

**Master's Programme in Nordic Master's in Visual Art and Art Education**

# **Sensing otherwise: From Multispecies Empathy to Entanglement through Art**

---

**Noreen Ali**

**Master's thesis  
2025**

---

**Author** Noreen Ali

---

**Title of thesis** Sensing otherwise: From Multispecies Empathy to Entanglement through Art

---

**Programme** Nordic Masters in Visual Art and Art Education

---

**Thesis supervisor** Professor, Dr Mie Buhl

---

**Thesis advisor(s)** Assistant Professor Tervo Juuso

---

**Date** 26.05.2025

**Number of pages** 55

**Language** English

## Abstract

Can we ever truly empathise with another? Is it genuinely possible to step into another being's shoes without reducing their lives to a projection of our own?

Taking these questions as a point of departure, this thesis challenges the conventional concept of empathy as solely a human ability. Instead, it reframes empathy as an entangled and relational, co-constitutive mode of being that includes both humans and non-humans.

The junction of art, ecology and education is establishing itself as a fertile ground for reimagining human-nonhuman relationships, in the face of ecological collapse driven by extractivist worldviews. The damage to this web of life continues to accelerate, like an endless cascade of falling dominoes. Education as a site for future making holds transformative potential to shift away from an exploitative, profit-driven mindset to more ethical and responsible modes of co-existence. This thesis offers a modest contribution to this evolving field by using art and empathy as a compass to navigate multispecies entanglements.

Building on the Multispecies postcard project, developed during the third semester internship at an innovation agency, this research critiques the initial design's tendency to reimpose anthropocentric hierarchies. The initial design invited participants to write from a non-human species' perspective to humans, but the responses often remained superficial, and guilt driven. This prompted a deeper inquiry: can empathy, conventionally understood as stepping into another's shoes: truly enable meaningful multispecies connection? Or should the meaning of empathy be redefined?

Using a design-based research (DBR) approach, this study uses iterative cycles of design, testing, analysis and reflection. It builds on interviews and feedback from art educators of grades 4-6 in Denmark and Pakistan and stands on the theoretical frameworks integrating posthumanism, critiques of Anthropocene and affective multimodal approaches in art education.

The findings suggest that while the redesigned tool has potential to ignite multisensory awareness, relational thinking and multispecies awareness, its effectiveness depends on further testing with both teachers and students, and be more attuned to ethical, cultural and logistical contexts. Instead of a universally adaptable tool, this research proposes flexible provocative design principles (speculative fabulation, art of noticing, collaboration and multimodality) to guide future multispecies educational interventions.

Ultimately, this thesis does not offer a prescriptive method but extends an open invitation to compost rigid curricula towards attending to messy, generative work of learning with the more than human, enabling new, situated modes of "worlding".

**Keywords:** Multispecies, Entangled Empathy, Design-based research, Posthumanism, Art, Pedagogy, Ethics

---

## Table of Content

<b>Acknowledgments</b>	<b>5</b>
<b>1. Introduction</b>	<b>6</b>
1.1. Problem statement	8
1.2 Knowledge gap	11
1.3 Research Question	12
<b>2. State of art:</b>	<b>12</b>
2.1 The Anthropocene Debate:	12
2.2. Posthumanist futures and ethics of entanglement:	14
2.3. Reconfiguring Education: Intra-active classrooms	17
2.4. Affective Compost: Posthuman approaches to art education	18
2.5. Einfühlung to Entanglement: Reimagining empathy through art	20
<b>3. Research design – Methodology</b>	<b>24</b>
3.1 DBR:	24
DBR Phases:	25
3.2 Pragmatism:	26
3.3 Fieldwork:	27
3.4 Semi-structured Interview:	27
3.5 Thematic Analysis:	28
<b>4. Design based research in practice:</b>	<b>29</b>
4.1. Phase 1 Problem identification/context analysis	29
4.2. Phase 2 Design: From Multispecies Empathy to Multispecies Entanglement	35
4.2.1 Design Principles:	39
4.3. Phase 3 try-out/test of design	44
4.4. Phase 4 reflections of the design based on test results	49
<b>5. Discussion</b>	<b>55</b>
<b>6. Conclusion</b>	<b>60</b>
<b>References</b>	<b>61</b>
<b>Appendices</b>	<b>68</b>
Appendix 1 Initial Multispecies Empathy tool (developed during internship)	68
Appendix 1a: Postcard Messages- Desire conference at DAC (during internship)	74
Appendix 1b: Postcard Messages- school-grade 6 (during internship)	76
Appendix 1c: Feedback by students and their teacher (D1)	77
Appendix 2 Design ideation	79
Appendix 3 Redesign	83
Appendix 4 Thematic analysis	94
Appendix 5 Interviews	101
Appendix 5a: Feedback from 6th grade art educator (D1) (with whom the first iteration was tested)	101
Appendix 5b: Danish art educator's feedback(D2)	103
Appendix 5c: Pakistani 6th Grade Art Educator(P3):	111
Appendix 5d: Pakistani Art Educator (P1)	120
Appendix 5e: Pakistani Art Educator (P2)	132
Appendix 6 Students' Feedback By Danish educator (D2)	140
Appendix 7 Interview with Anna Tsing	144
Appendix 8 Consent	165

## Acknowledgments

This journey would not have been possible without the constant support and guidance of my mentors, friends, and family.

I would like to sincerely thank my supervisor, Mie Buhl, for her relentless patience, guidance, and encouragement. In the overwhelming process of writing this thesis, her concrete feedback, ongoing motivation, and reminder to trust the process helped me move forward one step at a time.

Thank you, Tervo Juuso, for helping me untangle my chaotic and abstract ideas. Your kindness and thoughtfulness kept me afloat throughout my thesis and this master's program.

I feel incredibly fortunate to share this journey with a cohort of such kind people. Thank You, NoVAs! Each one of you is incredibly unique, kind and brought something inspiring to this experience.

I would like to thank my parents and partner, who has been a persistent source of strength and calm. Their support helped me navigate moments of panic with ease. I am deeply grateful to them for encouraging me to power through this transformative journey.

Lastly, a big thanks to all the creatures seen and unseen, for a constant source of inspiration. Especially to the twin white cats, and the barn swallow couple nesting on my front door. It is a great source of happiness for me to see their eggs finally hatch on this last day of writing.

# 1. Introduction

As a visual artist from Pakistan, my practice is entrenched in examining themes of coexistence, interspecies relationships, and the complexities of the Anthropocene. My work originated from an emotional and intellectual engagement with the often-marginalised realities of non-humans, within the socio-cultural and ecological landscape around me.

Observing the systematic oppression of animals, minimised to means for labour, entertainment, or economic gain, has driven me to question the hierarchies that govern human-nature relationships. I aim to challenge the anthropocentric narratives through my art, and create visuals that highlight the entanglement of humans and non-humans, encouraging us to reassess our place in the world. This research does not aim to critique any singular context. Still, it is a collective appeal to consider the ethical and ecological implications of humanity's disconnection from the more-than-human world. Building on my interest in exploring the notion of posthuman studies, coexistence, and the interconnectedness of the world, I pursued an internship in the fall of 2024 as part of my Nordic master's in Visual Studies and Art Education (NoVA). I joined NXT, an innovation agency in Copenhagen, to contribute to Desire by X, an EU-funded project under the New European Bauhaus initiative. This initiative seeks to foster an "irresistible circular society" by challenging conventional thinking around planetary boundaries and multispecies inequality, emphasizing "aesthetics, belonging, biodiversity, circularity, and movement" (*Desire: An Irresistible Society*, 2024). During the project, we developed a range of both analogue and digital tools, including multispecies postcards, reflection cards, and a poster. The concept of multispecies postcards emerged from a writing exercise conducted by Helene Johanne, the first artist involved in the phases of urban development, positioning artistic practice not merely as a final outcome but as a methodological approach to engaging and reimagining the world (Desire, 2023).

This experimental project took place in Herlev, Denmark, where an asphalt factory was transformed into a residential area. As part of this transformation, a temporary droplet-shaped greenhouse-like structure was installed adjacent to the construction site. Artists selected through an open call who assumed the role of the "garden caretaker," inhabited this space residing there for two weeks to conduct artistic research and draw attention to the site through creative methods. The methodology, termed "being of place," involved a deep engagement with the location's history, characteristics,

and ecological context to foster a sense of belonging and emphasize the interconnectedness of all living beings, as well as the responsibility humans hold toward the environment (Rodriguez, n.d.). Johanne's writing exercises invited participants to write letters to non-human species and natural phenomena, in an effort to foster environmental sensitivity and question anthropocentric perspectives.

Based on Johanne's exercise, the multispecies postcard activity was further developed as a tangible tool/activity for the Desire project, designed to foster more empathetic and meaningful engagement. The postcard format invites the participants to embody a specific species or natural phenomenon depicted on the postcard, and write a message to the humans, seeing the world through the lens of that species. The aim of this practice was to move away from a guilt-focused to ideas about connection, understanding, and coexistence with the more than human world. The multispecies postcard format is free and can be utilized as a tool in workshops or classrooms to increase participants' empathy toward non-human species.

As stated on the project's website, "It acts as an important reminder to design for a biodiverse and caring place" ([Multispecies Postcards - Desire](#)). By working with these formats, I was re-invigorated to consider how embodied modes of artistic inquiry can cultivate multispecies empathy. Testing the multispecies postcard tool has grown my interest in art-based interventions that can cultivate empathy for non-human life, especially in educational settings. It also intensified my aim of investigating the potential of such interventions to instill empathy for non-human beings while raising important questions: Can humans "speak for" another species without reinforcing anthropocentric frameworks? Is trying to embody or stepping into a non-human's shoes an anthropocentric risk that, instead of shattering hierarchies between humans and non-humans, recenters the anthropocentric perspective? These questions raise the complexities and ethically debatable nature of efforts aimed at promoting multispecies empathy through artistic and educational practices.

Even though much work has already been done at the intersection of multispecies empathy, art, and education, my aim is not to reinvent the wheel but to offer a small yet meaningful contribution to this evolving field of inquiry. By layering on existing research and practices, I hope to investigate into and expand the discourse from my perspective, voice and interventions. This is where the thesis is as an experimental exploration; interested in the potential of multiple outcomes as opposed to rigid expectations and foreseen outcomes. This approach encourages intellectual openness, critical inquiry and reflexive learning on the subject matter.

## 1.1 Problem statement

The pace of irreversible global ecosystem degradation is propelled by anthropocentric worldviews and capitalist frameworks, evident in accelerating biodiversity loss, ocean acidification, and climate collapse due to impulsive, unchecked advancements. This crisis is realized most intensely when environmental collapse directly endangers human populations (Duobliene & Vaitekaitis, 2021, 37-38). One of the latest instances, which reveals the fragility of human-nature interdependence, is the California wildfires, which destroyed many people's livelihoods and displaced communities. However, these crises are not isolated incidents but symptoms of a deeper systemic failure. Much of the ongoing decline is largely driven by human activities shaped by the consumerist and competitive societal framework, which views the natural world as exploitable resources (Jackson, 1994; Kahn, 2010; naess, 2008; Speth, 2008 as cited in Tom Anderson & Anniina Suominen Guyas, 2012). In an interview with Anna Tsing (2024), she stressed the need to think about more than just human livability. She stated that it's a common 20th-century idea that humans could instil damage on the planet and still live a comfortable life has proven false. Tsing (2024) criticises the fantasy of escaping to space as a solution for planetary destruction, contending that such a view misunderstands reality. Furthermore, she noted that human survival depends on multi-species relationships, including plants, animals, fungi and bacterias that aid digestion and skin-health. These interdependencies are essential for human and non-human survival. This fantasy of abandoning Earth for a new planet encourages reckless destruction, as if we have a Plan B (Tsing,2024, Appendix 7).

This pervasive anthropocentric worldview reduces non-human entities and ecosystems to exploitable resources, rather than recognising them as agential beings with intrinsic value (Chao & Celermajer, 2023, 1-2). Addressing this crisis requires a radical reimagining of human-nature relationships, one that centres on empathy, coexistence and the rights of a more-than-human world. This research positions art education and multispecies empathy as critical tools for fostering such a paradigm shift, challenging the hierarchies that normalise ecological injustice and offering creative pathways toward ethical and sustainable futures.

Education shapes people's attitudes and worldviews, yet it remains rooted in humanist traditions and inherited patterns of thought persisting from generation to generation; It prioritises economic productivity over ecological responsibility. Modern education primarily focuses on shaping students into "proper humans", productive workers and consumers who contribute to the global economy without reflecting on philosophical questions about our interconnectedness within the web of life



(Snaza, 2015, 4). This human-centred perspective reinforces individualism, competitiveness, while failing to instil ethical responsibility towards non-human species. As noted in UNESCO's 2020 report: *Learning to Become with the World: Education for future survival*, calls for a turn towards post-anthropocentrism, it argues for contemporary education to develop "ethical responsibility and multispecies empathy" (Duobliene & Vaitekaitis, 2021, 40-41). Operating in more than humanist paradigms, contemporary education must embrace a more holistic, post-anthropocentric stance that promotes "ethical responsibility and multispecies empathy" to envision an interwoven and just future with all species (Duobliene & Vaitekaitis, 2021, 40-41).

Deleuze and Guattari's concept of "people-yet-to-come" (Hroch, 2014; Wallin, 2014) is pertinent to this discussion. It refers to "individuals with a new consciousness", specifically children and adolescents who are ready to adopt new ways of thinking and interacting with the world, both in the present and the future. In the context of Human exceptionalism, this future generation needs to acknowledge the necessity of transforming their interactions with both humans and non-humans, while understanding the importance of ethical responsibility. Although this shift may be challenging in some contexts, education represents a promising platform to cultivate this consciousness through a range of diverse, innovative and creative strategies (Hroch, 2014; Duobliene & Vaitekaitis, 2021, pg. 41).

The human-centered perspective dismantles traditional binaries of "mind/body, nature/culture, self/other" (Wilson, 2015). Learning instead, emerges through complex interactions with the environment, shaped through sensory stimuli (sounds, smells, movement, light), the microbial germs and continuous engagement with non-human entities and materials (Wilson, 2015 as cited in Cartens, 2020, 77). To cater to this complex, ever-changing and unpredictable world we live in, which is beyond what humans can completely comprehend- education needs to embrace the uncertainty and strangeness, subverting the existing neoliberal and humanist educational narratives (Cartens, 2020, 78-79.) Despite the deeply embedded neoliberal idea that meaningful resistance in education is impossible, even small shifts in teaching can rupture this limiting mindset. As Mark Fisher (2009) said, 'even a tiny moment can tear through the "grey curtain" of capitalist realism and make space for new possibilities' (Cartens, 2020, 79).

According to Deleuze, education acts as a control mechanism, to uphold order and prevent chaos rather than to ignite revolution. Stability and conformity are prioritized over transformation, which hinders the efforts to tackle pressing issues like environmental sustainability (Pedersen, 2021).

