, it was necessary for us to sustain them. This could be achieved by providing them with opportunities to care for their space and help in any way possible. As previously mentioned, these opportunities can range from poster making to volunteering at wildlife organisations, for example.

There appeared to be one more transition that children underwent during the caring for nature phase: the shift from personally caring for the environment to becoming an activist for pro-environmental behaviour. As illustrated in Figure 4.6, this shift was stimulated by experiences that evoked emotional turmoil.



**Figure 4.6 A shift in caring for nature**

A good illustration of this transition was captured by Flash. Flash made this transition during an outing at the mangroves. There was a colony of crabs living alongside the boardwalk and one of the children grabbed a big stick and started poking the crab holes. Flash was outraged. He immediately started shouting at the other child to stop, explaining that the holes were the crabs' homes - and questioning how he would feel if his home were destroyed. I could see the agony that Flash was feeling. A similar experience occurred another time when a child jumped off a bridge to stand on a crab. One of the boys, also furiously upset by this action, jumped off the bridge to rescue the crab. He carried the crab with him for the next two hours, nursing him. As a facilitator, I found this to be a very difficult space to navigate; as you want to step in and enforce boundaries that protect the children's feelings. However, as more instances unfolded in reality, I realized how important they were for our children to discover their voice and begin to use it. Realizing this made me understand that these experiences are necessary and not ones to avoid but rather utilize and debrief on in such a way that they become beneficial to our children on their journey to connecting with and protecting nature. Table 4.4 presents the experiences that promoted or stunted a transition to becoming an *activist* for nature.

As children found their voice, they started to avidly share their love and emotional standpoints with their friends. For example, Grace became an activist for waste collection, ecosystem and biodiversity conservation and climate change. Eventually, a session did not pass without Grace

finding an environmental issue to discuss and rebel against. Her vigour for the cause was so powerful and many of the children that she spent time with began remarking on environmental concerns. In a way, she had been acting as a teacher to the other children and her opinions snowballed throughout our group with gaining momentum. I noticed that when a child makes comments, it has a very different effect on their peers than the same comment being made by the facilitator. This was becoming a beautiful space to play in.

**Table 4.4 Experiences that promote/stunt a transition from personally caring for nature to becoming an activist for nature as well as pointers that a transition is taking place**

<b>Experiences/elements that promote transition</b>	<b>Experiences that stunt</b>	<b>Pointers that a transition is taking place</b>
Emotional turmoil	Lack of exposure to emotion	Actively and verbally rebelling against actions that are detrimental to the environment
	Lack of opportunity to help	

#### **4.4 The role of deep immersion**

A deeply immersive experience can be defined as an experience that places one in wild nature for a prolonged period of time (Vroegop, 2015). During these experiences, one is surrounded by nature and usually reliant on her. During my observation period, we conducted two overnight hikes, which could be examples of such experiences. Each time the children hiked 5km into the Drakensberg Mountains and spent the night in a cave. We drank water from the river and bathed in the natural pools. There was no mobile phone signal and we were encouraged to be present in our surroundings. During the following months and interviews, it became apparent that these experiences had a profound impact on the children. Eye of the Tiger began referring to herself as a “Cave Sleeper” while Little Bird, Shy, Grace and Ancient told everyone they met about the experience. Tiger drew pictures of the cave which he carried around with him. Tiger’s mom noticed that both the hikes and their deeply immersive camping holiday had a large effect on Tiger’s development. She found that they matured him and improved his ability to connect with both his family and himself. The experiences also appeared to highlight the important role that nature plays in our everyday lives: it is the provider of water, food and shelter. The children began to appreciate this role of “Mother Earth” and often referred to it. Grace and Eye of the Tiger also said that their cave experience made them feel part of nature. Upon return from the hike, the children would

engage more willingly with the environment and immerse themselves fully in their surroundings. They spoke more about nature and embodied a deep calm.

I noticed that these deeply immersive experiences seemed to accelerate the children's transition to *caring* for nature. A note must be made here that such experiences are only suitable for children that are already *comfortable* in nature, because if they are not yet, it may be overpowering for the child and could cause them to shy away from nature further. I also noticed that they were more eager to attend Kinship and felt a desire to be in nature more often after attending the overnight adventures. Their repeated weekly exposure acted to sustain their newly formed connection, highlighting how important consistent exposure is.

## **4.5 Facilitating nature connectedness – from the outside**

While facilitating the nature experiences and talking to other facilitators about their experiences, we noticed the effect that each person had on the sessions: how the way we prepared and related to the children affected how they interacted with the space and each other. We also noticed the profound individuality of each child and how this affected what they required from the facilitator. Blended between the children's individual needs was a pattern based around how comfortable they felt in the natural space, i.e. they required something different from the facilitator depending on their phase of nature connectedness. In this section I first discuss the necessary pre-session preparations, both in terms of preparing the environment and one's self (the spiritual preparation of the facilitator). Second, I unpack the shifting roles of the facilitator as the child transitions from being *afraid* in nature to *caring* for nature.

### **4.5.1 Pre-session preparation**

As the research unfolded, we found that preparing the environment had a positive impact on the flow of the session. The sessions were much calmer when we had a clear image of how the session may unfold and had prepared different stations (such as mud play, flower arranging and leaf pressing) that the children could freely flow between. This preparation of the environment seemed to provide safe boundaries within which the children could exist.

We found that the children could sense our energy and often fed off it. When we felt grounded going into a session, the children appeared to sense our internal order. If we arrived rushed with a disorganized mind, the children could sense it and often the sessions would run wild-er. As a result, we made a concerted effort to take the time to centre ourselves before each session.

We realised that the children were constantly observing us and how we interacted with the environment. Flash found a frog that he showed to one of the facilitators and her first reaction was to pull away. Flower looked at me and asked, “Why is she so afraid?” This instant made me realise how important it is for the facilitator to be aware of themselves and the image that they are portraying to the children. Another example came to the fore with the realisation of the large impact that my collection of litter while walking had had on the children.

#### 4.5.2 Shift in facilitator role

As the children journeyed through the phases of nature connectedness, our role as facilitator changed. As depicted in Figure 4.7, we moved from being a protector and initiator to observer and navigator.

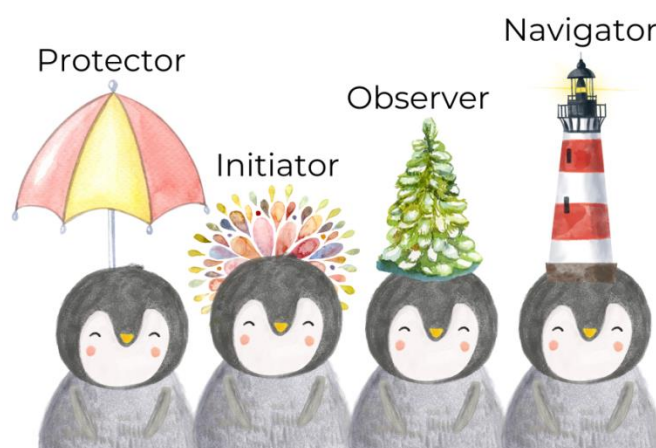


Figure 4.7 Different hats of the nature experience facilitator

***Afraid – Comfortable:*** *Our first role was that of protector.* While the children were uncertain in the environment, we needed to offer them comfort. This came as the offering of our hand to hold or light verbal encouragement. It was important to build trust with the child, as this trust was transferred from our relationship to their willingness to interact with the environment. Trust allowed us to extend them willingly into their zone of proximal development - which refers to the difference between what a child can do with and without help or guidance (McLoed, 2019). This trust was built when we listened to the children, got down to their level, and delivered on what we promised.

***Comfortable - Engaged:*** *Our second role was that of the initiator.* Many of the children who had just become comfortable in nature did not know how to play in the environment yet, and so we needed to show them. During this time, we built forts, made fires, concocted imaginary stories and ran wildly through the forest. As the children began to initiate play, we were able to step back, and

allow them to assume the role of initiator. We then needed to make sure that the experiences we offered them were fun and engaging.

We also tried to encourage them to observe their surroundings. We constantly searched for spider webs, fungi or interesting looking leaves. As we remarked on these objects, we brought the children's interest to the objects and encouraged them to search their environment, too. We questioned things aloud and found that these questions prompted the children to wonder. We were very conscious of our body language and facial expressions, as many of the children were enjoying their first experiences of nature and our reactions could have had lasting effects on their perceptions of the natural environment.

***Engaged - Caring: Our third role was that of observer.*** As the children were now able to engage with the environment, we stepped back and became more observant. We found that it was important to give the children the space they required to initiate their own activities without us imposing on them. We spoke to them about their interests and used these to craft opportunities for them to volunteer. We felt that the children in this phase required big, meaningful tasks, and so we curated these tasks for them. We also found that the children modelled our behaviour and so we paid careful attention to ourselves to ensure that we were modelling the pro-environmental behaviour that we were hoping to encourage.

***A shift in Caring: Our fourth role as a navigator.*** Our main role during this phase was to help the children navigate their emotions. During this phase, we needed to maintain distance and allow the children to be exposed to uncomfortable events. This was very challenging as the children appeared to plunge into emotional turmoil. Once the feeling has been felt, we would then debrief the children. During the debriefing we asked them why they felt the way they did, what initiated their actions and what they thought they could do differently next time. We found that helping them navigate these critical emotions was very important in their transition to becoming activists for nature.