As environmentalist and writer David W. Orr (2004, pg. 17) states:

*“Much of what has gone wrong with the world is the result of education that alienates us from life in the name of human domination, fragments instead of unifies, overemphasizes success and careers, separates feeling from intellect and the practical from the theoretical, and unleashes on the world minds ignorant of their own ignorance.”* (Smith & Macquarrie, 2009, pg.31)

Even when educators attempt to foster a connection between students and the natural environment, they often find it challenging. Many children struggle to engage with nature, finding it less stimulating compared to the fast-paced, captivating world of digital entertainment. This detachment persists despite children’s awareness of the ongoing ecological crisis and a common response to this is psychic numbing, a mild form of cognitive and emotional detachment that serves as a psychological defense mechanism (Boeckel, 2009, pg.10-11).

Arne Vetlesen (2009) argues that our inability to act morally and empathetically branches from psychic numbing: the incapacity to perceive or feel the suffering of others. He believes that emotional numbness drives exploitative behaviours which have consequences for environmental degradation and domination of the non-human world. Vetlesen’s (2009) perspective offers a critical approach for investigating humanity’s troubled relationship with nature and highlights the pressing need for novel strategies to resensitize individuals, particularly children, to the natural world (Smith & Macquarrie, 2009, 32).

Innovative approaches are essential to resensitize individuals, particularly children, to the natural world. At the same time, it is important to acknowledge the ecological crisis and resist desensitization by adopting a different perspective. Anderson and Anniina Suominen Guyas (2012) argue that positive emotional investment is a key principle in addressing environmental challenges. Instead of allowing ourselves to become numb, we should attune ourselves to the “wonder, power, complexity, color, subtlety, and interdependence of nature.” When this interconnectedness is approached through art as a source of optimism, it can cultivate love and care, emotions far more powerful in inspiring meaningful change than fear alone (Anderson & Anniina Suominen Guyas, 2012).

Art practice offers a promising pathway for this reconnection. Rather than serving as an add-on (“icing on the cake”), art can act as a method for sensing and engaging with the world (Boeckel, 2009, pg.2). Through artistic expression, children can develop a deeper sensitivity to nature, process their emotions about the ecological crisis, and cultivate a renewed sense of wonder and responsibility toward the environment.

Art education has a longstanding tradition of addressing critical social justice issues and actively challenging systemic forms of oppression, such as sexism, ableism, classism, and racism, particularly concerning historically marginalized and dehumanised individuals (Kallio-Tavin, 2020, pg.301). Scientific consensus has confirmed the breach of planetary boundaries such as “climate change, nitrogen cycle and biodiversity loss” thus it is urgent amidst these escalating irreversible transformations, art education must adopt an “eco-ontological stance”, not to solve these issues but to realign the educational priorities and reconfigure the “partition of the sensible”: (Ranciere’s concept of a system of determining who or what is seen, accepted and valued in society), thereby expanding beyond human centric frameworks to include non-human voices, agencies and vulnerabilities (Jagodzinski, 2015, pg.125-127).

In recent decades, many art educators have focused on fostering artistic and educational engagements with non-human agencies, particularly in the context of ecology, ecojustice, environmental sustainability, climate change, and biodiversity loss (Kallio-Tavin, 2020, pg.300). Art education possesses significant potential to facilitate a paradigm shift by activating empathy in children, attributed to its inherent openness, ability to engage learners, expand their perspectives, and evoke emotional resonance (Inwood, 2010, p. 34; Ylirisku, 2021).

## 1.2 Knowledge gap

Contemporary educational paradigms remain constrained by human-centered frameworks that fail to address the complexity of ecological crises. In the Anthropocene, capital-ocene, white-supremacycene, as planetary ecosystems unravel, we urgently require educational approaches that challenge conventional human-centered models (Cartens, 2020; Dooren et al., 2016, pg. 3). Prevailing pedagogical methods rooted in reductionist paradigms that confine learning to individual human cognition are inadequate for our interconnected, more than human reality, necessitating a radical shift toward approaches that resist colonial and capitalist logics (Cartens, 2020, pg. 77). This paradigm shift requires pedagogies that acknowledge nonhuman actors as co-creators of knowledge and worldmaking, recognizing that meaning-making emerges through embodied, multispecies entanglements where cognition is shaped by sensory, microbial and chemical processes extending beyond the brain alone (Wilson, 2015 as cited in cartens, 2020, pg.76).

Art-based pedagogies offer potential pathways to sit with uncertainty, navigate messy processes with empathy, and engage with the complex nuances of the world. Art has the ability to immerse

learners in empathic engagement with ambiguity, where wild ideas emerge not from lesson plans that yield standardized results, but from collaborative entanglement with multispecies (Cartens, 2020,pg. 77).

Schools are key places to create real change. Without intervention, empathy remains theoretical. While scholars argue that art education has the potential to foster multispecies empathy, there is still a gap to know how to make this a real tangible part of curricula. Such shifts require more than abstract theory; they emerge through real-world actions, as active performative processes grounded in practice; thinking and doing are inherently interconnected (Rotas, 2015, 94). As Lather (1991) asserts, embracing contradictions becomes a form of intervention, one that challenges the traditional philosophical limits (Lather 1991 as cited Rotas, 2015, 94).

### **1.3 Research Question**

How can embodied, and sensory art interventions activate multi-species empathy in 4-6th grades in Denmark and Pakistan? To support a more relational and entangled understanding of human-nature co-existence.

## **2. State of art:**

The state of art section provides a critical overview about posthuman turn in art education.

The theoretical framework grounds this research by exploring concepts such as the anthropocene and its criticism, posthumanism and posthuman pedagogy, empathy and entangled empathy to set the stage for a decolonial, multi-species approach to education. It taps into affective, sensory and ethical approaches to subvert human-centered learning.

### **2.1 The Anthropocene Debate:**

The term *Anthropocene* was first introduced in the early 1980s by ecologist Eugene Stoermer to describe the profound impact of human activities on earth's geological and ecological systems (Haraway, 2016, pg.44). This concept emerged from the recognition that anthropogenic changes particularly since the industrial revolution have been so transformative as to potentially warrant

designation as a new geological epoch, replacing the Holocene epoch (Haraway, 2016). The observable effects of these changes became markedly pronounced with the advent of steam engines and exponential increase in coal consumption, which polluted the atmospheric and aquatic systems- extreme methods are being used to dig deeper into oceans to extract every last bit of oil and gas (Haraway, 2016). Noting the alarming rate of contemporary fossil fuel consumption, Haraway (2016, p.46) jokingly suggests the 'Burning Man' as an apt metaphorical representation of the Anthropocene as a fiery destructive age.

However, the Anthropocene is often contested as it is a hierarchical concept which reflects a Eurocentric binary worldview that positions humans as separate from nature. The anthropocentric conception of "the human" is not an inclusive but rather a culturally constructed ideal that systematically favors white, heterosexual, able-bodied masculinity (Braidotti, 2013, p.26). This human / non-human division is foundational to western enlightenment but is not universal across other cultures. There is a clear bias toward the concerns of dominant cultures, ethnic groups and social classes, carrying the tone of "white anxiety" (Braidotti, 2019, pg. 87; Viveiros de Castro, 2009, p.44; Morton, 2013).

Many indigenous cultures reject this binary, instead they emphasise interconnectedness among all living beings. Where western frameworks ask, "what makes humans distinct?" indigenous perspectives ask, "How are we related?". Moreover, it lumps all humans together, hiding the fact that indigenous, non-western people suffer the most from ecological crises (Viveiros de Castro, 2009, p.44 as cited in Braidotti, 2019, pg. 87). In a similar vein, Derrida (2011) criticizes the generalized label "the animal", he criticises this oversimplification, pointing out that lumping all non-human life as "the animal" ignores their unique qualities and justifies human control over them (Derrida, 2011, pg.392).

"The animal" is a word, it is an appellation that the man has instituted, a name they have given themselves the right and the authority to give to another living creature" [à l'autre vivant] (Derrida, 2011, pg.392)

The anthropocene's framing of Man as a singular villain risks fatalism, and this narrative only ends in doom and not solutions for survival, numbing us and taking away the ability for imagination and care (Haraway 2016, p.49). Man as species is not a single actor that caused destruction, it is also other forces at play like capitalism, colonialism and exploitation (Haraway 2016, p.49). The term anthropocene according to Haraway (Mitman, 2019) is misleading and reinforces a dangerous misconception as it makes it harder for people to see the real causes of environmental destruction,

instead it wrongly blames the entire human species, while Tsing has an optimistic approach to the term.

In a recent interview (Tsing, 2024) expressed disappointment over the rejection of the Anthropocene as an official geological epoch. She believed keeping this term in wider circulation was important as it helped people grasp the full scope of humanity's damage to the planet. When the conversation shrinks to just "climate change", it often gets co-opted by capitalist interests. These elite corporate actors often twist the narrative for their benefit, they push superficial solutions like electric cars, better recycling programs while ignoring deeper systematic issues. Resisting narrow framing highlights issues beyond climate change. It forces us to think about a range of interconnected problems like species extinction, toxins, radioactivity, mining and more. Tsing (2024) argues that losing this broad perspective risks oversimplifying the problem and moving forward, she stresses the need to hold onto a critical lens when imagining alternative futures (Tsing, 2024).

The prevailing critique of anthropocentrism often falls into a paradoxical trap (Rautio, 2012, 450). By framing human-centeredness as a broad problem requiring a "return to nature", we unintentionally reinforce the very separation we seek to overcome (Rautio, 2012, 450). This approach makes assumptions such as humans exist apart from nature, we have lost the connection with nature which we originally had, and that nature would be better off without humans, all of which ironically preserve the human/nature binary (Rautio, 2012, 450). Rather than denying our human perspective, which is impossible, we should focus on why human uniqueness so often becomes superiority claims and challenge the false evolutionary hierarchy that positions humans at the top. The path forward is not rejecting our humanity, but recontextualizing it within the web of life where every species' way of being has equal validity (Rautio, 2012, 450).

## **2.2 Posthumanist futures and ethics of entanglement:**

Posthumanism represents a critical theoretical framework that challenges anthropocentric worldviews, contesting the assumed centrality and superiority of human beings within ontological hierarchies (Wolfe, 2009). It is a complex and evolving concept which holds a lot of creative energy that helps us map new power dynamics and subject formations (Braidotti, 2019, pg.17). The term post in posthumanism does not suggest moving beyond humanism. Instead, it signals a rejection of the traditional division between human and nonhuman as distinct and separate classifications and considers non-human agencies as equally important (Kangas, 2023,pg.9). Similarly, Jackson (2015) emphasizes terms like post and beyond can reinforce eurocentric views than to challenge them,

moreover, focusing on “more-than human” often ignores race, colonialism and slavery in discussions about life and materiality (Springgay & Truman, 2018, pg.10).

This Paradigm shift questions traditional humanist conceptions by emphasizing the profound interconnectedness and interdependence between human and non-human entities. As (Wolfe, 2009, pg 11-12) notes, citing Foucault's work, “man is an invention of a recent date”, suggesting that the modern conception of human nature is an idea shaped by time/culture and is not fixed forever; Foucault's metaphorical depiction as a ‘face drawn in sand at the edge of the sea’ powerfully illustrates the current understanding of human nature as temporal, anticipating its potential of being washed away by emerging paradigms of thought (Wolfe, 2009, pg 11-12). However, posthumanism does not completely reject humanism, it critically examines its limitations while proposing alternative conceptual frameworks, seeking new and fairer ways forward (Coole & Frost, 2010; Pedersen, 2010; Snaza & Weaver, 2015 as cited in Ylirisku, H. 2021 ). Challenging the idea that humans are completely independent or superior, seeing humanity connected to and influenced by other beings and forces; it is a “rehumanizing effort”, that requires us to reawaken our sensitivity to the ethical, relational and embodied connections between human and more than human objects (Taylor & Bayley, 2019, pg 5-86). The shift is simple yet profound, replacing ‘human nature’ with interconnected ‘naturecultures’ (Haraway 1997, 2003 as cited in (Braidotti, 2019, pg.18).

The posthumanist perspective directs us to move beyond the traditional human-centered ways of thinking. This posthumanist shift instead of confusion and feeling of doom provides a positive, forward looking outset on our collective existence, helping escape ‘stagnation’, rigid perspectives and lack of imagination. (Braidotti, 2019,pg.14 ; Taylor & Bayley, 2019, pg 5-86 )

Education scholars have pointed out that the division between nature and culture is often reinforced because we treat nature as an object or something distant: an object to be studied, rather than an existing part of it, it is positioned as separate from human subjects who observe and analyze it (Hohti et al., 2024, pg.1130). Posthumanism thought frequently goes beyond simply critiquing anthropocentric perspectives, it translates into methodological approaches/ research frameworks that aim to dismantle established hierarchies by treating both human and non human as active participants in what is being studied (Hohti et al., 2024, pg.1130). Continuing this line of thought, Karen Barad(2007)'s notion of intra-action in agential realism emphasizes the interconnectedness of ethics, knowledge and existence (Cozza & Gherardi, 2023,pf.56). It reveals how all entities whether human or nonhuman co-emerge through their dynamic entanglements (Chiew, n.d., 62-63). This gives us insight into seeing knowledge production as an ongoing process where nature and culture are inseparably intertwined.

Unlike interaction which assumes pre-existing, independent actors come together and influence one another, intra-action suggests agency arises relationally through inseparable forces (Stark, 2016). Importantly, intra-action does not negate differences between entities and events. Rather, it shows that these differences do not exist independently or in isolation but are produced from the world's active, interconnected processes (Chiew, n.d., pg.62). As Barad (2007) posits that 'we do not acquire knowledge just by observing it from a detached position but by being embedded within it, engaged in its continuous unfolding' (Chiew, n.d., pg.62). Barad (2007) uses the concept of diffraction from physics, explaining the interaction of waves when they converge and overlap. In this process, the original waves transform as they merge, yet their essence persists within the newly formed wave pattern. This diffractive approach highlights how newness emerges through difference, demonstrating that new knowledge arises not through isolated elements but through their intra-action (Chappell et al, 2019p.300; Vagg, 2021,pg.544).

While posthumanism offers transformative insights, it is important to note that posthumanism has western roots drawing in the eurocentric tradition of humanism and its critique; it risks inadvertently perpetuating western biases and to avoid doing that, in the future posthuman theories should integrate decolonial, marginalized, indigenous voices (Ylirisku, H. 2021). Tuck and Gaztambide Fernandez (2013) caution against replacing humanism with posthumanism in education risks repeating colonial patterns, where settlers borrow indigenous knowledge to secure their own future while still marginalizing indigenous ways of knowing (Snaza et al., 2014, 4-5).

Some posthumanist philosophers such as Bogost, Harman, Timothy Morton (Ylirisku et al., 2024, pg.88) have proposed ideas related to flattening hierarchies between human and non-human, but even though humans face the ecological crisis as a whole, it is crucial to not overlook power imbalances that underlie the concept of unified humanity (Rosi Braidotti, 2016 as cited in Ylirisku, H. 2021; Springgay & Truman, 2018, pg.10). Snaza et al (2014) in response to the argument acknowledge that posthumanist critique of humanism does not mean to reclaim indigenous knowledge as its own. Instead, seeing posthumanism as a space where feminist, anti-colonial and anti-racist critiques can intersect, rejecting false white supremacy. Rather than framing posthumanism as the superior discourse, it becomes a shared framework for rethinking education and politics beyond human lens, staying accountable to past histories of violence and considering ethical responsibility (Snaza et al., 2014, 4-5).



## 2.3 Reconfiguring Education: Intra-active classrooms

Educational spaces are often viewed primarily as spaces for humans, designed to prepare children how to transform into functional adults. However, this perspective overlooks the entanglements of these spaces with the non-human world. Beyond the human occupants, schools are part of a vast non-human network, like electrical and plumbing systems, non-human animals on leftovers from the cafeterias, the leather on shoes, specimens on biology trays, weeds and microorganisms inhabiting every corner. They also have a variety of material objects like computers, books, cleaning supplies etc. all of which highlight the constant interplay between human and non-human forces in educational settings, challenging the assumption that humans should remain at the center of the conversations (Snaza et al., 2014,pg. 39-40).

Posthuman ideas are changing education at all levels, from primary education to university by shifting the focus from anthropocentrism to ways of teaching in a world amidst ecological challenges and rapid technological change (Braidotti, 2019, p.129). It urges us to recognize how deeply humanist ideas are entrenched in “educational philosophy and research”. It reconfigures education as a practice already embedded within a complex system of animals, machines and material objects that shape everyday life (Snaza et al., 2014,pg.40).

It expands on humanist and modernist education by examining the complex connections between human, animals and technology (Morris, 2015, 43). Where the core ‘learning outcome’ of traditional education is to turn students into productive humans who can neatly fit into the global economy as consumers and workers; the posthuman pedagogy challenges this narrow view by embracing the untapped and uncertain potential of human and non-human actors (Snaza, 2015, pg.4).

Storm’s (2015) findings demonstrate this shift through collaborative learning methods, material practices and dismantling the teacher student hierarchies (Braidotti, 2019, p.129). These approaches move beyond individualism and creates a dynamic classroom opening ways where technology, animals, ecosystems actively contribute to learning, which results in a pedagogical model emphasising on hybridity, difference and relationality connecting the classroom to broader world concerns (Braidotti, 2019, p.129).

Posthumanism opens up wild collaborative possibilities by breaking down the boundaries between disciplines set up by humanist thinking. It questions how disciplines have been divided, such as separation between social, natural sciences and humanities, inviting antidisciplinary approaches. For example, the possibility of a curriculum developed by a ‘horticulturist’, ‘architect’, ‘urban planner’

sociologist could be a reality. However, the challenge with this radical approach is figuring out how to involve non-human actors as participants and not just objects of research (Snaza, 2015, p.5).

Moreover, the impact of posthumanism is not just about how we relate to non humans or what's out there but also about how we understand ourselves as humans, it reveals how humanist ideas shape the way we do research or imagine politics, and education in the future (Snaza, 2015, p.6).

Barad's (2007) concept of intra-action has the potential to help educators tap into newer ways of thinking and doing relationships with materials, matter, nature, discourse and people, since these connections create meaning and agency rather than just pre-existing (Hiltunen & Campbell, 2024, 104). Shifting to a posthumanist approach in education may almost seem utopian in neoliberal school systems that prioritize measurable outcomes, simply making room for creative and embodied learning can be an act of resistance (Hiltunen & Campbell, 2024, 106).

However, embracing this reorientation requires recognizing the critical differences between contexts in which knowledge occurs, and acknowledging the relativity of these contexts. This means moving beyond just knowledge accumulation as an absolute, to a more relational understanding of meaning making. Meaning making is the interplay between patterns of information and unrecognized complexities that shape our shared worlds. Through this view, knowledge abstraction remains a human capacity, but meaning extends beyond human cognition, emerging through more than human entanglements (Bogost, 2012; (Snaza et al., 2014, pg.50-51).

Moving forward, it is important to remember that posthumanism is not the first theory to challenge humanism. It shares common ground with feminist, anti-racist, and anti-colonial theories and perspectives. Rather than seeking to replace or supersede these theories, we should recognize how these theories collectively challenge human-centred paradigms in education (Snaza et al., 2014, pg. 40-42).

## **2.4 Affective Compost: Posthuman approaches to art education**

Posthuman in Art Education is a developing field that invites imaginative inquiry and it is just as powerful as critical philosophy in innovating novel approaches to sensing, thinking and perceiving (Braidotti 2013; Ylirisku & Dufva, 2024, pg.2).

Within this framework art-making becomes a collaborative process where the creative agency is distributed among both human and non-human, making the artist not the sole creator but rather a participant (Ylirisku & Dufva, 2024, pg.4). When viewed from a posthumanist perspective, art transcends dichotomies by exploring relationships between "human/nonhuman",

“material/immaterial”, “social/cultural”, enabling newer relational ways of engaging in the world. (Rotas as cited in Ylirisku & Dufva, 2024,pg.5). However it is crucial to acknowledge that these human /nonhuman entanglements are never neutral in artistic practice, research and education. We must therefore recognise the ethical and political implications embedded in these relations (Vladimirova as cited in Ylirisku & Dufva, 2024,pg.5).

Affect holds significant potential to reconfigure pedagogical theory. Moody (2016) promotes affective pedagogy as a feminist post-human model for art education, rooted in Deleuze’s Spinozist concept of “Affectus” which is different from emotion as a catalyst for transformation. Rather than solely focusing on human-centered learning, Moody (2016) argues for a shift toward posthuman approaches that acknowledges material and relational forces in education. Art, in this framework plays a key role in this shift as it subtly changes the way we think, feel and relate to others. For example, a painting, a poem or music may be created by an individual, but the way it ‘affects’ culture, opens new ways of thinking and being and when people change through these experiences, it also contributes to a wider social change as new artistic environments are shaped (Moody, 2016, 258-259). Aligning with Braidotti’s (2002) view that our true sense of self emerges through the interaction between “affect and spatio-temporal variables”, such embodied interactions reveal insights about ourselves and the world around us (Snaza, 2015,pg.175). This way art goes beyond human dominion over material, it becomes a field of engagement with ambiguity and strangeness (Hood & Lewis,2021 as cited in Ylirisku & Dufva, 2024,pg.4).

According to Deleuze and Guattari(1996), art negates territories or fixed patterns and opens up to ‘chaos’ making space for novelty. Like rhizome it builds a network of connection with different actors that normally do not belong together. When different territories overlap, “interspecies junction points” are created where human and non-human encounter and affect each other through art. These junctions emerge through artistic methods that generate “blocs of sensation”. Deleuze and Guattari (1996) assert that artworks are made up of complex combinations of “percepts and affects”. A percept apprehends the materiality; the tangible element of the world manifested in artwork, while the affect are the sensations or emotional resonance tied with the materiality of the artwork. When “percept and affect” come together, they form “blocs of sensations”, which is the language of art (Deleuze and Guattari, 1996,p.176-177; Moody, 2016,pg.260) .

*“Art is the language of sensations. Art does not have opinions. Art undoes the triple organisation of perceptions, affections and opinions in order to substitute a monument composed of percepts, affects and blocs of sensations that take the place of language. . . A monument does not*

*commemorate or celebrate something that happened but confides to the ear of the future the persistent sensations that embody the event: the constantly renewed suffering of men and women, their re-created protestations, their constantly resumed struggle”.*(Deleuze and Guattari, 1996, pp. 176–177 as cited in Moody, 2016,pg.260)

Thus, according to Moody (2016) these blocs of sensation have a pedagogical function creating new possibilities that can make “minor transformations” to shift a person's ability to experience and engage with the world. Thus, art creates new relational landscapes that prompt new alliances and subvert human-centered meanings. (Moody, 2016, 252-259).

## **2.5 Einfühlung to Entanglement: Reimagining empathy through art**

Before delving into the intersection of multispecies empathy, art and education, it is essential to first establish a foundational understanding of what empathy is and why fostering multispecies empathy is both significant and necessary in art education.

The term “empathy” is relatively modern, originating in 1908 as a translation of the German word *Einfühlung*(in feeling). Initially it was an aesthetic idea, it referred to the act of projecting one’s own feelings into the forms and shapes of objects (Lanzoni, 2018), meaning, projecting life or emotion onto things we observe whether people, art, objects or animals (bridge,2010,p.3 as cited in Kangas, 2023,pg.14). Theodor Lipps conceptualized *Einfühlung* as a process where spectators project their unconscious emotions and inner imagined movements into an artwork, thereby animating it with felt experience. According to Lipps, we could empathize beyond people (with artworks, nature, animals and objects), for non-human entities particularly, Lipps employed anthropomorphism- the attribution of human qualities onto non-human (Kangas, 2023, pg.14-15).

Researchers have tried to measure empathy using psychometric tools, with early approaches mirroring intelligence testing methods. However, later studies revealed that such instruments frequently captured subjective projections rather than genuine interpersonal understanding, while inconsistent outcomes across different scales highlighted variations in methods and there was no clear agreement on what empathy really meant leading many to question whether empathy could be accurately measured at all (Lanzoni, 2018, pg. 158-159).

Over time, the concept has evolved from a focus on objects to a more interpersonal, human to human relationships and therapeutic concept, emphasizing the ability to understand and share emotion of others. However, its roots in aesthetic engagement suggest its potential to transcend anthropocentric boundaries, fostering connections with more than human world. This artistic view

of empathy encourages to soften the rigid lines between self and world, potentially changing our perception of reality (Lanzoni, 2018,pg.17-18). Lanzoni's (2018) analysis highlights that empathy fundamentally involves balancing "distance and closeness", "similarity and differences", "immersion and alienation", establishing a relation that both separates and unites (Lanzoni, 2018,pg.17-18). However, researching empathy presents significant challenges, because researchers still disagree on what empathy really is, it is such an internal and abstract concept and because the definition is not clear, people have used the idea of empathy in different conflicting ways (Kangas, n.d., Preston & De Waal, 2002; Nowak, 2011).

The original idea of *Einfühlung* did not limit empathy to just human interactions. Instead, it framed empathy as a transformative connection, what Nowak (2011, cited in Kangas,2023) termed a "mystical union", where boundaries between subject and object dissolve resonating with Barad's idea of Agential realism, stating that instead of separation between subject/object there is an entanglement of subject/object (Kangas, 2023, pg.15).

Life depends on interconnection, not isolation (Van Dooren et al., 2016, pg.2). We exist as part of an interconnected web of life, where humans and other species are fundamentally bound in complex relationships (Van Dooren et al., 2016, pg.2). When we reframe humans as simply one species among many, the focus shifts toward mutual coexistence and reciprocal influence between species (Rautio, 2012, pg.448). This perspective recognizes that species do not exist in isolation but are continuously shaping and being shaped by one another (Rautio, 2012, pg.448). In a similar vein Haraway introduces the term *Sympoiesis* means "making-with" or "Worlding" which also challenges the notion of existing in isolation, no entity generates or organizes itself in isolation; all beings exist in perpetual interdependence: it describes how complex, ecosystems constantly adapt and change through relationships (Haraway, 2016, pg.57). While some things may appear self-sustaining ("autopoietic"), they're actually always interacting with and being shaped by their environment (Haraway, 2016, pg.57). *Sympoiesis* includes these individual processes, but shows how they are always part of a collaborative making of the world together (Haraway, 2016, pg.57).

Deleuze(1994)'s notion of "difference as generative" highlights that differences do not just separate us but they actually create us- differences are a creative force that make everything exist. The identity does not come from belonging to a certain species, instead it comes through the relationships and that identity shifts slightly in every encounter (Deleuze 1994 as cited in Rautio, 2012, 448). Difference according to Deleuze is not an outward disparity between fixed identities, it is a continuous process of emergence and disintegration. It is a creative force that generates new

possibilities for thought, constantly in the process of becoming. Deleuze argues that thinking in terms of binaries, we conceal the true nature of differences by hiding it, we confine these fluid processes into rigid categories like subject vs object, experiencer vs experienced, hindering our ability to understand their real movement (Williams, 2013, 76). According to Deleuze, real difference is not about contradiction but about perpetual becoming, for instance as Deleuze exemplifies, a wave is not defined by its opposition to stillness, but a process of continuous movement, always unfolding and that is never confined in fixed forms (Williams, 2013, 83). Lori Gruen proposes entangled empathy which similarly emphasizes a relational, context aware approach to empathy that goes beyond emotional projection. According to Gruen (2015), ethical engagement requires acknowledging the differences between one's own perception, experiences and beliefs from those of another. This self-awareness helps avoid the common mistake of assuming that others share our perspective. As Kangas (2023) exclaims, empathy's significance is not reserved to personal success nor a mechanism for appropriate response to emotions, but instead it is important for comprehending our constant process of becoming, revealing our "response-ability (capacity to ethically engage) and accountability to the world (Kangas, 2023,pg 8). This awareness helps us appreciate the complexity of other's lives and to see a more nuanced picture of the world. However, recognizing these distinctions also risks reinforcing rigid binaries leading to exploitation and exclusion. But, this distinction does not have to imply distance or dominance, instead, it can support ethical relationships by recognizing that we are deeply interconnected but also distinct whose identities are constantly being shaped by one another (Gruen, 2015,pg. 61-62).

Gruen (2015) defines entangled empathy as "a type of caring perception focused on attending to another's experience of well-being" (Bakoff, 2015). Gruen's framework of entangled empathy proposes a relational approach to interspecies ethics that combines emotional attunement with critical cognition (Entangled Empathy, 2022). This process begins by acknowledging our pre-existing, often problematic relationships with non-human animals, then actively working to improve them through interdependent practices like: attentive observation of specific individuals both human and non human in their particular circumstances, perspective humility that seeks to understand animal experiences within their own ecological and social contexts, not through anthropomorphic projections ; commitment to collective flourishing(Gruen,2022).

Drawing inspiration from Barad's intra-action, Gruen (2017) emphasizes that our identities are not just formed by these relationships but are constantly shaped by them. This mutual dependence means that the quality of these relationships directly affects the quality of our lives. However, this does not imply that one loses their sense of self in this. Empathizing involves moving back and forth

between our own perspective and of another, constantly shifting between first person view and third person view. To engage in this process of empathy it is important to have as much understanding as possible about the other's perspectives and circumstances. Thus, entangled empathy is a mixture of "cognition and affect" where the empathizer is aware of both the similarities and differences between themselves and the other. This continuous movement between perspectives helps maintain a relationship without breaking boundaries and preserving one's distinctiveness while recognizing their interconnectedness (Gruen, 2015,pg. 61-65).

Looking at empathy from an educational perspective, conventional education often separates the learner (subject) and the artwork (object) as separate entities. However, in reality they are unified, mutually influencing each other (Kangas, 2023,pg 49). This view can enable educators to frame empathy not just as an internal emotion, but as an active process, something that can be practiced through material engagement. Working with materials reveals empathy by observing our interaction with them, recognizing our relation to them, the "stories and powers behind them". Ultimately, incorporating empathy in education means taking responsibility for our actions, our perceptions and our blindspots (Kangas, 2023,pg 49).