We also had to help the children manage their hopes and aspirations. The children felt intensely about perceived environmental wrongs and had grand ideas to address challenges - such as Grace wishing to teach the radio staff about the importance of biodiversity. Sometimes their desired actions were not feasible, and so we had to manage these scenarios and explain the different effects that our voice can or cannot have. It was our task to provide the children with opportunities to help/give back that were rational and achievable and console them when the world was not ready for their high ideals.

## 4.6 Summary of findings

My research goal was to gain an understanding of nature connectedness *as a process*, in order to better understand how to facilitate its development with children.

My findings suggest that children progress along a journey of nature connectedness from being *afraid to comfortable*, to *engaged* and then *caring (self and activist)*. I found that during each phase of connection, there were certain experiences/elements that resonated with the children and helped them transition from one phase of connection to the next. These phase-specific experiences provide insight into how to encourage the development of nature connectedness through the provision of nature activities. I also found that the children required something different from the facilitators depending on the phase of nature connectedness that they were in. This finding provides insight into how the facilitator's actions can encourage the development of the relationship between a child and nature during each phase and transition of nature connectedness.

## Chapter 5: Discussion and conclusion

Nature connectedness has been linked to pro-environmental behaviour and engagement in sustainable development (Pritchard et al, 2020; Moula et al, 2022). Encouraging children to develop a strong and positive relationship with nature may help them become champions for nature conservation and sustainable development - working towards righting past environmental wrongs.

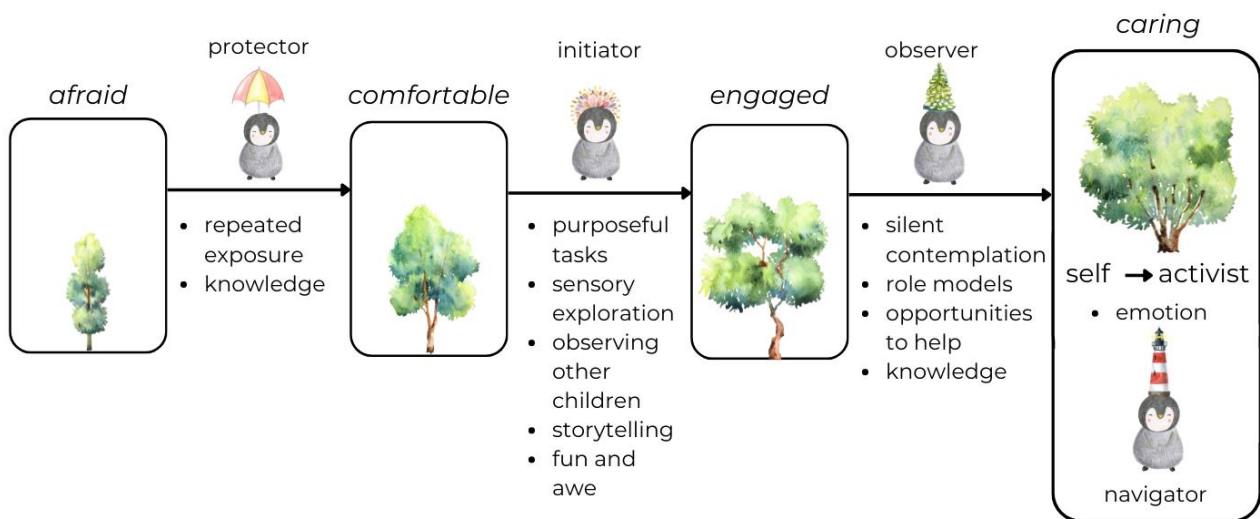
My research goal was to gain an understanding of nature connectedness *as a process*, in order to better understand how to facilitate its development with children. In order to meet this goal I asked: How can we support the process of nature connectedness in children? This entailed gaining an understanding of the following sub-questions: (1) How does the relationship between children and nature develop? (2) What experiences may promote its development? (3) What role(s) can the nature experience facilitator play to encourage this connection to develop?

Answering these questions, my study makes three broad contributions. First, looking at nature connectedness as a process, I extend Giusti and colleagues' (2018) framework on nature connectedness. Second, I identify nature experiences that promote phase transitions. And third, I define the different phase- and transition-specific roles of the nature experience facilitator.

### 5.1 How does the relationship between children and nature develop?

Looking at nature connectedness as a process, I noticed that it develops along a trajectory that I characterised by specific phases of connection, as well as transitions between phases. I identified five phases of nature connectedness: *afraid*, *comfortable*, *engaged*, *caring (self)* and *caring (activist)*. The phases of nature connectedness provide a basis for us to analyse, track and monitor the quality and depth of a developing relationship between a child and nature, providing valuable insight into how nature connectedness develops. Figure 5.1 illustrates my findings on the journey of nature connectedness with details about the experiences and facilitation roles that promote phase-specific transitions.





**Figure 5.1 Detailed illustration of the journey of nature connectedness with experiences and facilitation roles that promote phase-specific transitions**

Overall, my findings are consistent with previous research on developing nature connectedness: indicating that the relationship develops with intimate, direct experiences with nature over a prolonged period of time (Zylstra et al, 2014; Barragan-Jason et al, 2021; Moula et al, 2022). I noticed particular similarities with Giusti and colleagues' (2018) framework on phases of nature connectedness.

Giusti and colleagues' (2018) framework attributed different abilities to different phases of connection. They defined the phases of human nature connection as being IN nature, being WITH nature and being FOR nature (Giusti et al, 2018). During the IN nature phase children are comfortable and curious about nature (Giusti et al, 2018). This phase links with the phase that I have called *comfortable*. During the WITH nature phase children are able to read natural spaces, act in natural spaces, feel attached to natural spaces, know about nature and can recall memories about time spent in nature (Giusti et al, 2018). I simply referred to this phase as being *engaged* with nature. During the FOR nature phase, children take care of nature, care about nature and feel at one with nature (Giusti et al, 2018). This FOR phase aligns with my *caring (self)* phase.

However, my findings offer an extension of Giusti and colleagues' (2018) framework by incorporating two additional phases of nature connectedness, and offering a processual view of how nature connectedness unfolds.

First, I show a potential starting point for the nature connectedness journey. Many modern children spend the majority of their time indoors as a result of increased risk aversion and fear among parents, loss of space and opportunity for exploration, and the gravitation towards digital

technology for play opportunities (Chawla, 2020; Moula 2022; Barkham, 2020). This has resulted in an increasing human-nature disconnect and culminates in the lack of a relationship between many modern urban children and nature (Beery et al, 2015). As a result, many children are in fact *not* comfortable in nature. This discomfort was exhibited by their fear for nature, and captured by my phase of being *afraid*. Building on Giusti and colleagues' (2018) framework, this phase could be described as being OUT of nature. The incorporation of this phase is important as it recognises and brings our awareness to the human-nature disconnect while providing a firm starting point for analysing nature connectedness.

Second, my study further identifies a shift from personal care for nature to pro-environmental activism. While Giusti and colleagues' (2018) framework includes a personal care FOR nature, it does not explicitly incorporate the active pursuit of championing pro-environmental behaviour - something that several of the children began to practice in my study. I therefore subdivide my caring phase into *self* and *activist* to capture the change in vocalisation of care. This shift in behaviour was catalysed by events that evoked emotional turmoil and deep feelings of anger and sadness. This is important to note, as we often try to shelter children from traumatic/unpleasant experiences (Chawla, 2020), when in fact these feelings are important for fuelling pro-environmental behaviour. If we are to achieve a shift in the social norm that currently accepts environmental degradation (Richardson et al, 2020; Beery et al, 2015), we require a populace that actively condemns these actions (Feront, 2021). Building on Giusti and colleagues' (2018) framework, this phase can be described as ACT, for taking action. By acknowledging this shift in behaviour as well as the catalyst for this shift (emotional engagement), my study helps us gain an understanding of how to encourage the formation of activists that will rebel against our anthropocentric society.

Table 5.1. places alongside each other (1) a summary of Giusti and colleagues' (2018) findings on the different abilities possessed during the different phases of nature connectedness and (2) the abilities that I noticed the children exhibit during the additional phases, described as being OUT of nature and ACT - *taking action as an activist*.