Historically, art has been linked to the notion of empathy, tracing back to the German concept of *Einfühlung*, describing the experience of "feeling into" nature and art. Understanding empathy through its historical lens, as an evolving aesthetic idea reveals potential, extending beyond human to human relationships to incorporate non-human connections (Krzmaric, 2014, Kangas, 2023,pg 2). Recognizing empathy as a dynamic embodied encounter with both human and non human can provoke shifts in "thinking, feeling and being". These dynamic empathetic encounters interweave both cognitive and affective processes making them operate in a decentralized rhizomatic manner (Vagg et al.2021). By Building on Barad's (2007) intra-action, Kangas (2023) frames art education from an Agential realist lens, highlighting how it can evoke empathy performatively, not just as a fixed human capacity but as an emergent, multidimensional and material discursive practice (Kangas, 2023,pg 59).

As (Kangas,2023) poetically exclaims, "It might just be that art is the oyster shell of empathy's pearl" like an oyster gradually transforms a grain of sand into a beautiful pearl, artistic engagement can similarly layer meaning around raw emotional experiences into something meaningful (Kangas, 2023,pg 1&59).

### 3. Research design – Methodology

This section outlines the research design, methodologies and analytical strategies used in this research. It explains the rationale behind using specific methodologies, their strengths, constraints and potentials associated with these methodological choices. It demonstrates how these methodological choices align with this research's overarching goals.

#### 3.1 DBR:

Design Based Research (DBR) has established itself as a transformative methodological approach that directly connects education theory with practical classroom applications (Anderson & Shattuck, n.d., pg.16). It is a method where researchers and educators collaborate to identify real problems, design solutions, test interventions, and refine solutions through iterations and create flexible guidelines or design principles that other classrooms can also adapt (Brown 1992 cited in Buhl et al.,2022). At its core DBR emphasizes situated authenticity, the principle that research must be conducted in real educational environments to ensure both the validity of the findings and their practical utility (Anderson & Shattuck, n.d., pg.16).

A fundamental characteristic of effective DBR intervention, as noted by Brown (1992), is their capacity for scalable implementation. At the core of this approach lies a collaborative partnership between researchers and practitioners, working together to identify critical classroom challenges and co-design research based solutions. These interventions may take various forms, including innovative teaching tools, technological tools all rigorously developed through iterative cycles of implementation and refinement (Anderson & Shattuck, n.d., pg,18).

However, DBR has been contested for being too rigid in its theory refinement processes while remaining too vague in developing practical sustainable solutions (Buhl et al., n.d., pg. 206). While these criticisms have merit, they highlight an opportunity for DBR's evolution toward a more critical constructive approach and being reflexive, this includes a more deliberate problem selection, clear articulation of the design principles and careful consideration of implementation contexts beyond individual projects (Buhl et al., n.d., pg. 206). Moreover, instead of being used as a complete holistic methodology, many researchers are picking and choosing certain parts of DBR that suit their needs, however, this does not mean we abandon DBR, but to strengthen it by continuous critical reflection (Buhl et al., n.d. ; Dede, 2004).



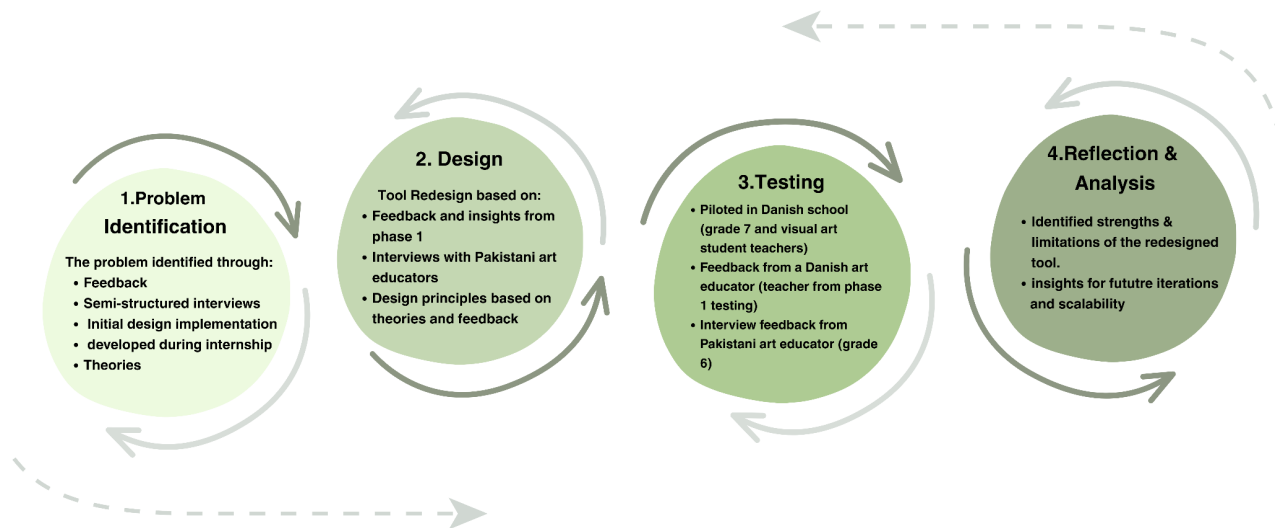


Figure 1: Phases of the multispecies postcard tool development derived from (Amiel & Reeves, 2008, pg. 34)

Key	
P1	Pakistani Art Educator 1 (Grade 6)
P2	Pakistani Art Educator 2 (Grade 4)
P3	Pakistani Art Educator 3 (Grade 6)
D1	Danish Art Educator (Grade 6)
D2	Danish Art Educator (Grade 7 & visual art student teachers)

Figure 2: Key to identify mentioned educators in the DBR process in this thesis

### DBR Phases:

**Phase 1: Problem Identification:** Phase 1 involved the analysis of fieldwork from the initial testing of the first iteration of the multispecies empathy postcard tool in a Danish school, including observations and feedback from students and their teacher (D1). Additionally, semi-structured interviews with two Pakistani art educators (P1 and P2) helped gather feedback from a different cultural context.

**Phase 2: Design:** Guided by the feedback from the first pilot conducted during the internship, this phase involved redesigning the multispecies empathy postcard tool to multispecies entanglement postcard tool. Drawing on data gathered in Phase 1 and relevant theoretical insights, this phase proposes a set of speculative design principles to guide the redesign.

Phase 3: **Testing:** The redesigned multispecies entanglement postcard tool was tested with Grade 7 students in Denmark and visual art student teachers (D2). Further feedback was gathered from the same Danish art educator (D1) involved in the initial testing. In the Pakistani context, an interview with a 6th grade art educator (P3) provided contextually grounded feedback on the tool's applicability.

Phase 4: **Reflection:** Insights gathered during the testing of the redesigned tool were synthesized using thematic analysis to assess the strengths, limitations and scalability of the redesigned multispecies entanglement tool.

## 3.2 Pragmatism:

Pragmatism is a philosophy of science used for qualitative research that prioritizes “action and change” and real-world impact over fixed structures, viewing the world as constantly evolving through human actions (Goldkuhl, 2011, pg.139). Rather than seeing society as abstract relations, it focuses on ongoing actions that give those relationships meaning. Pierce (1878) states that the meaning of any concept emerges from its practical effects, and even the smallest shifts in meaning must be understood through their impact on real world practice (Pierce 1878 as cited in Goldkuhl, 2011, pg.139).

On the other hand, Interpretivism is also another qualitative research paradigm that focuses on understanding subjective meanings and experiences of people within their socio-cultural contexts (Goldkuhl, 2011, pg.138). A researcher's goal is to interpret those meanings attached to people's actions to capture the complexity of human experiences, underlying intentions and shared understandings within a social group (Goldkuhl, 2011, pg.138).

This research is grounded in pragmatic approach, particularly functional pragmatic foundation- which focuses on generating knowledge that resolves a real world problem (Goldkuhl, pg.141). This philosophy of science aligns well with the design based research (DBR) used in this research which follows an iterative cycle of testing and refinement anchored in action and reflection. By identifying a real world challenge (multispecies empathy in this research), gathering feedback and interviewing practitioners in the field, designing practical pedagogical intervention, testing it in educational settings, and analysing the feedback. Furthermore, by bridging theory and practice this study aimed to yield new knowledge and actionable resources that educators can adapt to their specific contexts.

### 3.3 Fieldwork:

Fieldwork is an important component of ethnographic research, characterized by long-term engagement with a social group to document and interpret cultural practices, everyday activities and social interactions. It typically begins with a broad area of interest, evolving through the accumulation of unstructured qualitative data and the gradual refinement of research questions (Hammersley & Atkinson, 2019, 1-4).

For this research, fieldwork was a key component of DBR methodology, informing the problem identification phase 1. It started during an internship in the third semester, where the reflection cards and the initial multispecies empathy postcards were developed, refined and tested. The first iteration of the tool was tested at the Danish Architecture Center (DAC) during the Desire conference, organized by the new European Bauhaus initiative. Based on the feedback from the initial test, another iteration with minor modifications was tested at a Copenhagen school later that semester. These changes included a grounding humming bee meditation, a reflection card activity and writing the postcard from a species' perspective (Appendix 1).

Building on feedback from this fieldwork from the third semester, semi-structured interviews in this current research and domain specific theories, the tool underwent further redesign. The Danish educator (D2) then tested it independently with grade 7 and visual art student teachers in Copenhagen. The educator (D2) provided her detailed feedback via email. Additional feedback was gathered from a 6th grade art educator (D1) at the same school where the second iteration was tested in the third semester.

Although the tool could not be formally tested in Pakistan due to logistical restraints, insightful feedback was received from grade 6 Pakistani art educator (P3), providing a cultural perspective on the tool's potential scalability.

### 3.4 Semi-structured Interview:

Semi-structured interviews balance structure with flexibility. They encourage open-ended conversations and offer a window into the personal perspectives and lived experiences of the interviewees. (Brinkmann, S., & Kvale, S. 2018,. Pg 58-63). They are highly effective at creating an interview environment where interviewees are free to respond based on the thematic direction set by the interviewer, allowing for both guided discussion and emergent responses. (Brinkmann, S., & Kvale, S. 2018,. Pg 58-63).

This research conducted semi-structured interviews as the primary methodological approach during the problem identification(1) and testing phases (3) of design based research (DBR). The aim was to get an insight into educators' perspectives on posthumanist pedagogies, with particular focus on multispecies empathy in art education. Two art teachers (P1 & P2), teaching grades 4-9 from different Pakistani schools, were interviewed online via Zoom. Additionally, two Danish art educators of grades 6-7(D1 & D2) provided feedback via email. The interview questions had a predefined theme with flexibility for open exploration. Firstly, to hear teachers' experiences and get their insights on integrating non-human perspectives in their classroom. Secondly, to identify practical challenges and opportunities in implementing posthumanist approaches in Pakistan's educational context. Lastly, to get feedback on the multispecies postcard activity as a pedagogical tool, its adaptations to their local context, its strengths and limitations for future scalability and iterations. While these interviews aimed to document educators' personal insight, an unexpected but valuable outcome was the revelation of their underlying assumptions and preconceptions about multispecies and non human actors in art education, unlocking a new depth to researchers' outlook (Brinkmann, S., & Kvale, S. 2018, Pg 47-48).

To ensure ethical data collection and its analysis, it is important to obtain consent from the interviewees. All the participating educators were provided with a consent form to read and sign (see appendix 7). They also have the right to withdraw from this research at any point. To maintain anonymity and privacy, participants' names were hidden in this report along with any personal identifiable information.

### **3.5 Thematic Analysis:**

Thematic analysis is a flexible method of analysing, identifying & organizing patterns within data, such as interviews, group discussions or written texts (Braun & Clarke, 2008,pg.79,85). A theme is what reflects a significant recurring pattern in the collected data relevant to the study's research question. It represents a consistent element within the data (Braun & Clarke, 2008, pg.82). When analyzing data, it is crucial to evaluate what qualifies as a theme. While recurring patterns can strengthen a themes' validity, frequency alone cannot determine a theme's significance. The theme's relevance to the research goals and its ability to highlight something important in the data are equally important. Researchers sometimes also choose to focus their analysis on examining one theme in great detail, rather than covering many themes broadly allowing deeper exploration of

complex ideas emerging from data (Braun & Clarke, 2008, pg.82). Thematic analysis is flexible and can take different forms depending on the researcher's goals and theoretical frameworks. Regardless of what form it takes, it is essential to clearly document the analytical process. This process requires constant back and forth, from initial note taking, coding to the final interpretation (Braun & Clarke, 2008, pg.86-87).

Thematic analysis was used after phase 3 (testing) in this research to interpret the data gathered from two Danish art educators (D1 and D2) and an interview with one Pakistani art educator (P3). This analysis led to identification of four main themes, which are discussed in phase 4 (reflection). This method followed Braun & Clarke's (2008) flexible six step framework: 1. Familiarization with data/transcribing, generating initial codes, searching for themes, reviewing themes, naming themes and finally producing a report (Braun & Clarke, 2008, pg. 87-93). Braun & Clarke (2008) identifies a key concern which is the risk of merely condensing data devoid of deeper interpretation. Therefore, careful attention was given to decode the data, identify themes, formulating evidence based claims, and ensure alignment with the study's goals. See appendix (4) for a detailed process of the thematic analysis.

## **4. Design based research in practice:**

### **4.1 Phase 1 Problem identification/context analysis**

This section synthesizes empirical data from fieldwork carried out during the third semester internship, along with semi-structured interviews conducted with Pakistani art educators (P1 & P2) as part of this thesis research. Since the tool had already been tested in Danish context, the purpose of conducting semi structured interviews with Pakistani art educators was to gather feedback that could inform its application in a different cultural context.

The bifocal choice of research in these contrasting contexts serves several purposes. First, it draws on the researcher's personal and professional background as both an artist-educator in Pakistan and a master's student in Denmark. Secondly, it aims to test the adaptability of posthumanist pedagogy across diverse cultural, political, and educational landscapes. This is not a straightforward comparative analysis, but a situated exploration of how posthumanist design might be adapted, and scaled in both western and non-western contexts.

This approach interrogates whether posthumanism, despite its decentralizing intentions, risks reimposing intellectual hierarchies even as it seeks to dismantle anthropocentric ones by situating it in the global south (Braidotti, 2019; Ylirisku, 2021). By situating this work in the global south, the research seeks to challenge potential euro-centric biases and explores the practical, ethical, and logistical barriers that may emerge when translating such frameworks across asymmetrical political and educational landscapes.

Additionally, this dual context approach provides insights into scalability of the multispecies entanglement tool, identifying distinct pedagogical challenges and innovative possibilities that may arise when adapting them to different socio-cultural contexts.

The initial testing of the multispecies empathy postcard tool revealed a critical gap in both Danish and Pakistani contexts. The curricula remain predominantly human-centered, the superficial engagement with ecological themes and multispecies empathy- the capacity to recognize non-humans as agential beings within shared ecological networks.