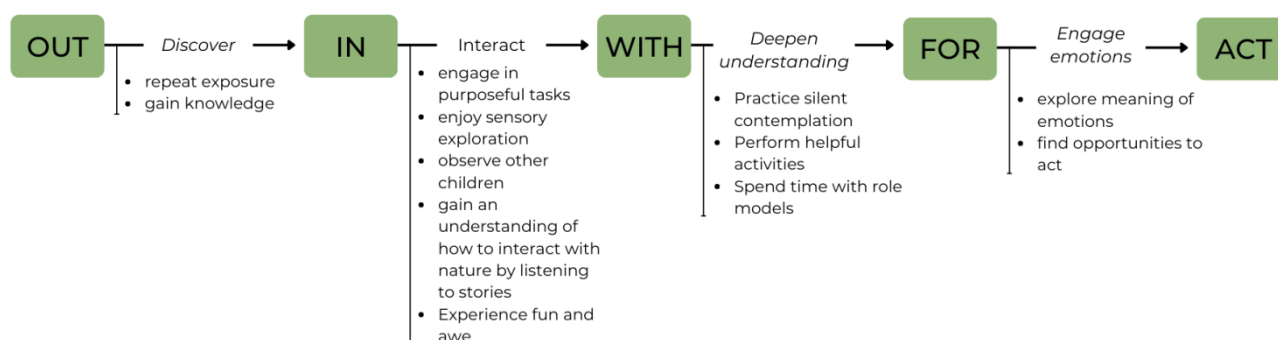
Table 5.1 Extension of Giusti and colleagues' (2018) findings on abilities possessed during the phases of nature connectedness

Giusti and colleagues (2018) abilities possessed during each phase of nature connectedness				
<i>Being OUT of nature</i>	<b>Being IN nature</b>	<b>Being WITH nature</b>	<b>Being FOR nature</b>	<i>ACT - Taking action</i>
<i>Being afraid of nature</i> <i>Unable to participate in activities or engage with the group</i> <i>Being fearful</i>	Feeling comfortable in natural spaces Being curious about nature	Reading natural spaces Acting in natural spaces Feeling attached to natural space Knowing about nature Recalling memories with nature	Taking care of nature Caring about nature Being one with nature	<i>Actively and verbally rebelling against actions that are detrimental to the environment</i>

Third and finally, by focusing on nature connectedness *as a process*, I offer a dynamic view of how nature connectedness unfolds and how children move from one phase to another. During my study, I noticed that the phases do not alone capture the full nature connectedness journey. Moreover, it is often difficult to contain a child to being within a particular phase. Rather, children exist mostly in transition spaces, moving from one phase to another. Focusing on supporting children to transition forward from one phase to another and on identifying phase-specific experiences that encouraged them to progress along their nature connectedness journey, I was able to extend the *phase view* of nature connectedness (offering a snapshot of where they are at) into a *process view* (showing how they move between phases).

A process view makes sense of the unfolding journey of nature connectedness by highlighting how a child transitions between the different phases of nature connectedness. My process view on nature connectedness is illustrated in Figure 5.1, while an adjusted version in line with Giusti and colleagues (2018) nomenclature and viewed from the perspective of the child is illustrated in Figure 5.2. When children are OUT of nature, it is important for them to *discover* nature safely through repeated exposure and by allowing them to gain knowledge about nature. This process may lead them to progressively feel comfortable and curious IN nature. Once they reach this phase of nature connectedness, they can start to *interact* with nature. They interact with nature when they engage in purposeful tasks, enjoy the sensory exploration of the environment, observe others having fun and hear stories that give them ideas on how to interact with the natural space. This can then lead them

to be WITH nature, feeling attached to natural spaces and associating good memories with nature. Once they reach this phase of nature connectedness, they can progress in their journey when they *deepen their understanding* of the natural world. This process usually takes place when children practice silent contemplation, are around role models or perform helpful activities. Deepening their understanding of nature may lead children to being FOR nature. Once they reach this phase of nature connectedness, children may struggle with certain conflicting emotions. When they *engage their emotions*, they explore the meaning of these emotions and often want to find opportunities to act. This leads them to ACT on behalf of nature.



**Figure 5.2 Process View of the journey of nature connectedness using, in-part, Giusti and colleagues' (2018) nomenclature**

While this process is presented here in a seemingly linear way, it is important to note that it is in fact a dynamic, fluid, iterative and complex process, where children may go both forward and backwards as they engaged with the natural environment. Children progress along their nature connectedness journey at their own individual pace and when they are supported through phase-specific experiences.

## **5.2 Which experiences encourage the development of nature connectedness?**

My study identifies phase-specific experiences that promote the development of nature connectedness and transitions towards greater connection. I noticed that the quality and depth of a child's nature connectedness could be strengthened through the provision of specific nature experiences. The experiences that promoted beneficial development depended on the phase of nature connectedness that the child was in and transitioning from. Children who are *afraid* of nature benefit from different experiences to those who are *comfortable* in nature. For instance, with

repeated exposure and increased knowledge about nature, the children transition to becoming *comfortable* in nature. Purposeful tasks, sensory experiences, observing other children and storytelling then encourage the children to *engage* in their natural environment. A *caring* for nature can be encouraged through silent contemplation, role models, fun and awe, opportunities to help and knowledge transfer. Children shift from personally caring for nature (*self*) to becoming an *activist* for pro-environmental behaviours after experiencing emotionally tumultuous events.

To date there is limited empirical research that provides a clear understanding of experiences that enhance the development of nature connectedness. Most prior research centres around a particular activity type: such as mindfulness, creative arts or storytelling (Moula et al, 2022; Barragan-Jason et al, 2021; Beer et al, 2018). However, these studies do not acknowledge the different phases of nature connectedness, nor recognise that these phases may affect the manner in which participants engage with the activity. While my findings were generally consistent with previous research on the types of nature experiences that encourage the development of nature connectedness – i.e. immersive experiences that are sustained over time (Beer et al, 2018; Giusti et al, 2018; Ardoin & Bowers, 2020; Mullenbach et al, 2019; Barthel et al, 2018) – my study adds to previous research in several ways: (1) by linking experiences to specific phases of nature connectedness and identifying which experiences promote transitions between the phases; (2) by proposing a shift in experience philosophy; (3) by highlighting the importance of purposeful tasks; and (4) by developing a novel idea of curating experiences for children to volunteer their help.

### **5.2.1 Experiences that promote transitions between the phases**

While Giusti and colleagues (2018) considered the qualities of the nature experiences that children relate with during each phase of connection, my study analysed which experiences (that possess qualities) promote the transition from one phase to the next. Consequently, my findings help us better understand how to support phase transitions. My study also adds value to our current understanding of in-phase experiences as it tests the applicability of phase-related experiences and provides a guideline for the intentional design of nature experiences that promote increasing nature connectedness.

### **5.2.2 Child-led as an experience philosophy**

Similarly to prior research, I found that nature experiences are most beneficial when led by the child. Prior research agrees that hands-on, informal, *self-initiated* exploration and discovery is necessary for the formation of nature connectedness (Wilson, 2011; Loupoukhine et al, 2014;

Leonard, 2013). Giusti and colleagues' (2018) attribute the self-initiated/child-led element of discovery to the phases of IN and WITH nature. However, I have not incorporated child-led activities in my mapping of transitions, as I believe that this element is not phase-specific, but rather one that should be embedded in the philosophy of the nature experience as a whole. The Kinship Programme practices the Montessori philosophy of *following the child*, and so the child leads in all activities and scenarios. Children in the *afraid* phase were followed by the facilitator, who adjusted the depth of entry into the forest and activity. Children in the *comfortable* phase were followed by the facilitator, who presented purposeful tasks around their interests. Children in the *engaged* phase were followed by the facilitator, who observed their activities and supplemented their experience by sharing knowledge. Children in the *caring* phase were followed by the facilitator, who supported them in their endeavours to action pro-environmental behaviour and through situations of profound emotion. It is evident that this approach can be applied to all phases of nature connectedness and therefore applies to the philosophy of the experience and not a specific phase. It is important to allow the child to lead the experiences, as in doing so the experiences become personal and meaningful (Murphy, 2003; Beer et al, 2018).

### **5.2.3 The benefit of purposeful tasks**

My study found purposeful tasks to be especially valuable for encouraging children in the *comfortable* phase to engage sensorially with the environment. Initially, the idea of purposeful tasks may appear to stand in contradiction to the statement that activities should be child-led. However, it is possible to present an activity, knowledge or experience that aligns with the children's interests, and then follow them in their manipulation of the activity/knowledge/experience. Whereas Giusti and colleagues (2018) do not incorporate purposeful tasks in their study, Mullenbach and colleagues (2019) and Richardson and colleagues (2022) advocate for the incorporation of direct learning aims to help people connect with natural spaces. My findings provide evidence to support this approach. The activities that were presented to the children - such as the building of a "bug hotel"- captured their interest and gave meaning to the space and objects around them. This meaning appeared to negate their uncertainty and encourage them to engage with the space. Without the meaning imparted through the purposeful tasks, it may have taken a lot longer for the children to move from feeling comfortable to actually engaging sensorially and acting in the natural spaces.

### **5.2.4 The importance of curating volunteering opportunities**

My study also found that it is important to carefully curate volunteering opportunities for the children that can be child-initiated and -led. During the *caring* phase the children often possessed a desire to help but required support in actioning this desire. During a standard Kinship session

several children happily collected litter without instruction for 90 minutes. However, during a session that held the primary aim of collecting litter, the same children - but now with instruction - appeared to lose interest. This pointed to the necessity to curate the opportunity for the experience but not instruct it. For example, host a session in a space that is riddled with litter; perhaps make a light remark about the litter; and then wait for the children to initiate its collection. As the facilitator is hoping this will happen, they should “happen to have” the equipment needed for litter collection. This agrees with Loupkhine et al’s (2014) encouragement to allow children the freedom to develop and lead their own initiatives. Their leading of the activity ensures that the responsibility lies with the children and the action becomes part of them, instead of being imposed on them - drawing them closer to the space, instead of pushing them away from it.