Multispecies empathy postcard tool was first tested at DAC and then with sixth-grade students in Denmark, during a third semester internship. It revealed a fundamental flaw in conventional approaches to empathy; a concern that informs the problem formulation in this thesis. Rather than fostering genuine connection across species, the exercise unintentionally reinforced anthropocentric perspectives. The students instead of acknowledging the gap were simply anthropomorphizing- projecting human experiences onto the other species, as evidenced in students' message on the postcard (from the initial iteration):

*"I need a hug. I am a pine tree and I have spiky needle-like leaves so no one wants to hug me. I do so many things for the ecosystem . so the only thing I would like is a hug from a human."* (Appendix 1b)

*"Hi! I'm Robin. I just want to tell you that if you like Someone, just show off your moves and they will fall for you easily. Hope you get a Fantastic life."* (Appendix 1b)

Regardless of the creativity of students with their messages, this demonstrates how empathy frameworks based solely on human terms break down when applied to multi species relationships, as they can not account for the radical differences in how other beings experience the world. Humans and non-humans experience the world through different lenses. Attempting to homogenize these diverse ways of existence through anthropomorphic projection erases the different realities of

each species (Derrida, 2011, pg.392). However, it also shows potential in artistic methods to spark creativity in students with the correct prompts and frameworks.

This outcome contradicted the activity's goal of developing relational understanding without reducing nonhuman experiences to human frameworks. Student feedback and observational data (see appendix 1b & 1c) further highlighted a preference for embodied engagement, the grounding exercise and reflection card discussion elicited more enthusiastic participation and creative responses compared to the writing component. This underscores a fault in the approach of the design of multispecies postcard, instead of asking the students to embody a species and write a message to humans, the approach could have been about the intra-action between human and non human. Echoing Barad's idea of intra-action that agency is entangled meaning entities do not have agency independently but emerges through intra-action (Barad, 2007, 141). Unlike the postcard prompt which assumes the student and the phenomenon or the species as separate- meaning the writer and subject, the concept of intra-action highlights that the agency emerges through entanglements. Imagine students on a nature walk, walking barefoot on the grass and feeling its texture on their skin is not just experiencing the grass as an object; they're part of a phenomenon where grass, worms underground, skin, sky, wind, sunlight, attention and emotions co-create a "mutual becoming". This exemplifies that the students are not just mere observers but they are intra-acting with the environment around them, altering it and being altered by it. Drawing from the initial testing during the internship, grade 6 students in Danish school explicitly expressed greater interest in direct nature interaction over text-based activities, this suggests our current design overemphasizes language-based methods while undervaluing embodied, situated learning experiences.

Rautio (2012) argues that the western thought often reinforces a separation between direct engagement with the world and conceptual understanding of it, where conceptualizing is considered as more "civilized". However, both are equally important and intertwined into daily life (Rautio, 2012, pg. 454). Effective education should embrace both situated engagement as well abstract thinking, avoiding rigid binaries like human/non human, or discourse/matter. Instead, following Deleuze's idea of "difference as generative", it can be highlighted how these binaries influence one another (Rautio, 2012, pg. 454). Pedagogically, this perspective invites openness and "anarchy", with room for unstructured spontaneous moments within the curricula and expands the definition of teacher beyond the human, recognizing that non-human entities too mentor and support learning (Rautio, 2012, pg. 454).

Multi-modal and multisensory engagement has the potential to help students get sensitised and recognize the existing relationship they have to the environment . As Tsing (Coats et al., 2022, pg.333) presents her idea of art of noticing which emphasizes on paying attention to the world through observation and encourages slowing down and being immersed in a place which can also help bridge classroom learning with real-world experiences challenging conventional ways of learning (Coats et al., 2022, pg.333). Employing other senses like sound and the sense of smell can be a powerful teaching tool as it creates a strong lasting memory, more effective compared to other senses (McCormack as cited in Coats et al., 2022). This happens because the brain's smell center directly links to the amygdala and hippocampus that process emotions and memory, making smell a unique way of connecting learning to personal experiences (Coats et al., 2022, pg.333).

While the initial multispecies empathy postcard tool developed during the internship at innovation agency was not empirically tested with Pakistani students, it was presented to Pakistani art educators (P1 & P2) during semi-structured interviews. The aim was to understand how empathy is perceived and practiced in Pakistani context specifically for students of grades 4-6. These interviews revealed noteworthy insights.

Both educators recognized art's unique capacity to facilitate student engagement with ecological interconnectedness and kinship-making with non-human entities. As Mira Kallio-Tavin (2020) highlights the importance of art to address issues like speciesism, animal abuse and discrimination; art education's main goal should be to help students engage in a conversation with the world around them rather than just focusing on self expression (Gert Biesta as cited in Kallio-Tavin, 2020, 308).

However, mirroring observations from the Danish context, Pakistani students - whose primary language is Urdu with English as a secondary language - demonstrated a marked preference for creative production over written exercises within art. This linguistic and pedagogical challenge was compounded by students' expressed desire for immersive, sensory experiences in natural environments, coupled with opportunities to develop both conceptual understanding and technical artistic proficiency.

The 4th grade Pakistani art educator (P2) exclaimed while emphasizing the importance of prioritizing hands-on creativity driven approaches over writing intensive tasks, as students often arrive in art class fatigued from other subjects and seek an outlet for free expression.

“Kids get offended if art class is taken away from them because they want to do art and art-related things in art class, that’s why I asked you about the writing part. Since children already spend their whole day doing work, they don’t want to write more in art class; they just want to create.” (See



appendix 5e)

The interviewee also talked about students' limited engagement with the environment and suggesting that maybe if they had more exposure to observe the non-human they'd be able to think and react more about it as they already empathise and care for the pets they have at home like cats, dogs and parrots. She suggested that increased exposure to non-human entities might deepen their ecological sensitivity.

*"I was so shocked when I started hearing students say something about the future. And they really don't care about anything other than themselves. I feel that they are so money driven. All they think about is that, Miss, I will do this because I have to earn money."* (P1) (See appendix 5d)

Moreover, a recurring challenge highlighted by both the art educators (P1 & P2) was students' fixation on aesthetic outcomes rather than process-based learning even though the school endorses process over product. For instance, according to the art educator (P2), students lack basic foundational drawing and observational skills. She mentioned that the fourth grade students struggled with accurately drawing an octopus's eight legs and insisted other students or the teacher to draw it for them, because they preferred their work to look presentable. Both the interviewees (P1 and P2) highlighted the lack or superficial existence of environmental themes in the art curriculum like limited engagement via conventional art competitions that prioritize skillful outcomes over conceptual depth, resulting in less original, redundant work.

*"They're always chasing after something that looks beautiful, but I want them to understand that not every piece of work has to be beautiful."* (P2) (Appendix 5e)

*"But I think that this is an approach that a lot of teachers don't have even now. And they still feel that the focus on skill is way more important. And you can see it when you see the portfolios towards the end of the day. You can see that it's so formula-based"* (P1) (Appendix 5d)

Students demonstrated a particular resistance to reflective dialogue, showing a preference for immediate artistic production. Many appeared disengaged from broader ethical and environmental concerns due to predominant motivation for financial success. A more fundamental barrier emerged in prevailing attitudes of both students and some teachers, who resisted discussions about ecology and more than humans. Ecological topics were often dismissed as a waste of time, since the curriculum is largely result-oriented and leans more towards skill development. Additionally, they

have become desensitized towards ecological issues as they seem distant, with nothing to do with their own lives. *“They feel that it's not that important to think about things. They just want to create. So I struggle a lot with that.”* (P1) (Appendix 5d)

The educator (P1) proposed several strategies to enhance engagement in her context, emphasising the need to adapt to contemporary media consumption patterns through video-based art forms that provoke critical reflection, storytelling, particularly through film and real-world narratives, were highlighted as effective for fostering empathy and connecting abstract concepts to lived experiences. The discussion revealed an urgent need for teacher training or instructional resources to effectively integrate environmental themes through playful, art-based methodologies and develop educators' interest in such topics.

*“I feel that this should be targeted for teachers as well, because I don't think a lot of the teachers also understand this. How will they communicate when they themselves don't really think about this, and aren't interested in any tools, etc. They don't think about these things, and they also feel that it's not their job to make the students think about these things”* (P1) (Appendix 5d)

As the selection of topics and the art educators' willingness carries significant weight, along with how they structure the learning environment. Their role involves designing such pedagogical spaces, then actively guiding “provoking” and “responding” to unfolding events (Ylirisku et al., 2024, pg. 5-6). While the postcard tool prompted creative responses, outcomes, such as guilt-driven apologies to non-human species or superficial engagements highlighted tensions like: can human-centric notions of empathy authentically bridge interspecies divides, or do they risk reinforcing the very hierarchies they aim to dismantle.

Consequently, rather than attempting to instruct empathy- an abstract and deeply internalized process, the focus should shift toward creating open spaces for engagement and dialogue. Art can serve as a method of inquiry that uses empathy as an initial entry point to critically examine unjust relations with other species, thereby allowing participants to develop their own nuanced responses without being steered toward a predetermined outcome.

The interviews underscored a persistent tension between pedagogical intent and the actual classroom practice. Although the tool was designed to bridge interspecies divide and foster multispecies empathy - defined here as the capacity to recognize non-human entities as agential beings within shared ecological networks - it instead perpetuated the very hierarchy it aims to dismantle.

## 4.2 Phase 2 Design: From Multispecies Empathy to Multispecies Entanglement

Building upon the challenges identified in the problem identification chapter, this section outlines the revised design of the multispecies empathy postcard tool. The redesign is informed by the fieldwork observations and feedback from Danish students and their teacher (D1), semi-structured interviews with Pakistani art educators (P1 & P2), and insights from domain specific literature. The innovation agency developed the original postcard tool, the instructional manual and the soundscape, in collaboration with the EU-funded Desire project. As mentioned earlier in the problem statement, the tool was derived from Helene Johanne's poetic practice who was one of the artists from the Garden Caretaker project; her poetic exercise invited people to write letters to non-human species. The multispecies postcard was developed as an attempt to create a tangible tool to foster multispecies empathy by prompting humans to embody a non-human species or adopt the perspective of a non-human species. It was framed as writing a letter beginning with, "Dear Human" and ending with, "With love, [name of the species]" (see Appendix 1). This framework of the postcard presented several challenges: Instead of encouraging a relational understanding, it risked anthropomorphising, meaning, it reduced the non-human experience to human logic and projection of human emotion which reimposes the hierarchy.

Another challenge was the concept of empathy as stepping into someone else's shoes or embodying another species which reinforces the idea that one can fully embody another being's perspective. This idea of empathy itself becomes anthropocentric as it negates the differences between human and non-human and lumps together the similarities, ultimately recentralizing humans as the emotional interpreter (Derrida, 2011, pg.392). The postcard iterations revealed how the traditional notion collapses empathy into a one-sided human-centered notion and raises questions about the possibility of measuring or achieving empathy which is abstract and has been contested in history. In response to these challenges, the new design reconceptualized empathy from embodiment to a relational, entangled and an intra-active understanding. Aligning with Rachel's (2023) research on art education framing empathy as a performative practice, not just cognitive and internal but as an active process which is externalized through the process of art making. Rachel highlights how applying an agential realist lens to art education blurs the boundaries among material/object/matter and creates conditions for a nuanced, non-anthropocentric empathy to emerge (Kangas, 2023, pg.58-59).

Bohr and Barad (2007) exemplifies this view, they elaborate how a person holds out a stick to feel their way into a dark room; that stick does not remain a tool anymore, it becomes a part of their senses, like an extension of a person's body. Similarly in artistic practice empathy emerges through a collaboration of 'materials/object/matter' blurring the line between us, the artwork, and the material, opening up new ways to understand each other and the world (Kangas, 2023, pg.41-42). Gruen's (2002) idea of entangled empathy further emphasizes that humans are already in relationships with non-human and must work to nurture these relationships. Rather than just trying to imagine what it's like to be a bat, Gruen argues we must also recognize their vulnerabilities and needs but also take a step further by practicing it to make those relationships better - shifting empathy from just cognition and emotion to care and moral responsibility. It is not a quick fix, entangled empathy is emerging and requires ongoing reflection and practice (Gruen 2015 as cited in Myisha Cherry, 2017, p.440). Comparably, posthumanism rejects the mind and body binary, arguing that cognition and affect are interdependent forces shaping and influencing each other, (Massumi 2002 as cited in Kangas, 2023, p.20).

Thus, based on the theoretical understanding the redesign of the postcard attempts to emphasise that empathy is not becoming the other, but it is about acknowledging the ways of becoming with the other. Accordingly, the redesigned postcard is renamed to Multispecies entanglement postcard to reflect this shift. (See appendix 3 for detailed re-design process and final multispecies entanglement postcard tool pack)

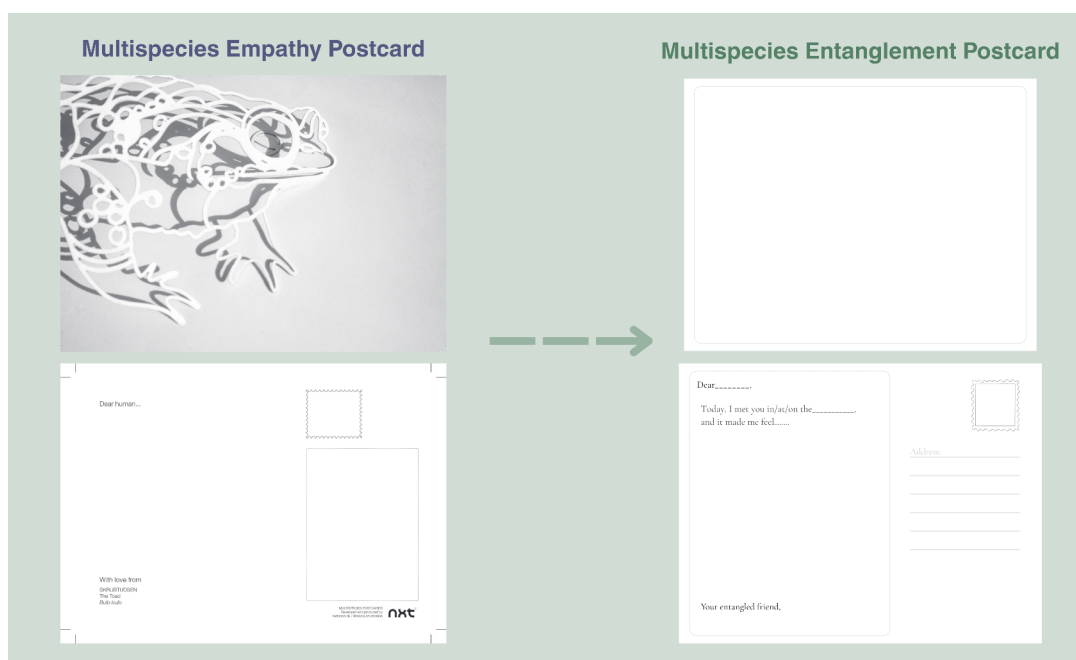


Figure 3: Redesign of multispecies empathy postcard tool

The redesigned multispecies entanglement postcard activity follows a seven stage structure designed to scaffold the participants from sensorial somatic grounding to speculative dialogue (reflection cards), artistic expression (outdoor excursion to artistically co-create with non-human species) and feedback/exhibition (see appendix 3 for the detailed visual redesign).