### **5.3 What role does the nature experience facilitator play in encouraging the development of nature connectedness?**

The nature experience facilitator has a large impact on the delivery of the experience, the child’s interpretation of it, and ultimately the child’s perception of nature. As the goal is to encourage the development of nature connectedness, it is valuable to understand how to tailor the facilitator’s approach to best achieve this connection.

I found that the children required different support and approaches from the nature experience facilitator depending on which phase of nature connectedness they were in or transitioning from. Children in each phase of nature connectedness gravitate to different qualities of nature experiences and the provision of these different types of experiences requires different forms of facilitation. My study thus identifies the different roles that the facilitator should embody when working with children in each phase of nature connectedness to encourage the furthering and deepening of this relationship. In particular, the children required the facilitator to act as *protector* during the afraid to comfortable transition; *initiator* during the comfortable to engaged transition; *observer* during the engaged to caring transition; and *navigator* while children move from a personal (*self*) sense of care to *activist*.

Prior research disagrees about the role and approach of the facilitator in nature experiences and did not consider the variations in facilitation methods and techniques to align the phase of the child’s nature connectedness to the approach of the facilitator (Barkham, 2020; Julie, 2016; Lapierre, 2017; Murphy, 2003; Hunter et al, 2019). Bilton (nd) and Hunter et al (2019) state that the facilitator should be an active learning ally, while Lapierre (2017) and Montessori Northwest (2008) call for the facilitator to step back and allow the child to lead.

My findings make sense of these contradictions and offer guidance on the role of the facilitator depending on the phase of nature connectedness in which children are situated. During my research, I found that both approaches have merit, but that their applicability actually depends on the phase of the child's nature connectedness. Before delving deeper, it is important to note that each child is in a different phase of connection and so the shifting of roles is a continuous process that will happen many times during each nature experience. During the *afraid* phase and *afraid - comfortable* phase transition the facilitator is primarily the protector- a role that has not been identified in prior research (protector). The role of playmaker (Bilton, nd) and active learning ally (Hunter et al, 2019) appears to be most applicable during the *comfortable* phase and *comfortable - engaged* phase transition with the facilitator illustrating the possible ways to interact with the environment (initiator). The retreat into the role of observer (Lapierre, 2017) applies to the *engaged* phase and *engaged - caring* phase transition (observer). During this phase, the children are confident in the space and know how to engage with it. Grain & Lund (2016), Feront (2021) and Chawla (2020) speak to the role that the facilitator plays in mentoring the children through critical emotions, showing them a new possible future and equipping them with the skills and tools that they require to achieve it. It is during the shift in the *caring* phase that children are mainly looking to champion pro-environmental behaviour, and so it is during this phase and phase transition that the facilitator becomes the navigator and key role-model for the child (navigator).

## 5.4 Practical implications

My findings can be applied practically during the daily facilitation of nature experiences, in the design of environmental education curricula, and in the informing of education policy. They illustrate that phases of nature connectedness can be usefully applied to a group of children through qualitative approaches to assess the level of nature connectedness - an alternative option to psychometric testing. My findings also illustrate that it is possible to intentionally design experiences that promote the development of nature connectedness and to provide a phase-based guideline on how to do so.

*At the Kinship Programme:* We have been applying my findings in practice for the past year. We observe the children, noting how they interact with the environment and classify them into a specific nature connectedness phase/phase transition. We then use this understanding to both (1) design the nature experiences, ensuring that the children are provided with the experiences that will hopefully promote their phase transitions and (2) alter the approach that we have to facilitating them during the session.



*For daily facilitation of nature experiences:* If you are a nature experience facilitator/teacher/parent/interested adult you are able to use the abilities outlined in the extended table of phases of nature connectedness (Table 5.1) to assess which nature connectedness phase each individual child is in. You can then incorporate the appropriate nature experiences in your daily activities to help strengthen this connection or encourage the transition to deeper connections (see Figures 4.3 - 4.6). While doing so, you can adopt the suggested facilitation roles (see Figure 4.7).

*For the design of environmental education curricula:* My findings support the notion for immersive, child-led learning experiences. If you are a nature experience facilitator/teacher/curriculum designer you can apply the suggested nature experiences in the design of curricula or nature interventions. Externally from this thesis, I have used this knowledge to develop a series of curricula that include these experiences in actionable lesson plans, such as the building of rivers, construction of bug hotels out of natural materials and pretending to be predators that track their prey through the forest. These lesson plans constitute the Kinship Programme curricula - please see Appendix C for an example.

*For education policy:* My findings highlight the importance of direct, sensory experiences as a prerequisite knowing for environmental education. This knowledge can be used to inform environmental education policies that value and call for direct and meaningful learning experiences. For example, policies could dictate that future environmental education projects in schools should include repeated, immersive experiences in nature, so that further learning becomes meaningful.

## **5.5 Research limitations**

My findings are limited by my sample demographics and the experiences that I was able to provide. In terms of demographics, my results are only applicable to children from middle to upper income backgrounds that live in urban areas. My findings will not necessarily translate to rural children, who live much closer to the land, and may have a very different relationship to nature. The general family interest and appreciation for nature also poses a limitation to my findings, rendering them potentially less applicable to contexts in which nature is not valued at home to the same degree, since there may be less reinforcement of the growing connection to nature. I also was not able to provide every type of nature experience as a result of location, time and cost. As a result, there may be elements missing from my findings. During each session, there were also many uncontrollable variables, such as group dynamics, that will have affected the activity and how the children experienced it.

## 5.6 Future research

My study points to several potential areas for future research, including a comparative study of nature connectedness of rural and urban children in Durban/South Africa, an investigation into the applicability of the suggested phase-based nature experiences in rural Durban/South Africa and an assessment of promoting the nature connectedness of pre-teens (9 - 12year olds) and teenagers.

First, while I selected a sample of urban children for my study, it would be interesting to assess the nature connectedness of rural children. I purposefully selected urban children for my study as many urban children experience a lack of access to nature and therefore form part of the global sample of children that are disconnected from the biosphere. Rural children tend to live more closely entwined with nature, and so it would be fascinating to assess their nature connectedness. The results obtained could build a more complete image of the state of nature connectedness of the children in South Africa.

Second, it would be interesting to assess the applicability of my findings to a group of rural children. My findings outline the nature experiences that help urban children connect with wild nature and progress along their journey of nature connectedness. In a more nature-rich environment, where families rely on nature for their livelihoods and relationships with nature may be more contested, would these experiences still be beneficial? And in an extension of this exploration of different demographics, do nature experiences that enhance nature connectedness transcend social and cultural beliefs?

Third, whereas I focused on children below the age of nine, one could assess how to stimulate the development of nature connectedness in pre-teens (nine – twelve years) and teenagers. I selected children between the ages of four and eight years since it is during these formative years that they are developing their self-identity, and it is believed that the period before the age of eight is crucial for the development of environmental identity (Ardoin & Bowers, 2020). A study of pre-teens and teenagers could assess whether similar nature experiences would be beneficial, or if older children require a qualitatively different set of activities to encourage their nature connectedness journey. It would be valuable to investigate how to navigate the development of nature connectedness in children that are older and do not have any form of base connection with nature.

## 5.7 Conclusion

*A path now lies before me  
that no longer leaves me  
wandering behind the child  
but walking alongside the adult.*

My research journey has had a profound effect on me and my perceived role in the world. By engaging in a detailed, thoroughly-planned and documented study, I was able to make sense of what I had been witnessing and informally testing while facilitating nature experiences. My findings on a process view of nature connectedness, with insight into what to provide children and how to approach them along their nature connectedness journey, has shaped both my own practice as a facilitator, and the systems and practices of the Kinship Programme. My initial guess-work has somewhat been consolidated into a guideline that I think will be able to shape the way that nature experiences are designed for intentionally developing nature connectedness. I feel that this knowledge is something that I should share and so I have developed something called Kinship in a Box. This includes training on how to identify phases of nature connectedness and facilitate accordingly – with curricula content and suggestions of themed nature experiences for each phase. My path feels to have shifted from solely focusing on the child to dancing between providing learning and training experiences for both adults and children.

I am extremely grateful for the rigour that grounded theory lent to my research and the deep relationships that a participatory action methodology allowed me to form during the process. I feel equipped to begin the learning journey that implementing my findings will bring, and working through each individual implementation to edit, refine and strengthen my study foundation.

## Reference List

- Adams, W., 2015. Chapter 4: Conducting Semi-Structured Interviews. In H.H.K.N. J. Wholey, ed. *Handbook of practical Program Evaluation*. 4th ed. Jossey-Bass.
- Adom, D., Yeboak, A. & Ankrah, A.K., 2016. Constructivism philosophical paradigm: Implications for research, teaching and learning. *Global Journal of Arts Humanities and Social Sciences*, 4, pp.1-9.
- Allen, W., 2016. *Participatory action research provides for multiple benefits*. [Online] Available at: <https://learningforsustainability.net/post/par/> [Accessed 24 June 2022].
- Ardoin, N. & Bowers, A., 2020. Early childhood environmental education: A systematic review of the research literature. *Educational Research Review*, 31.
- Barker, J. & Weller, S., 2003. "Is it fun?" : Developing children centred research methodology. *International Journal of Sociology and Social Policy*, 23(1/2).
- Barkham, P., 2020. *Wild Child*. London: Granta Books.
- Barrable, A. & Booth, D., 2020. Increasing nature connection in children: A mini review of interventions. *Frontiers in Psychology*, 19.
- Barragan-Jason, G. et al., 2021. Human-nature connectedness as a pathway to sustainability: A global meta-analysis. *Conservation Letters*, 15.
- Barthel, S., Belton, S., Raymond, C. & Giusti, M., 2018. Fostering children's connection to nature through authentic situations: The case of saving salamanders at school. *Frontiers in Psychology*, 9.
- Beer, T., Cook, A. & Kantor, K., 2018. Running wild: engaging and empowering future custodians of place through creative nature-based play. *Journal of Public Pedagogies*, 3.
- Beery, T., Ingemar Jonsson, K. & Elmberg, J., 2015. From environmental connectedness to sustainable futures: Topophilia and human affiliation with nature. *Sustainability*, 7, pp.8837-3354.

- Behrens, L., Rosen, L., Rogers, J.M. & Taylor, C., 2007. *Writing and Reading Across the Disciplines. Canadian edition*. Toronto: Pearson Longman.
- Bhandari, P., 2022. *Inductive reasoning: Types, examples, explanations*. [Online] Available at: <https://www.scribbr.com/methodology/inductive-reasoning/> [Accessed 24 June 2022].
- Bilton, H., n.d. *Playworker: The adult role in outdoor play and learning*. [Online] Available at: <https://www.firstdiscoverers.co.uk/playworker-outdoor-learning/#null> [Accessed 1 April 2022].
- Boeve-de Pauw, J. & van Petegem, P., 2012. The effect of Flemish eco-schools on student environmental knowledge. *International Journal of Science Education*.
- Bohme, J., Walsh, Z. & Wamsler, C., 2022. Sustainable lifestyles: towards a relational approach. *Sustainability Science*.
- Bryman, Bell & Hirschson, 2014. *Reserach Methodology: Business and Management Context*. 5th ed. Oxford University Press Southern Africa.
- Buchholtz, K., 2020. *How has the world's urban population changed from 1950 to today?* [Online] Available at: <https://www.weforum.org/agenda/2020/11/global-continent-urban-population-urbanisation-percent/> [Accessed 26 February 2021].
- Canlas, I.P. & Karpudewan, M., 2020. Blending the principles of participatory action research rpproach and elements of grounded theory in a disaster risk reduction education case study. *The International Journal of Qualitative Methods*, 19(3), pp.1-13.
- Carter, N. et al., 2014. The use of triangulation in qualitative research. *Oncol Nurs Forum*, 41(5), pp.545-47.
- Chaput, J. et al., 2018. Outdoor time and dietary patterns in children around the world. *Journal of Public Health*, 40(4), pp.e493-501.
- Charmaz, K., 2011. Grounded theory methods in social justice. In K. N. Denzin & S. Y Lincoln, eds. *The Sage Handbook of Qualitative Research*. Thousand Oaks, California: Sage Publications.

- Chawla, L., 2020. Childhood nature connection and constructive hope: A reivew of research on connecting with nature and coping with environmental loss. *People and Nature*, 2, pp.619-42.
- Collado, S., Straats, H. & Corraliza, A., 2013. Experienceing nature in children's summer camps: Affective, cognitive and behavioural consequences. *Journal of Environmental Psychology*, 33, pp.37-44.
- Cumming, G. et al., 2014. Implications of agricultural transitions and urbanization of ecosystem services. *Nature*, 515, pp.50-57.
- Darbyshire, P., MacDougall, C. & Schiller, W., 201. Multiple methods in qualitative research with children: More insight or just more? *Qualitative Research*, (<https://doi.org/10.1177/1468794105056921>).
- Ernst, J. & Theimer, S., 2011. Evaluating the effects of environmental education programming on connectedness to nature. *Environmental Education Research*, 17(11), pp.577-98.
- Fekete, A., 2021. Peri-urban growth into natural hazard-prone areas: mapping exposure transformation of the built environment in Nairobi and Nyeri, Kenya from 1948 to today. *10.21203/rs.3rs-1117045/v1*.
- Feront, C., 2021. *How do privileged insiders become change agents? A study of institutional volition*. PhD Thesis. UCT Graduate School of Business.
- Folke, C. et al., 2011. Reconnecting to the biosphere. *AMBIO*, 40(719).
- Forest School Canada, 2014. *Forest and Nature School in Canada*.
- Forves-Genade, K. & Niekert, D.v., 2017. The GIRRL program: A human rights based approach to disaster risk reduction intervention in Southern Africa. *International Journal of Disaster Risk Reduction*, 24, pp.507-14.
- Galal, S., 2022. *Largest cities in South Africa 2022*. [Online] Available at: [www.statista.com/statistics/1127496/largest-cities-in-south-africa/](http://www.statista.com/statistics/1127496/largest-cities-in-south-africa/) [Accessed 8 October 2022].
- Giusti, M., Svane, U., Raymond, C. & Berry, T., 2018. Framework to assess where and how children connect to nature. *Frontiers in Psychology*, 8.

- Giusti, M., Wang, W. & Marriott, T., 2020. Connecting land. A transdisciplinary workshop to envision a nature-connecting human habitat. *Cities and Health*, 10.1080/23748834.2020.1742491.
- Gordon, J., 2022. *Abductive Reasoning: Explained*. [Online] Available at: [https://thebusinessprofessor.com/en\\_US/management-leadership-organizational-behavior/abductive-reasoning-definition](https://thebusinessprofessor.com/en_US/management-leadership-organizational-behavior/abductive-reasoning-definition) [Accessed 24 June 2022].
- Grain, K. & Lund, D., 2016. The social justice turn: Cultivating "critical hope" in an age of despair. *Michigan Journal of Community Service Learning*, pp.45-50.
- Hordyk, S., Dulude, M. & Shem, M., 2014. When nature nurtures children: Nature as a containing and holding space. *Children's Geographies*.
- Hunter, J., Syversen, K.B., Graces, C. & Bodensteiner, A., 2020. Balancing outdoor learning and play: Adult perspectives of teacher roles and practice in an outdoor classroom. *International Journal of Early Environmental Education*, 7(2), pp.34-50.
- IPBES, 2019. *Global Assessment Report on biodiversity and ecosystem services on the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services*. Bonn, Germany: IPBES secretariat.
- Johson-Pynn, J., Johnson, L., Kitto, R. & Lugumya, D., 2014. Students and scientists connect with nature in Uganda, East Africa. *International Journal of Environmental and Science Education*, 9, pp.311-27.
- Jordan, M., 2009. Nature and Self: An ambivalent attachment? *Ecopsychology*, 1(1), pp.26-31.
- Julie, 2011. *Nature to nurture*. [Online] Available at: <https://julie-naturetonurture.blogspot.com/2011/10/outdoor-play-and-role-of-adult-eyfs.html> [Accessed 1 April 2022].
- Kelbessa, W., 2018. Environmental philosophy in African traditions of thought. *Environmental Ethics*, 40, pp.309-23.
- Kleespies, M.W., Braun, T., Dierkes, P.W. & Wenzel, V., 2021. Measuring connection to nature: A illustrated extension of the inclusion of nature in self scale. *Sustainability*, 13(4), p.<https://doi.org/10.3390/su13041761>.

- LaCapra, D., 2006. Experience and Identity. In L.M. Alcoff, M. Hames-García, S.P. Mohanty & P.M.L. Moya, eds. *The Future of Minority Studies*. New York: Palgrave Macmillan. pp.228-45.
- Lapierre, C., 2017. *Spirituality and Montessori Teacher Teams: The Path of the Heart*. Doctoral thesis. Calgary: University of Calgary.
- Leonard, G. & Allen, K., 2013. Experiences in nature: Resolute second-plane directions towards erdkinder. *The MANTA Journal*, 38(1), pp.153-63.
- Lieflander, A., Bogner, F. & Schultz, P., 2013. Promoting connectedness with nature through environmental education. *Environmental Education Research*, 10.
- Lincoln, Y., Lynham, S. & Guba, E., 2011. Paradigmatic controversies, contradictions, and emerging confluence, revisited. In K. N. Denzin & S. Y. Lincoln, eds. *The Sage Handbook of Qualitative Research*. Thousand Oaks, California: Sage Publications.
- Loupoukhine, N. et al., 2014. Empowering the next generation to connect with nature: A global movement. *Parks*, 20(2), pp.49-60.
- MacDonald, G., 2015. *The top 5 skills you need to be a successful Montessori elementary teacher*. San Diago: Montessori Institute of San Diago.
- Mail & Guardian, 2009. *Kenya's rainmakers called to combat climate change*. [Online] Available at: <https://mg.co.za/article/2009-09-20-kenyas-rainmakers-called-to-combat-climate-change/> [Accessed 6 March 2021].
- Mayer, F.S. & Franz, C.M., 2004. The connectedness to nature scale: A measure of individuals' feeling in community with nature. *Journal of Environmental Psychology*, 24, pp.503-15.
- McLoed, S.A., 2019. *What is the zone of proximal development?: Simply Psychology*. [Online] Available at: [www.simplypsychology.org/Zone-of-Proximal-Development.html](http://www.simplypsychology.org/Zone-of-Proximal-Development.html) [Accessed 20 April 2022].
- Middleton, F., 2019. *The 4 types of validity in research*. [Online] Available at: <https://www.scribbr.com/author/fionamiddleton/> [Accessed 2 March 2021].