While the format of the physical postcard is retained, the prompt is changed to highlight the relational awareness and entanglement. The revised version of the postcard prompt invites the students to observe and reflect on a shared moment with the non-human.

*“Dear [name of the species], I met you today at/on/in \_\_\_\_\_ and it made me feel \_\_\_\_\_.*  
*With love,*  
*your entangled friend \_\_\_\_\_.*  
*Address:”*

While providing a concrete prompt, it guides the student towards an entangled and intra-active form of empathy which recognizes the differences and encourages to closely observe the ways we are entangled. In the initial multispecies empathy postcard, the front side had an existing image of the species, not allowing the students to artistically externalize their experience with the species, keeping that empathy internal. However, in the redesign (multispecies entanglement postcard), the frontside of the postcard is left blank, moving away from isolated, predetermined imagery. This change invites students to engage artistically with species and phenomena in their local surroundings, interact with indigenous trees, flora, and fauna of their land and context.

The instructional manual further explicitly encourages educators to not just pay attention to the romanticized species often celebrated in popular media, but to also notice overlooked or less conventionally appealing species. The aim is to support students and educators to cultivate a broader multispecies ethic, that extends beyond beloved or charismatic animals like pets, farm animals, and include species that are less visible or with whom it is harder to form an emotional connection. The blank space becomes an invitation to notice not just the evident connections, but the harder, quieter entanglements that sustain life (Gibson, rose and fincher 2015 as cited in Taylor & Ketchabaw, 2015, 511-512). Building on that thought, Hird (2013,262) proposes “ethics of vulnerability” which decenters humans from deciding who deserves care. Instead, recognizing that we are deeply dependent on all kinds of life, especially the beings which we rarely notice. So, rather than acting

like caregivers from above, we should acknowledge our own vulnerability and how much we owe to the unseen lifeforms (Hird 2013 as cited in Taylor & Ketchabaw, 2015, 513).

Moreover, students are free to choose any medium to explore the physicality of these species, fostering a deeper connection with the non-human world. Additionally, this approach was informed by students feedback which expressed a desire for a meaningful and skillful product at the end of the process.

Based on the feedback from the initial iteration (Appendix 1c), students responded well to the sensorial and embodied exercises as they suggested an opportunity for play and direct contact with nature and the species mentioned on the postcards. This redesign of the postcard activity is designed as a package with different segments which attempts to stimulate the students' senses and lead up to the multispecies activity. Initial testing at both Danish Architecture Centre (DAC) and school settings in Denmark, demonstrated that participants struggled to immediately grasp the complexities of the non-human entanglement highlighting the role of preliminary sensory exercises. Tapping into different senses, these activities scaffold the participants/students to gradually attune to ecological relationships before attempting to externalize it in tangible formats.

The activity package begins with a grounding and sensorial engagement exercise, utilizing the humming bee breath meditation (see appendix 3). Along with this meditation, the revised package introduces two additional options to deepen embodied engagement: a guided meditation and a sensory stimulation activity set. The guided meditation, titled “symbiosis meditation,” (see appendix 3) was originally created by an imagination activist, Phoebe Tickell. This eight-minute meditation invites participants to reflect on the interconnectedness of human and non-human, helping them visualise the body as a network of relationships and connections. It also encourages imaginative thinking about alternative, hopeful futures anchored in entanglement (Stålne & Greca, 2022).

The set of sensorial activities in the redesigned tool prompts the students to feel textures and to pay attention to smells and sounds around them, stimulating their senses as one of the ways to generate “affective and speculative” connections to disrupt traditional paradigms (Jagodzinski, 2009; Lewis & Thurman, 2019 as cited in Coats et al., 2022, pg. 332).

Art-based and sensory activities like these give the opportunity to slip away from traditional result-oriented ways of doing education while staying grounded with a concrete structure making “intervals of possibility” (Coats et al., 2022, pg. 331). Arts’ subversive nature encourages speculative and affective engagement with pre-existing conventions, fostering disruptive and playful connections that reimagine established norms (Jagdozinki, 2009; Lewis & Thurman, 2019 as cited in Coats et al., 2022, pg. 332). This subversion does not imply that art pedagogical processes are

directionless. On the contrary, these processes within posthuman-art education are grounded in ethical and political responsibility, with the intention of promoting “ecological justice” and cultural diversity (Ylirisku & Dufva, 2024, pg.5).

Anchoring artistic learning in environmental experiences, such as nature excursions and the opportunity to learn from non-humans outside the classroom stretches traditional studio based art production through sensorial and place based methods (Graham, 2007, 2014; Gray et al., 2019; Hickey-Moody et al., 2021; Ingold, 2018; Powell et al., 2017; Powell & Uhlig, 2019; Trafi-Prats, 2017 as cited in Coats et al., 2022, pg. 332).

### **4.2.1 Design Principles:**

According to Baumgartner and Bell (2002) design knowledge is an ongoing process, not a one time event. Educators and researchers act as designers who continually refine their practices in response to learners’ evolving needs (Baumgartner & Bell, 2002, pg.3).

Design principles are concrete guidelines developed through educational design research. They help translate theoretical insights into practical applications that can be adapted across various contexts and classrooms, effectively bridging the gap between theory and practice (Baumgartner & bell, 2002, pg.4). However, relying on predefined design principles is not sufficient for ensuring effective design. As highlighted in later work, design principles are rarely linear, it is often messy, adaptive and dependent on negotiation and transformation through the agency of educators and learners (Hanghøj et al., 2022,). The concept of design principles are not fixed recipes, but must be continually interpreted, enacted, and revised in response to local needs, constraints and emerging insights (Hanghøj et al., 2022).

This research draws on Baumgartner and Bell’s (2002) generative design principle approach: meaning they are theory informed, meant to generate new educational interventions. However, it simultaneously diverts from their model through a speculative posthumanist lens. Drawing on ideas of entanglement, intra-action and ‘worlding’, the design principles here extend agency beyond just educators and students to include non-human actors as co-creators. Infused with speculative and art based inquiry, these principles go beyond stagnant templates to provocations, serving as starting points of an ongoing inquiry: open-ended transformative invitations to think otherwise, embrace ambiguity and imagine alternative ways of being that are alive with possibility; by remaining with unfamiliar and strange, opens up portals to new transformative ways of thinking, feeling and being

(Cartsens,2020 as cited in Hiltunen & Campbell, 2024, 104). Moreover, acknowledging that educational design is not a structured algorithm but a relational practice. Rather than offering specific measurable solutions, it is an attempt to provide ethical ways of building kinship , subverting hierarchies and cultivating transformative modes of attention.

Following are the design principles derived from the research based on fieldwork, interviews and domain specific theories:

Speculative fabulation: Storying otherwise

Art of noticing

Collaboration-composting-assemblage

Multisensory and multimodal Engagement

### **Speculative fabulation:**

Haraway (2016) conceptualizes SF (Science fiction, speculative feminism, speculative fabulation, string figures) as a transformative methodology for becoming-with contemporary crises through narrative worldbuilding. It functions as a mode of “staying with trouble” that emphasizes becoming-with others in entangled, more than human worlds (Haraway, 2016, pg.10). This approach is not about escapist fantasy but about exploring real crises through speculative scenarios, it interrogates present crises through speculative yet grounded storytelling by asking “what if” in order to imagine more livable futures (pp.13-15). Central to this framework is the metaphor of string figures, derived from the Indigenous practice of na’atl’o (string games), played with loops of strings between fingers, it represents “continuous weaving”,collaborative meaning making where participants collectively weave and reweave patterns (Haraway, 2016, pg.10). Speculative fabulation, in this sense, is a tool for thought and care: a game of co-creating meaning that embraces failure, hope and historical entanglements.

Speculative fabulation in pedagogy has the potential to embrace uncomfortable complex ideas and explore both collapse and renewal without rushing to simple answers, rather than just telling stories. SF becomes a method for imagining fresh approaches to complex challenges by making the familiar strange and slipping into alternative ways of thinking, feeling and acting beyond conventional frameworks (Cartens, 2020, pg.75). Choosing this approach engages emotion and embodiment. Instead of just recording observations, it is about creating relational knowing (Hiltunen & Campbell, 2024, 106)



### **Art of noticing -arts of attentiveness**

We are so caught up in the cities we live in that we don't pay attention to the cities below us, like human cities there is an underground network that thrives on exchange and connection but unlike humans, these fungal networks, show how life can flourish through cooperation and collaboration (Tsing, 2010, 191). We have been trained in a neoliberal system that teaches us to focus on a few important things while ignoring everything else. However, we need to question: what if the real world is unfolding outside this field of narrow vision? To see that reality, we must unlearn these conditioned habits (Shin & Tsing, 2021). To break free from that limited way of viewing the world we need to pay more attention with all our senses and not just relying on vision like sound, touch and smell; smell for instance does not follow rules, it jumps from one memory to another, often catching us by surprise (Shin & Tsing, 2021).

The world is obsessed with endless growth: bigger economies, more production, constant progress. We need to question what is at stake or what it costs us? Not just from the lens of a human but as a part of a web of life that includes multispecies and ecosystems we depend on (Tsing & Elkin, n.d.). Growth is “self-devouring” that can turn on itself, much like a snake eating its own tail (Livingston as cited in Tsing & Elkin, n.d.), destroying the very things that sustains us, poisoning rivers, polluting the air. However, if we slow down and pay attention to the silence, hidden networks, like the way roots and fungi work together beneath the soil, we start to see how reckless expansion can have damaging effects (Tsing & Elkin, n.d.).

As Deleuze and Guattari (1987) emphasize adopting a rhizomatic way of seeing things, trying to see things from a middle ground rather than from fixed positions, from top down, looking from below, or side to side; seeing things from the middle fundamentally transforms our understanding of things around us, it brings to light how human and non-human actively shape one another (Vagg, 2021, p. 541).

Deleuze and Guattari (1987)'s suggests ‘embodied encounters to move beyond viewing things from a distance - to engage with the world sensorily, through the body, and processes of ‘becoming-with’. These embodied encounters ask us to linger in the middle ground, muddled with uncertainty (Vagg, 2021, 541). Art of noticing is thus an art of becoming-with which attempts to rewire our ways of thinking from neo-liberal individualistic to collaborative mindsets, not just documenting static entities but participating in their continual co-creation, prompting us to ask what new systems might flourish if we truly practiced embodied attention?

### **Collaboration-Composting-Assemblage:**

Multispecies research necessitates collaboration across different fields and convergence of diverse knowledge and expertise forming “multidisciplinary associations”. These alliances help bridge rigid divides such as “science wars” of the 1990’s (Dooren et al., 2016, pg. 11). However, making alliances is not just about gathering diverse views or adopting simple relativity but about “staying with trouble” (Dooren et al., 2016, pg. 11).

This research also frames collaboration as a relational, open-ended process of co-becoming between students, educators, non-human species and materials.

Collaboration is not merely a method, but a mindset rooted in relational, iterative and entangled learning. Drawing from Jan Varpanen’s (2025) concept of co-existential practices, which highlights ethical and relational engagement in education, emphasising “being with” others in a shared collaborative space rather than imposing change or mastery. In this view, both student and the teacher are mutually affected participants in the emergence of learning (Varpanen, 2025, pg. 19). Varpanen (2025) proposes a pedagogical shift by embracing “hospitality’s image of education” which centers on cultivating a relationship, embracing the “wonder and mystery” of the student instead of changing or imposing “mastery” over them (Varpanen, 2025, pg. 189).

While acknowledging Derrida’s concerns about the paradoxes instilled within hospitality, particularly how the gesture of welcoming can, paradoxically, reassert authority and control (Derrida, 2000, 4; Varpanen, 2025, 185-188). Varpanen (2025) reinterprets these tensions through the Deleuzian lens. From this lens hospitality becomes an “immanent” practice rooted in life itself: dynamic and entangled in the here and now, not something unattainable, transcendental and paradoxical.

Thus, collaboration is not framed as a means to achieve an end product, but as an “immanent” shared practice of “being with” cultivated through acts of play, dialogue and artmaking. This resonates with Haraway’s (2016) *Sympoeisis*, of becoming within which students, teachers, and more than human participate in “worlding” together, in ways we can never completely predict or control (Haraway, 2016, pg.25).

### **Multisensory and Multimodal Engagement**

The purpose of this tool is to foster embodied and multi-modal meaning making, bolster students to intra-act and express their ideas not just through traditional media but through their bodies, senses and emotions. The origin of the binary between mind and body dates to the Enlightenment era, particularly Descartes’ famous declaration, “I think, therefore I am”, which framed the mind as

separate and superior from the body. However, ongoing research shows that learning is not merely logical or devoid of affect. Cognition is not just a computational process but one also deeply embodied (Damasio, 2011, as cited in Olsen, 2025, 62-63).

The idea of embodied cognition challenges the computational view by demonstrating that the neural mechanisms responsible for logical reasoning and abstract thought are interconnected with those governing emotion, bodily movement and sensory perception (Johnson, 2007 as cited in Olsen, 2025, 62-63). Rather than working as an isolated processing system, the brain relies on dynamic sensory and ‘multimodal neural pathways’ (Barsalou et al., 2003 as cited Olsen, 2025, 62-63)

Learning is messier it is not just confined to cognition and human centred logical thinking, it involves entanglements (Barad, 2007, pg, 152,332) between bodies, emotions, gut bacteria, senses and surroundings. This approach embraces the affective complexity of everyday experience, where strange and confusing teaching methods has the potential to challenge traditional ideas of education that remain rooted in human exceptionalism (Cartens, 2020, pg.78-79) .

Post-humanist and new materialist frameworks reveal a dynamic view of knowledge, that learning occurs through the intra-action between learners, tools and environments. This shifts art education from mere technical skill development to an exploration of co-creative processes where boundaries between students, mediums, environment, human and non-human actors dissolve into generative possibilities.

### **4.3. Phase 3 try-out/test of design**

Phase 3 involves testing of the redesigned multispecies entanglement postcard tool by interviewing teachers about their feedback and their experiences testing it.

#### **Feedback from 6th grade art educator Denmark (D1) (see appendix 5a)**

The art educator (D1) observes that the redesigned Multispecies Entanglement tool now aligns more distinctly with art education compared to its previous iteration. This is because the new version invites students to document their nature walk using multiple creative modes like writing, drawing, photography, video or sound. The educator emphasizes that this multimodal approach engages students in noticing their surroundings through artistic expression, a key goal in art education. In

contrast, the earlier version felt more cross-disciplinary, blending art with science and environment studies without the tool being firmly rooted in artistic practice (Appendix 5a) .

The educator (D1) notes that this sensory and embodied method provides a unique learning experience by allowing students to physically interact with the subject matter.

*“You are using your body and senses to connect with what you are investigating, and thus makes it easier to remember after, as you have created an output/product”* (Appendix 5a)

This sensory and hands-on engagement helps them reflect better and retain knowledge, as they ultimately produce an output based on their active participation.

Moreover, the art educator believes that the nature excursion component could enhance creativity in ways traditional art lessons may not. However, they also highlight challenges such as: outdoor activities can lead to distractions in students and require at least two facilitators, which is often difficult to arrange and more costly for schools. They recommended making it clearer that meditation and reflection card activities can be done indoors as well, since students may find it easier to ground themselves without outdoor distractions.