- Montessori Centre International, 2013. *Child Development*. Module. London: Montessori Centre International Montessori Centre International.
- Montessori Northwest, 2008. *Suggestions and remarks upon observing children: From Dr Montessori's 1921 London Training Course*. AMI.
- Montessori, M., 2012. *The 1946 London Lectures*. 17th ed. Amsterdam: Montessori-Pierson Publishing Company.
- Moula, Z., Palmer, K. & Walshe, N., 2022. A systemic review of arts-based interventions delivered to children and young people in nature or outdoor spaces: impact on nature connectedness, health and wellbeing. *Frontiers in Psychology*, 13.
- Mullenbach, L., Andrejewski, R. & Mowen, A., 2019. Connecting children to nature through residential outdoor environmental education. *Environmental Education Research*, 25(3), pp.365-74.
- Mundaca, E., Lazzaro-Salazar, M., Pujol-Cols, L. & Munoz-Quezada, M.T., 2021. The emotional and cognitive scale of the human-nature relationship (ECS-HNR). *SAGE Open*, (January-March), pp.1-12.
- Murphy, M., 2003. *Maria Montessori on the natural formation of character in young children*. Illinois: University of St Francis.
- National Community Development Institute, 2006. *The act of facilitation: A facilitator's guide*.
- Neaum, S., 2016. Observing and Assessing Children's Learning and Development. In *Child Development for Early Years Students and Practitioners*. London: Sage. pp.139-53.
- Nilsson, D., Baxter, G., Butler, J. & McAlpine, C., 2016. How do community-based conservation programs in developing countries change human behaviour? A realist synthesis. *Biological Conservation*, 200, pp.93-103.
- Nisbet, E., Zelenski, J. & Murphy, S., 2009. The nature relatedness scale: Linking individuals' connection with nature to environmental concern and behavior. *Environment and Behaviour*, 41(5), pp.715-40.
- O'Brien, L., 2009. Learning outdoors: The Forest School approach. *Education 3-13*, 27(1), pp.45-60.

- O'Neill, A., 2022. *Urbanisation in South Africa 2021*. [Online] Available at: <https://www.statista.com/statistics/455931/urbanization-in-south-africa/> [Accessed 30 August 2022].
- Peterson, G. & Elam, E., 2020. *Observation and Assessment in Early Childhood Education*. California: College of the Canyons California Community Colleges.
- Pritchard, A., Richardson, M., Sheffield, D. & McEwan, K., 2020. The relationship between nature connectedness and eudaimonic well-being: A meta-analysis. *Journal of Happiness Studies*, 21, pp.1145-67.
- Pyle, R.M., 2003. Nature reconnected people and nature. *Oryx*, 37(2).
- Raymond, C.M., Kaaronen, R., Giusti, M., Linder, N., Barthel, S. 2021. Engaging with the pragmatics of relational thinking, leverage points and transformations – reply to West et al. *Ecosystems and People*. 17(1):1–5. doi:10.1080/26395916.2020.1867645
- Reddy, C., 2021. Environmental education, social justice and teacher education: Enabling meaningful environmental learning in local context. *South African Journal of Higher Education*, 35(1), pp.161-77.
- Restall, B. & Conrad, E., 2015. A literature review of connectedness to nature and its potential for environmental management. *Journal of Environmental Management*, 159, pp.264-78.
- Richardson, M. et al., 2020. Applying the pathways to nature connectedness at a societal scale: A leverage points perspective. *Ecosystems and People*, 16(1), pp.387-401.
- Richardson, M. et al., 2022. Actively noticing nature (not just time in nature) helps promote nature connectedness. *Ecopsychology*, 14(1).
- Riechers, M., Martin-Lopez, B. & Fischer, J., 2022. Human-nature connectedness and other relational values are negatively affected by landscape simplification: Insights from Lower Saxony, Germany. *Sustainability Science*, 17, pp.865-77.
- Rosa, C., Profice, C.C. & Collado, S., 2018. Nature experiences and adult's self-reported pro-environmental behaviours: The role of connectedness to nature and childhood nature experiences. *Frontiers of Psychology*, 9, p.article 1055.

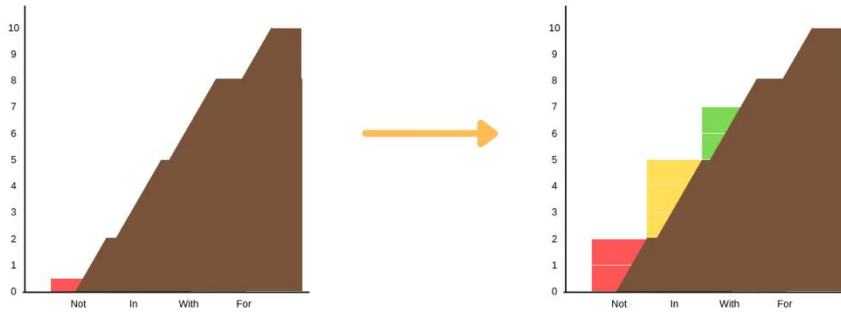
- Salmon, E., 2000. Kincentric ecology: Indigenous perceptions of the human-nature relationship. *Ecological Application*, 10(5), pp.1327-32.
- Sellman, D. & Bogner, F., 2013. Climate change education: Quantitatively assessing the impact of a botanical garden as an informal learning environment. *Environmental Education Research*, 19(4), pp.415-29.
- Seymour, V., 2016. The human-nature relationship and its impact on health: A critical review. *Frontiers in Public Health*, 4.
- Sills, J., 2018. Nurturing connections to the environment. *Science*, 362(6417), pp.886-88.
- Smith, S., 2006. Encouraging the use of reflexivity in the writing up of qualitative research. *International Journal of Therapy and Rehabilitation*, 13(5).
- Soga, M. & Gaston, K., 2016. Extinction of experience: The loss of human–nature interactions. *Frontiers in Ecology and the Environment*.
- Steffe, W. et al., 2015. Planetary boundaries: Guiding human development on a changing plane. *Science*, 347(6223).
- Swain, J. & King, B., 2022. Using informal conversations in qualitative research. *International Journal of Qualitative Methods*, 21, pp.1-10.
- Taylor-Powell, E. & Stelle, S., 1996. *Collecting Evaluation Data: Direct Observation*. Program Development and Extension. Wisconsin: University of Wisconsin.
- Teram, E., Schachter, C. & Stalker, C., 2005. The case for integrating grounded theory and participatory action research: empowering clients to inform professional practice. *Qualitative Health Research*, 15(8), pp.1129-40.
- Türkoğlu, B., 2019. Opinions of preschool teachers and pre-service teachers on environmental education and environmental awareness for sustainable development in the preschool period. *Sustainability*, 11(4925), p.doi:10.3390/su11184925.

- Turtle, C., Convery, I. & Convery, K., 2015. Forset Schools and environmental attitudes: A case study of children aged 8-11years. *Cogent Education*, 2(1).
- United Nations, 2021. *The Sustainable Development Goals Report*. ISBN: 978-92-1-101439-6. New York: United Nations Publications Department of Economic and Social Affairs.
- Vaughn, L. & Jacquez, F., 2020. Participatory research method: Choice points in the research process. *Journal of Participatory Research Methods*, 1(1).
- Vila-Henninger, L. et al., 2022. Abductive coding: Theory building and qualitative (re)analysis. *Sociological Methods & Research*, (<https://doi.org/10.1177/00491241211067508>).
- Vroegop, J., 2014. *Nature connectedness and winter camping: A combination of quantitative and qualitative approaches*. Master's Thesis. Linkopings: Linkopings Universiteit Institutionen för kultur och kommunikation.
- Walter, M., 2009. Participatory action research. *Social Research Methods*. (pp. 151-158). London: The Falmer Press.
- Wells, N.M. & Lekies, K.S., 2006. Nature and the life course: Pathways from childhood nature experiences to adult environmentalism. *Children, Youth and Environments*, 16(1).
- West, S., Haider, L.J., Stålhammar, S. & Woroniecki, S., 2021. Putting relational thinking to work in sustainability science: Reply to Raymond et al. *Ecosystems and People*, DOI: 10.1080/26395916.2021.1898477, pp.108-13.
- Wilson, C., 2011. *Effective approaches to connect children with nature*. Wellington: Department of Conservation.
- Wilson, E. O. (1984). *Biophilia*. Cambridge: Harvard University Press.
- Zahra, E., 2020. What is sensory processing disorder or sensory integration. In *COPE Sessions*., 2020. Ministry for Education and Employment National School Support Services.
- Zylstra, M., Knight, A., Esler, K. & Le Grange, L., 2014. Connectedness as a core conservation concern: An interdisciplinary review of theory and a call for practice. *Springer Science Reviews*, 2, pp.119-43.