Although the educator (D1) has not tested the tool in their class yet, they suggest more structured guidance, especially around selecting artistic media for postcard drawing. Many students, particularly in grade 6, lack confidence in drawing and may struggle with open ended creative tasks. Providing clear steps, examples and a list of required materials would support both teachers and students better.

They also recommended explaining terms like “your entangled friend”, especially for non-native English speakers. Additionally, they suggested clarifying the purpose of sensory activity. Without a clear connection to the rest of the lesson, students may wonder why they are interacting with items and textures like spoons and rocks if those objects are not to be used again later.

Lastly, compared to the initial version where students embodied other species which some students found confusing and difficult to engage with, the new version of writing from a human perspective seems more accessible. This shift will make it easier for the students to relate and express themselves more creatively. Overall, they found the redesigned tool, with its added layers of nature observation, reflection card dialogue, documentation, drawing and writing, more effective. The educator is curious to see how the sensory elements play out in practice in her classroom.

### **Testing with a Danish art educator (D2) and her students (Appendix 5b):**

A Danish educator (D2) tested the revised tool with her 7th grade students and described the experience as fun, refreshing and notably different from their usual art lessons. She noted that the meditation was particularly effective in framing the session through a sensory and grounding approach to bring the students in the present. Following this, students participated in the sensory smelling jars activity, where they smelled natural scents like cotton, sawdust, bark and grass with their eyes closed without knowing what was in the jars beforehand. Students found this activity to be playful and engaging.

Reflection card activity was well received. It was initially challenging, as the questions were unfamiliar and required a different kind of thinking. However, once students found a rhythm, they became deeply engaged and expressed enthusiasm about the experience.

*“The questions turned out to be a big success, so much so that the students didn’t want to stop. We ended up spending about 20 minutes in a shared dialogue, where many contributed with reflections and personal perspectives” (Appendix 5b)*

The nature observation walk presented a challenge due to the school’s limited green space (only one tree and a bush). To adapt, students selected species they knew existed in the local area, illustrated them and wrote about them on the postcards. The session concluded with students presenting their postcards to one another. Although the entire activity took around 70 minutes, the teacher observed that the variety of sensory and reflective components kept students engaged throughout.

The Danish art educator (D2) also tested the activity with her visual arts student teachers at the Copenhagen University College. Overall, the student teachers responded positively and described the session as both meaningful and inspiring. Grounding meditation was particularly well received. Many appreciated it as a calming and sensory rich way to begin the session, helping them become more present and receptive.

However, some students found the transition to the scent-based “jar smelling” activity slightly disjointed. They suggested that this component would have worked better had it been integrated into the end of the meditation itself. Instead of moving back to the table, to smell the jars, they felt it would have been more immersive to remain in their meditative positions and engage with the scents with eyes closed. The shift felt abrupt and somewhat disconnected from the rest of the experience. Reflection card activity was very successful: The questions were thought provoking, and the student teachers quickly became deeply engaged. The task sparked lively and unusual conversations, and

the group ended up spending around 20 minutes discussing the prompts, demonstrating the activity's capacity to generate meaningful dialogue.

During the nature walk, participants observed species and elements in their surroundings they would usually overlook. Upon returning to the university, they each chose one species to respond to artistically. Some chose to draw; others wrote and while several combined both forms on their postcards. The act of going outside and writing to a species was described as a powerful way to cultivate connection with the more-than-human world, effectively tying together the session's themes. One of the students wrote:

*"Dear Butterfly,  
Today I met you in the park and it made me feel at ease. It's lovely when you pass by, you're quickly on your way, but I get to see you. Thank you for announcing that summer is on its way. Thank you for being here."* (see Appendix 6)

The final sharing circle was regarded as a "magical" conclusion. Each student teacher presented their postcard aloud, reading what they had written and showing their artwork. This moment of collective reflection was described as moving and poetic, creating a deeply felt "third space", an unspoken but shared sense of connection within the group. Many student teachers expressed that they would like to incorporate similar approaches in their future teaching. They appreciated how the activity invited them to consciously use all their senses and momentarily step outside human-centered perspective, becoming more aware of the entangled world they share with non-human life (see appendix 5).

The Danish art educator (D2) found the multispecies activity simple to use, requiring little preparation due to its clear, step by step structure. She noted that the activity works effectively across both visual arts and science/technology classes, bridging these subjects through its interdisciplinary approach (Appendix 5b). According to the educator (D2), in visual arts education, the activity helps students develop skills for expressing ideas, emotions and experiences through various 2d and 3d mediums. It strengthens their ability to translate personal thoughts and imagination into visual form. The sensory elements helped students calm down and sharpened students' focus and physical engagement with materials. The follow-up discussions about their artwork further developed critical thinking and group dialogue (Appendix 5b).

The educator noted how the activity successfully blends intuitive and analytical thinking, allowing the activity to be inclusive and all students to engage meaningfully. Students' reflective postcard messages showed genuine connection with non-human species. However, practical challenges

emerged, especially with the 45-minute class duration. Organizing an outdoor field trip requires scheduling adjustments, such as arranging for a substitute teacher and borrowing time from other classes. The educator suggested developing indoor alternatives for times when nature exploration is not feasible.

While most students produced visually similar work, influenced by peer ideas, the educator proposed that more guidance regarding creating visuals could encourage varied outcomes. Despite this, according to the educator (D2), the activity remains adaptable for different grade levels. However, for younger students who may struggle with full sentences, using individual words instead may help accommodate their skill level (See appendix 5)

### **Interview with a Pakistani art educator (P3) of Grade 6 (a practitioner's perspective):**

Feedback from the Grade 6 art educator provided valuable insights into both the potential and challenges of the multispecies postcard tool. The teacher characterized the tool as well thought out and concrete, noting its ability to scaffold student learning while enabling exploratory engagement. She particularly appreciated how the tool moves beyond conventional art pedagogy, focused on technical skills and art history, instead offering an innovative embodied approach to connecting with nature through art making.

She specifically valued the tool's sequenced approach, beginning with grounding sensorial exercises, transitioning with reflection questions to the outdoor exploration, and culminating in the postcard activity, which she believed could help students engage with nature through a new lens. The postcard prompt: Dear [name of the species], today I met you in/at/.....and it made me feel..... your entangled friend, [name of the writer], stood out to her as particularly effective for encouraging students to document and reflect on their multispecies encounters.

However, the educator noted several practical challenges. At first look, she found the tool to be text-heavy and visually intimidating, though she acknowledged that the instructions became clearer upon closer reading.

*"It was a lot of information, a lot of words, a lot of process. But when I started reading it was quite simple" It wasn't something that, oh my God, what am I reading? When I started reading it, when I looked at it, I found a lot of words. But when I started reading them, it did not feel very complicated.... I think it could be less wordy. But the instructions don't allow that". (Personal communication, 2025, Appendix 5c)*

She anticipated logistical problems, including the activity's length (requiring approximately two class periods) and potential classroom management issues during outdoor components, such as students discomfort with hot weather conditions or peer influence on creative outputs. To improve accessibility, she recommended reducing text density by adding more bullet points and changing the postcard background color for better visual impact.

While optimistic about the tool's innovative approach, the teacher emphasized that successful implementation with younger or older students would largely depend on the facilitator's ability to adapt and present the material in an engaging way, noting that, *"It's as engaging as the facilitator makes it to be"* [Personal communication, 2025, Appendix 5c].

## 4.4 Phase 4 reflections of the design based on test results

### Findings through Thematic analysis (appendix 4)

The third phase of this research involved testing the redesigned multispecies entanglement tool with educators in both Danish and Pakistani context. Phase 4 aims to evaluate the effectiveness, challenges and potential scalability of the tool, drawing insights from interviews and feedback. It is important to note that the redesigned tool was only tested directly with grade 7 students and student teachers from Denmark (D2) and feedback from grade 6 art educator (D1). While in the Pakistani context, only feedback from Grade 6 art educators (P3) was gathered, as in-class testing was not feasible due to the deadlines at the end of school year. Despite the limited sample size, the gathered feedback provided meaningful insights into how the redesigned tool might perform in diverse educational contexts, both western and non-western settings. (Find the process of detailed thematic analysis in appendix 4).

### Theme 1: Expanding the boundaries of art ed through Multimodal engagement

Participants particularly highlighted the tool's multimodal approach, which weaves together sensory, embodied, and reflective elements to help students think, feel, and create in more holistic ways. As the Pakistani Educator (P3) mentioned, *"Because the students kind of get a little bored hearing these topics as well. So, I think this is a chance for them to think way outside the box. And to do something that is extremely different from what their actual routine is"*. (Appendix 5c)



The integration seems to resonate with learners, offering a dynamic balance between thinking and creating. However, the feedback also surfaced several challenges that must be addressed for future iterations and scalability. Across both contexts, the educators highlighted the grounding exercise particularly the humming bee breath and the guided meditation as highly impactful.

*“The students relaxed and took the meditation seriously. I believe the meditation helped frame the assignment in a sensory and present way” (Appendix 5b).*

These techniques served as primers, calming the mind, helping ease the anxiety and sharpening attention. If anxiety can disrupt the learning (Olsen, 2025, pg.62,128) then it can also work in inverse: somatic and sensory regulation beyond traditional teaching that may help facilitate better learning. As Yang and Damasio (2011, pg.116) assert, “emotions play out in the body and mind, and are profoundly intertwined with thought... simply having the knowledge does not imply that a student will be able to use it advantageously outside of school” (Olsen, 2025, pg.62 ). The success of these embodied practices suggests how they may help bridge the perceived mind-body binary offering a holistic embodied way of retaining and processing knowledge (Olsen, 2025, pg.62).

While the sensorial grounding meditation received positive feedback, the art educators, especially (D1 & D2), noted a disconnect in how the olfactory (jar smelling) and tactile (texture feeling) were integrated into the sequence. As one educator(D1) remarked, “It’s a little confusing to me how the sensorial grounding activity makes sense to the other activities” (Appendix 5a). While another (D1) also observed, “Sitting at a table and smelling jars felt a bit out of place and made it hard to understand the purpose of the activity” (Appendix 5b).

The critique reveals space for better integration of the sensory activity. As Coats et al. (2022) emphasize, when designed and used correctly, such sensory engagement can deepen receptivity and “personal meaning making” (Coats et al., 2022, pg.333). Olfactory and tactile cues are “powerful educational stimuli” (Coats et al., 2022, pg.333), capable of triggering vivid memories, thoughts and emotional associations. Think of how a fleeting scent can instantly transport you to a specific moment in time.

To provide flexibility the two different variations of sensory activities were designed as optional components for the teachers to choose from. The feedback suggests the need for clearer guidance regarding their implementation. Educators were not required to use all modalities simultaneously,

but this flexibility appears to have created some uncertainty in practice. This highlights an opportunity to improve the tool's instruction to better and concretely communicate the adaptable nature of these exercises.

In the redesigned multispecies entanglement tool, the placement of these exercises also may have disrupted the flow. Danish art educator (D2) proposed a simple yet impactful adjustment: integrating smelling jar and textures activities within the meditation itself, allowing students to remain seated and maintain focus. This would preserve the momentum of the practice while leveraging the full potential of multisensory learning.

## **Theme 2: Critical thinking & Reflection**

Following the grounding exercise, students transitioned into the reflection card activity, which both Danish teachers reported as highly successful. Despite the unfamiliarity of the questions, they found them challenging yet intriguing. One teacher noted,

*“The questions turned out to be a big success, so much so that the students did not want to stop. We ended up spending about 20 minutes in a shared dialogue, with many contributing personal reflections and perspectives.”* (Appendix 5b)

This highlights the pedagogical potential of speculative dialogue and asking “what if” questions and “staying with the trouble” using imaginative scenarios to grasp complex challenges in the world while envisioning more livable futures (Haraway, 2016, pg.10). This approach functioned as a method that disrupted the mundane and conventional ways of thinking, making the familiar strange and opened up new possibilities for thought, emotion and action (Cartens, 2020, pg.75). Moreover, the reflection and exhibition segment of the postcards turned out to be quite successful in tying all the components together. The Danish art educator (D2) noted how the reflection not only deepened students' connection with the species but also fostered entanglement among peers, creating a “third space” between classroom and the outdoors (Appendix 5b).

As echoed by (Rotas, 2015), that reflection and reflective writing is not just about going back in the past and fixing things or plan for the future, instead it is an active process that opens up new possibilities adding new “layers to it” and extending experiences (Rotas, 2015, pg.96). Similarly, Ingold and Vergunst (2012), introduce the idea of “gestural present”, a reworking of the past experiences, that actively shapes the present moment creating new possibilities for “future entanglements” (Ingold and Vergunst, 2012 as cited in Rotas, 2015, pg.96).

### Theme 3: Logistics of Ecological Learning

Moving on to the outdoor activity, several challenges and concerns were shared regarding this component. It was highlighted how important it is to include this first-hand experience of students with the outdoors, where students learn through direct engagement with nature, making art a powerful way to connect with ecological issues (Graham, 2007, 2014; Gray et al., 2019; Hickey-Moody et al., 2021; Ingold, 2018; Powell et al., 2017; Powell & Uhlig, 2019; Trafi-Prats, 2017 as cited in Coats et al., 2022, pg 332).

As echoed by the Danish Art Educator 1 (D1): *“Just the fact that its outside is good... But it might also make it harder for some students to focus on the activity... there is a lot of other things they also want to explore in nature”* (Appendix 5a).

Adopting sensory-based approaches in the classroom can often clash with the structured spatial divisions and fixed schedules that define traditional schooling. (Gershon, 2019; Snaza & Sonu, 2016; Springgay, 2008, 2016; Tishman, 2018). Similarly, the educators identified logistical concerns regarding the space, time constraints and class management. Danish art educator (D2) highlighted infrastructural limitations, where the school is in an urban area with only “one tree and one bush” available (appendix 5b). While both Danish and Pakistani educators also emphasized time constraints. Standard 45 minutes art classes proved insufficient, as the activity required around 70 minutes, and they needed to arrange a substitute teacher which can also be expensive for the school to arrange. The Pakistani teacher (P3) also noted they would need to arrange back-to-back classes, thus creating a scheduling challenge.

This feedback suggests a need for flexible context sensitive adaptations that can be tailored to varying school environments. One promising alternative, explored by Coats et al., (2022) repurposed time restraints as a creative tool. Their study introduced one minute intervals of open-ended exploration of playful sensory-based activities designed to disrupt the conventional association between time and productivity (Coats et al., 2022, pg 335). Within these “intervals of possibility” the familiar school environment becomes unfamiliar, giving birth to a third space rooted in fluidity, positioning the students as collaborators in an emergent ecological learning process (Bogost, 2016; Lucero, 2020; Coats et al., 2022, pg 335).

The teacher’s feedback also reveals a narrow perception of where ecological phenomena can be encountered, often confined to wild spaces, overlooking their presence in urban environments. Yet microorganisms, critters, and other species thrive all around us. The challenge is expanding our awareness beyond the familiar.