Appendices

**Appendix A: Child profile**

**Sneaky**



Sneaky is 5years old and has an older sister Ki. Both of his parents work. His family are comfortable outside. In the morning he attends a Montessori school and spends his afternoons playing at home. The school has Astroturf grass and the children are not permitted to climb the trees. He spends approximately 2hours outside in the afternoon- although this does depend on the weather. He enjoys climbing his jungle gym. His family recently got a new dog and Sneaky explores the lower garden with Francis, creating hide-outs in the bushes. The lower garden is wild. Before Francis, Sneaky was very tentative of going down to the lower garden on his own.



This is Sneaky at the bottom of his garden with Francis. They hide in these bushes. The background is rocks.

**FigureA1 Sneaky's child profile**

## Appendix B: Illustrative stories

There are another eight children that feature prominently in our story. This section provides a small introduction to each of them: summarising their initial position in nature, experiences that influenced their journey and their position in nature after the six month observation period. I utilized the abilities that they exhibited to rate which phase of connectedness they were in. Their influential experiences come both from my interviews with the children and their parents, as well as my observations.

Tiger, a five-year-old boy, was initially comfortable in a wild environment. However, he didn't initiate play, suggesting that he was in the *afraid* phase. He was absolutely awestruck by the many new discoveries that he made - from simple realisations of how sand flows through the air to more complex understandings of how rocks form layers over time. Through his deep sensory immersion he came to believe that "Nature means life. Things grow, things live and walk and move." He felt that his plants make him part of nature and mentioned that he wishes to be "whole in nature". Tiger joined us for an overnight hike where we slept in a cave. This experience, as well as his family camping trip in Botswana, had profound effects on him and his relationship with the wild environment. He often spoke about them and his mom noted that she watched him develop and grow through these times. Tiger stopped attending Kinship towards the end of the observation period and mentioned in the follow-up interview how much he missed the forest and that instead of coming, he carefully cared for his plants now. As illustrated in Figure B1, it appears that Tiger transitioned from the *comfortable* to the *caring* nature phase.

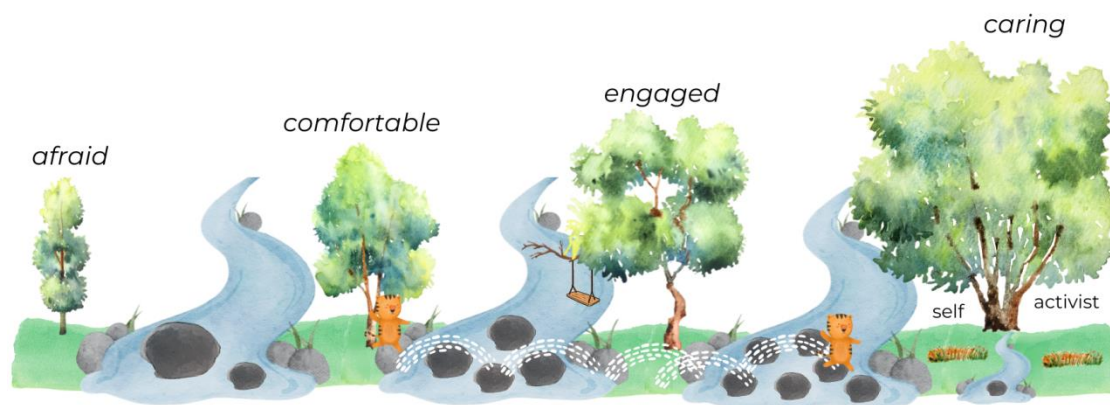
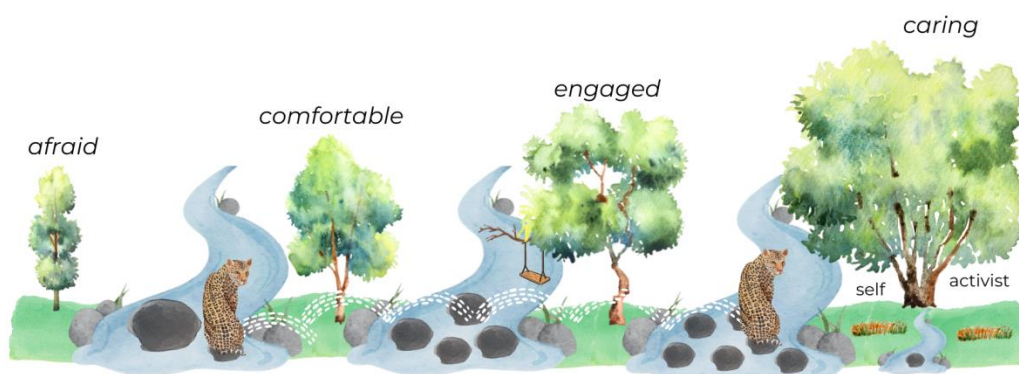


Figure B1 Tiger's journey of nature connectedness

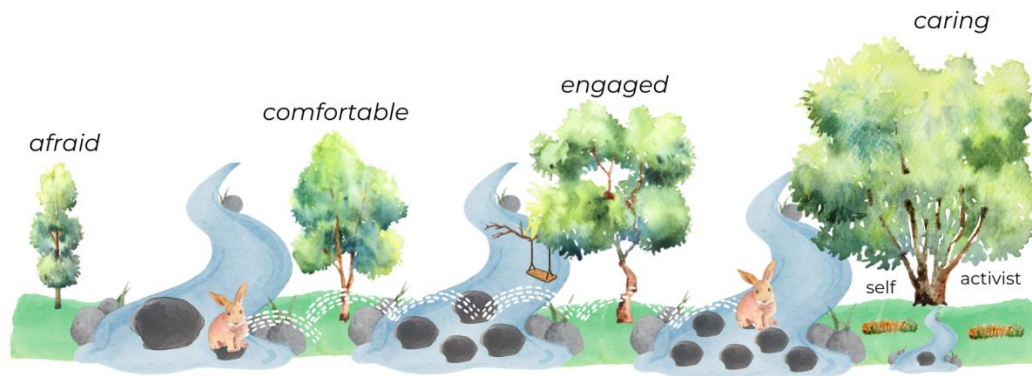
Shy, a five-year-old girl, was initially very tentative when entering wild spaces. She used to hold her cousin's hand for comfort. She also didn't enjoy getting dirty. She refused to visit a few spaces, despite having never been there, because she believed that monkeys lived there. Slowly, with repeated exposure she began to relax in the environment and engage sensorially. She drew on her

knowledge about the environment to help her connect. Through storytelling she gained an understanding of how to play in the new environment, and after discussing bushmen, she would frequently pretend to make fires and identify caves. She had a keen interest in saving animals, which was fuelled by her studies at school. Her favourite activity was “predators track prey”, where we hunt each other through the forest, disappearing into the overgrowth. While Shy did not spend much time in nature outside of Kinship, she felt part of it, and referred to one of the forests that we visited as her “favourite home”. As illustrated in Figure B2, Shy transitioned from being *afraid* in nature to *engaged/caring* nature.



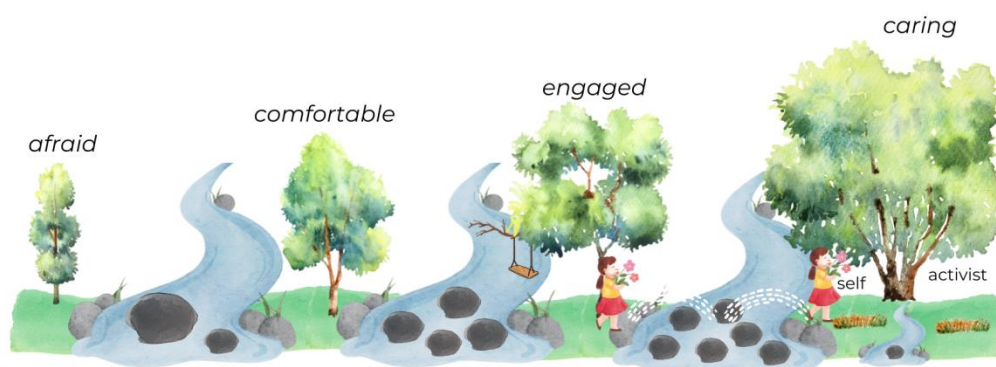
**Figure B2 Shy's journey of nature connectedness**

Humangasaur, a five-year-old boy, was rather tentative and used to hold his friend’s hand and wait for her guidance in activities. Initially he said that he wasn’t sure what he liked to do in nature, mimicking the other children. Humangasaur had quite a long day at school and so often when he would reach Kinship he was already a little tired. He really enjoyed fast paced adventures and activities that kept him stimulated. Running, playing with sticks and building forts became his favourite activities. He began to develop his will in the environment and grew more confident when playing. He began to build an association and relationship with one of our venues and would point it out to his mom saying “That is where Kinship is” every time they drove past. His initial opinion that he didn’t really like nature changed to “Nature makes me happy”. He also developed more awareness about the environment- especially in noticing litter. He told his parents that “At Kinship we pick up litter too”, and started questioning why people litter. As illustrated in Figure B3, Humangasaur appears to have made the transition from *afraid/comfortable* nature to being in the *engaged/caring* phase.



**Figure B3 Humangasaur's journey of nature connectedness**

Eye of the Tiger, a seven-year-old girl, was very comfortable and confident in the environment from her very first day. She was engaging with the environment and loved looking for bugs and climbing trees. Over the six month period she joined on two overnight hikes and relished in the experience. Her mom said that she tells everyone that sleeping in caves is her favourite thing to do. Her confidence extended so that she was comfortable enough to care for others in experiences that they did not feel comfortable in. This resulted in her being a natural leader during our wild experiences. She exhibited care for animals, remarked on the new knowledge she gained, and grew in awareness about environmental issues. Her mom said that “She takes littering personally” and will reprimand people for their actions. Eye of the Tiger said that she loves everything in nature and this love is what makes her part of the environment. Over the six months, she journeyed from being *engaged* nature to *caring* for nature. Her journey is illustrated in Figure B4.

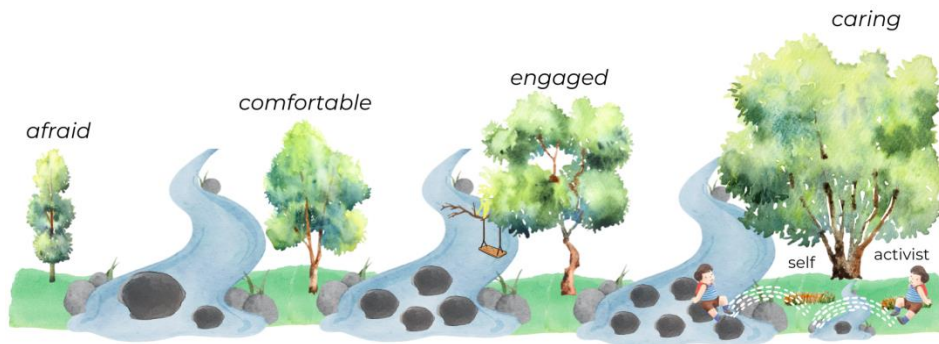


**Figure B4 Eye of the Tiger's journey of nature connectedness**

Flash, a six-year-old boy, was “raised in mud” as his mum described it. From the beginning of his time at Kinship he was very confident in the environment and capable of using it for play. He frequently retreated to quiet places in the forest to just observe. He enjoyed exploring and hiding in long grass. He also cared for the environment, looking out for insects and making sure that other children did not pluck leaves or flowers off the plants. When another child tried to crush a crab hole, Flash was distraught. He started shouting at the other child, telling him that it was the crab’s

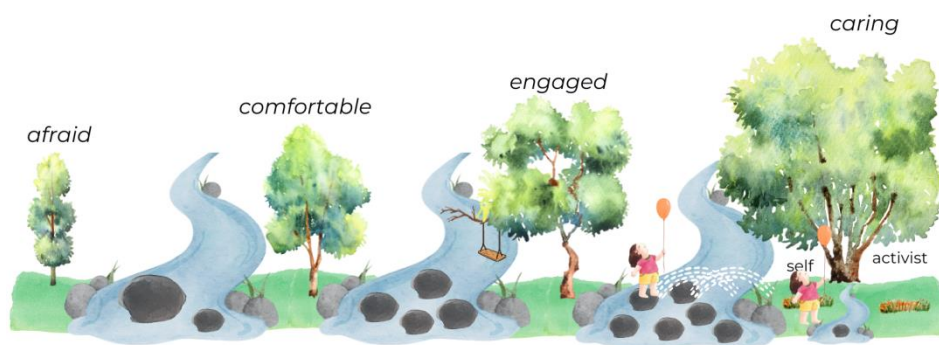


home and he cannot destroy it. In other similar experiences that evoked his emotion, Flash moved into the role of active environmental protector (*activist*). Flash really felt things and had a deep concern for the environment. His mom stated that “he has developed a beautiful awareness since starting Kinship, which we were trying to foster but not very well, only once a week.” His response corroborated this- when asked what he learnt at Kinship he said “That you must respect nature.” His sister, Flower, noted just how much Flash does to help nature. As illustrated in Figure B5, Flash transitioned from being *caring (self)* nature to *caring (activist)*.



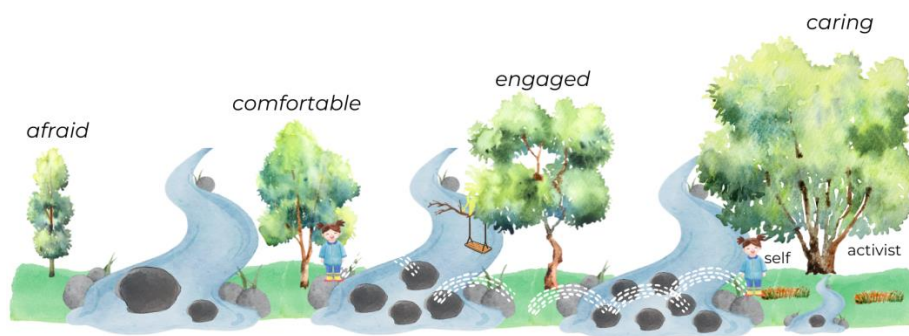
**Figure B5 Flash's journey of nature connectedness**

Flower, a four-year-old girl, was immediately comfortable in the environment. She enjoyed sensorially engaging with the environment: climbing trees, hiding in thickets and making mud potions. She spent plenty of time looking and caring for little creatures. She felt that she was most a part of nature when she did things to help nature, for example giving her plants food. She said that “I’ve learnt that we need to treat nature really good.” Her mum said that Flower was becoming more aware of litter and other detrimental events in nature. Her mom was also encouraging her to find a quiet space in nature that could help her regulate her emotions. As illustrated in Figure B6, Flower moved from being in the transition between *engaged* and *caring* for nature to being *caring (self)* nature.



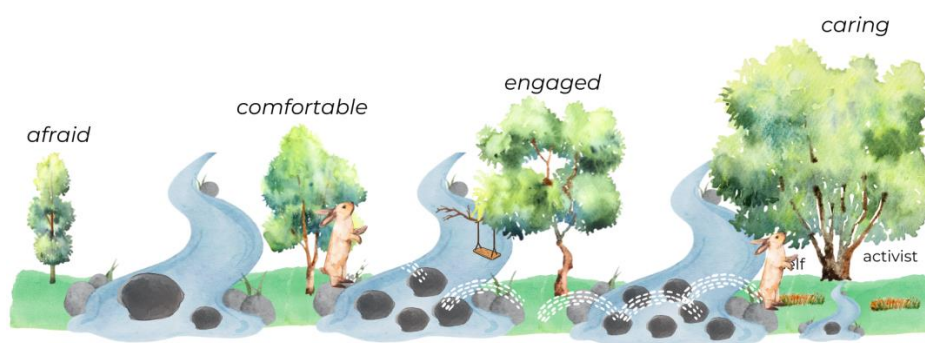
**Figure B6 Flower's journey of nature connectedness**

Little Bird, a four-year-old girl, was initially very careful and unsure of how to interact with the environment around her. Nevertheless, she was very excitable and willing to engage. She had a light sensory aversion, walking on her tippy toes if the grass was wet and avoiding mud play. The family embarked on a deeply immersive journey and Little Bird loved gaining knowledge about the world around her. She grew a lot more comfortable in nature, and even covered her entire body in mud. She had great concern for animals, particularly birds, and exhibited care for them. During our interview she referred to herself as the one that loves nature, saying that “Nature is a place full of quietness and it’s beautiful. Nature makes me feel calmness and calmness is what I like to be.” As illustrated in Figure B7, over the six months Little Bird journeyed from being *comfortable* in nature to *caring* for nature.



**Figure B7 Little Bird's journey of nature connectedness**

Ancient, a four-year-old boy, was initially very observant and interested in nature. He loved going on nature walks but didn't really use nature. Knowledge helped him feel comfortable: for example, learning about different trees aided him build his connection with the environment. He loved adventure walks and hiding in the forest. He was also very aware and concerned about nature. Some of the children wanted to make potions and he told them that we should not because potions have chemicals in them and the chemicals are dangerous for the animals that live around us. Ancient found nature very peaceful and used it as his comfort space to retreat to when the world became a bit much. He exhibited care for animals, moving them out of the path. As illustrated in Figure B8, he started to transition from being *comfortable* in nature to *caring* for nature.



**Figure B8 Ancient's journey of nature connectedness**

## Appendix C: Example of a bug hotel lesson plan

### Lesson Aim:

Develop an interest in the little creatures living around us

### Materials:

- A base for the bug hotel
- Bug hotel cards (provided): explaining which bugs live in different materials
- Art supplies
- Glue
- Junk modelling supplies so that the hotel can have different nooks and crannies

### Step by Step guidelines:

- Call the children in for a welcome circle. Talk through the bug hotel cards, exploring where different creatures live
- Go on a hike through the forest to collect supplies: dead leaves, bark, small twigs etc
- Come back to the picnic blanket and assemble the bug hotel
- Allow the children to decorate it as they wish and perhaps even make signs pointing the bugs to their hotel
- Walk through the forest to find the perfect home for your bug hotel

### Questions for higher order thinking:

Do you think all of the bugs live harmoniously together?

Which bugs do you think “get on well” or are friends?

### Follow-up activities:

Nature art

Forest fire running game