To address this, the multispecies entanglement tool could incorporate provocations, images and examples of some species found in urban environments in different contexts, making these connections more visible. Alternatively, focusing on one species at a time, studying it through both research and artistic, exploratory methods could provide a manageable yet immersive way for both students and teachers to engage with local ecology without feeling overwhelmed.

Engaging with the environment and using the prompt on the postcard to write about their experience with the species was successful as the messages written by the students were not guilt driven but were optimistic and acknowledging the species presence. The 6th grade Danish art educator (D1) appreciated the updated prompt, as it helps students to think more clearly about their message without requiring them to embody another species which they found extremely confusing in the previous iteration. However, some postcard messages highlighted the ingrained ideas of anthropocentric frustration, perhaps reflecting limitations in understanding of human non-human entanglement.

*“Dear Wasp,*

*Today, I met you in/at the Bryggerens Have, and it made me feel a bit angry. I am unable to appreciate your beautiful colours because of your unreasonable aggression.*

*Your entangled friend,*

*Carla*

*Address: wherever you annoying creatures live” (Appendix 6)*

On another note, such responses reveal tensions that may otherwise remain unrealized. As Gruen (2022) suggests, the process of entangled empathy begins by acknowledging our existing and often problematic relationships with non-human, then actively working to make them better by attentive practices (Gruen, 2022; *Entangled Empathy*, 2022).

While the Danish educators did not mention issues with resources and materials, the Pakistani teacher highlighted practical constraints, such as the difficulty of printing the full deck of reflection cards and postcards. They mentioned a desire for receiving a pre-packaged set including the activity cards, postcards and the instructional manual.

To improve the contextual adaptability, the instructional manual could suggest alternative ways to present the reflection card questions, such as: displaying the questions on the screen, writing them on paper chits for students to randomly pick or clearly describing the activities’ flexible nature according to classrooms’ available resources.

#### **Theme 4: Scaffolded creativity & Sense of belonging**

Danish art educators (D1 & D2) emphasized that younger students often lack confidence in their drawing abilities and need structured support in selecting mediums and techniques. The second educator (D2) noted that students' work tended to be repetitive, suggesting that targeted guidance and scaffolding in the creative process could help produce better outcomes. Likewise, the Pakistani educator (P3) also noted that in open-ended tasks, students frequently get inspired by each other's work, leading to similar results.

*"It will be hard for them just to choose a medium to work with and to draw/paint ect their chosen species - because often they need more guidance, as a lot of students in ex. 6th grade have very low confidence in drawing ect. But it could be interesting to see if i'm wrong."* [D1, Appendix 5a]

*"I don't think the students' visual expressions changed, perhaps there should have been some more guidance in the task."* [D2, Appendix 5b]

While the art educators (D1 & D2) note students' need for structure, Atkinson, (2018) warns that too much structure and framework may "pedagogise art into compliance" (Atkinson, 2018,pg.24), instead they suggest loosening up this view and focus on the "immanence of learning": the immediate, lived experience of learning and away from top down models of instruction, which may unfold organically for each student (Atkinson, 2018,pg.24). This mirrors Deleuze's (2004) distinction between "sedentary" (rigid) that divides and categorizes in fixed boundaries vs "nomadic" (emergent) that allow for emergent, self-organizing exploration. (Deleuze, 2004 as cited in Atkinson, 2018, pg. 203- 204)

Adapting emergent practices however does not mean "shredding lesson plans"; the challenge here would be to break free from deeply rooted social expectations by making the learning "unscripted" (Ingold and Hallam, 2007 as cited in Rotas, 2015, pg. 96). Viewing the classroom as "relational ecology", a living breathing system, teachers can create space for "disobedience" and unplanned learning moments (Atkinson, 2017; Rotas, 2015, 96). Consequently, learning is not about "prescribed methods" but emerges organically through collaborative engagement that generates new knowledge and diverse perspectives driving meaningful change (Rotas, 2015, 96).

Overall, the teachers praised the tool's comprehensive instructions and sequential flow, with some clarifications and making the visual less text heavy; they think it could be applicable to different classrooms depending on the facilitator's interest in the topic.

## 5. Discussion

This study aimed to shift from a result-oriented approach, instead prioritizing a process-oriented framework that emphasizes engagement with empathy as a compass within the integrated space of art and art education. Through a posthumanist lens, it reimagines this “hybrid” discourse as a platform for critical learning (Suominen and Pusa, 2018 as cited in Ylirisku et al., 2024, pg.191). Even though this inquiry of inclusion and “social justice” within art education is already being explored widely, posthumanist lens pushes further by not just delving into the differences and similarities among humans but beyond humans (Barad, 2007 as cited in Ylirisku et al., 2024, pg.191).

The research attempts to de-center human exceptionalist frameworks, which opens up new perspectives of thinking about creativity, connection and knowledge. Rather than attempting to teach empathy which risks imposing prescriptive outcomes, the intervention focused on creating a space for multispecies awareness, reflection and dialogue refining the existing multispecies entanglement postcard tool through art. Crucially, art was employed as a method of inquiry and not merely as an instrumental tool to achieve a predetermined goal (e.g. teaching multispecies empathy) but as a method of open-ended inquiry. A predetermined goal such as quantifying empathy shifts, risks reducing art to functional means to an outcome, a problematic framing, given that artistic engagement often yields unpredictable, immeasurable outcomes. Instead, this project used artistic methods as an entry point to activate conversations and set a stage for exploration, allowing participants to develop their own interpretations and responses. By trying to resist the pressure to guide participants toward specific conclusions, this approach embraced ambiguity, prioritizing emergent and individualized forms of meaning-making over fixed results.

However, moving forward just acknowledging and understanding these entanglements is not enough. It is important to think and ask, what’s next and what do we do with these entanglements? Who benefits from these entanglements? And most importantly, how do we activate these findings to make these entanglements more ethical, responsive and into meaningful relations? (Ylirisku et al., 2024, pg.191).

Ethics are central to multispecies studies demanding constant questioning, taking others' differences seriously without reduction and to innovate new modes of attentiveness and listening (Dooren et al., 2016, 16). Drawing on Deleuze’s “ethics is ethology”, this concept recognizes that noticing or “bearing witness” to diverse ways of being in multispecies studies is inseparable from ethics.

Paying close attention to how the world unfolds and takes shape becomes an act of ethics. While recognizing that storytelling acts as active worldmaking, weaving new relationships of care and accountability (Dooren et al., 2016, 16).

The multispecies postcard research was situated in dual context, western (Danish) and non-western (Pakistani) as a preliminary test to gauge the practical and cultural challenges in diverse classroom contexts. It was an exploration and did not intend to produce definitive conclusions. Therefore, it is important to reflect upon the future scalability of this posthumanist tool across different educational contexts.

Firstly, acknowledging that the sample size was small which even though provides valuable insights, it is not enough to apprehend the complexities of both educational systems, keeping the scalability as an open arena dependent on further testing. Secondly, the political, historical and cultural landscapes of these contexts cannot be disregarded. For instance, Pakistan's system regardless of progression still remains somewhat tethered to its colonial past, shaping its schools' pedagogical practices and assessment methods (Tahir, 2023).

The colonial legacy may have an impact on the effectiveness of exploratory tools like the multispecies entanglement postcard tool, which requires some degree of pedagogical and teachers' flexibility to go beyond the result-oriented approach and to make space for activities like this within a packed curriculum and lesson plans to be covered within a certain timeline. As the Pakistani Art educator (P1) mentioned in the interview 'that they are given guidelines and lesson plans by the Cambridge curriculum with some flexibility to adapt but also have restrictive goals in terms of outcomes' [Personal communication, 2025, appendix 5d]. She sometimes diverts from the lesson plans and lets her students explore mediums or just draw lines to music to give her students a break. Thus, it is also up to the facilitator's interest to decompress lessons with exploratory methods. Colonial past, compounded with political turbulence and repressive military regimes have impacted art educational development in Pakistan, giving more importance to STEM to compete in a tough economy (Hashmi 2015 as cited in Sadik, 2017, pg. 153). Pakistan has numerous educational boards and systems including public, private and international boards. However, this research was only able to gather teacher feedback from private schools which follow the IGCSE curriculum operating under Cambridge Board. Moreover, the tool was not tested in these schools due to end of the term assignments and deadlines, but the teachers were open to including it in their plans in the next term. It is also important to note that while some private institutions offer art education, a lot of the public schools do not yet offer it (Sadik, 2017, pg. 153-154).

On the other hand, the Danish teachers were more receptive towards implementing the tool, making it possible to test both iterations with students and gather valuable insights into its strengths and weaknesses. One of the reasons for the tool being more effective in the Danish context could be because of the autonomy of teachers to choose methods of their choice. Danish teachers have the notion of “freedom of methods” which they highly cherish giving them the autonomy to develop their own curriculums as long as it aligns with the overarching aims and skill requirements by the ministry (Bentsen et al., 2018, pg. 87-88). *Udeskole* is another concept which literally means “outdoor school”. It is an educational approach that shifts regular school activities from the indoor to the outdoors, connecting subjects to real life contexts and directly engaging with the local environments (Bentsen et al., 2018, pg. 83). Regardless of the *Udeskole*’s gaining momentum, it is not always easy to adopt. Travelling to green areas requires transportation costs and time, the crowded curriculum leaves little room for flexibility, it requires at least two teachers, raising staff costs and increasing academic demands add further pressure (Bentsen et al., 2018, pg. 93-96). The intent of mentioning the above is not to draw a comparison between the countries, or pass judgement, but rather to highlight how cultural and political nuances influence the adaptation of new tools and ideas. At present, the multispecies entanglement tool appears to be more effective in Denmark, but thorough testing it in Pakistani schools will provide clearer insights into its adaptability in that context. Additionally, it is important to note that the redesigned tool incorporated feedback only from teachers, making it primarily a teacher’s tool rather than a learner’s tool. Future iterations could directly engage students to assess whether they find it effective, ensuring a more holistic evaluation.

Regardless of differences in context, teachers around the world face some similar problems in their classrooms too. For example: Both Pakistani and Danish teachers emphasized their struggles with time constraints, finding substitute teachers, and classroom management in conducting open-ended activities like these. For instance: Pakistani 6th grade Art educator (P3) exclaimed:

*“So, I don't think I have a whole hour to conduct this activity with them and no other teacher will give me an extra class for this....I also do not have a block period. I only have one period at a time which is 35 to 40 minutes.”* (Personal communication, 2025, appendix 5c)



Similarly, the Danish art educator (D2) also mentioned something similar:

*“This requires substitute coverage and involves taking lessons from other teachers, a consequence of the way Danish schools are organized. Some schools only have 45 minutes of visual arts per week, while others have 90.”* (Personal communication, 2025, Appendix 5b)

To develop a tool/framework that thoughtfully integrates non-human perspective in art education through a post-humanist lens, contextual sensitivity needs to be prioritized over global adaptability. A globally adaptable tool especially grounded in universal posthumanist theories, which tries to dismantle dualisms, risks inadvertently reimposing euro-centric hierarchies assuming these theories can be applicable anywhere (Sundberg, 2014 as cited in Springgay & Truman, 2018, pg.11). It often appropriates indigenous ideas while remaining rooted in western epistemological frameworks but does not truly center them in the theory.

Moreover, Sundberg (2018) acknowledges the utility of posthuman theories, while critiquing its risk of homogenizing diverse worldviews calling it “radical alterity” (pg.11), meaning reducing differences into euro-centric sameness and asserts the need to be vigilant to not ignore “racial violence, colonization, legal oppressions” when addressing the more than human (Sundberg, 2014 as cited in Springgay & Truman, 2018,pg.11).

Regardless of posthumanist theories gaining influence in numerous fields and reshaping qualitative research, a key weakness lies in its broad definition and emphasis on the interconnectedness of all matters and species, an approach that can risk flattening complexities and overlooking politics and power dynamics at play (Springgay & Truman, 2018, pg.10)

As Wynter (2003), argues that the goal should not be merely inclusive of the marginalized but to fundamentally work towards transforming the idea of what it means to be human (Sylvia Wynter 2003, pg. 672; Jackson,2015 as cited in Springgay & Truman, 2018, pg.11). To decolonize research, one of the methodologies explored by Sundberg (2014) is “Walking-with as a strategy”, prioritizing “situated and contingent ontologies” (Sundberg, 2014 as cited in Springgay & Truman, 2018, pg.11). The Walking with approach argues that the act of walking as methodology is also not completely im-partial. It opposes “flaneur”, which romanticises wandering without observing the social and material realities around them, in contrast walking-with strategy calls for a more ethical, situated and relational approach and to pay more attention and accountability towards indigenous ways of knowing. It demands universalizing of species and focuses on the non-human ethics and political dynamics that emerge through their material intra-action (Sundberg, 2014 as cited in

Springgay & Truman, 2018, pg.11). It draws from Stenger's (2005) idea of "politics of slowness", which refers to slowness not just in terms of speed but engaging critical reflections and making space for alternative ways of thinking and being, making it a method of unlearning and subverting preconceived notions invoking ethical and political dimensions to surface (Stengers 2005 as cited in Springgay & Truman, 2018,pg.11-15). Like pausing a film, rewinding to examine the overlooked details.

The redesign was an attempt to refine a tool that already exists. Instead of re-inventing the wheel, trying to expand its potential by incorporating different layers of engagement and exploration like, nature excursion as a place-based method to help students engage with the local ecologies, trying to disrupt its universalizing tendencies and make it situated by engaging via multimodal methods, including walking, writing, documenting and drawing.

However, it also raises ethical questions about the politics and history of that place. Questioning how can it be ensured that these practices are not reproducing the same hierarchies and extractivist practices treating land as mere resource or treating these nature excursions as data collection rather than an agentic partner in learning even if conducted with good intentions. Moreover, questions like how this tool can move beyond just including the non-human in learning to co-creating with them especially at a primary school level.

The choice of postcard as a medium also surfaces tension. Postcards are inherently human artifacts designed as a mode of communication, but this does not need to be a limitation. It can be viewed as an opportunity to embrace the humanness ethically and creatively, instead of trying to erase the difference between human and non-human, the design can embrace it creatively, moving from the idea of reciprocity to response-ability and becoming-with (Haraway, 2016 pg. 12). Education that is anchored in "place, context and situatedness" into consideration moves beyond strict dualisms. It engages with the idea of these binaries always being in a flux, shaping each other. Aligning with the Deleuzian notion of generative difference, as for Deleuze, "The different is related to the different through difference itself..difference is that which turns all representations into illusions – identity is only a cloak thrown over deeper pure differences." (Smith, 2012, pg.240). Educating children involves embracing spontaneity, recognizing the unquantifiable but meaningful insights these encounters foster. It also expands the educator's role to include not just humans but other forms of life and matter, acknowledging that learning is co-created through complex multisensory interactions (Deleuze 1994, Hultman and taguchi, 2010, Rautio, 2012, pg. 454).

While the multispecies entanglement postcard served as a great entry point into engaging with multispecies relationships, it also surfaces tensions and limitations in terms of scalability. Given

these nuances, it may be more effective and liberating to think in terms of design principles rather than a fixed tool to integrate the complexities and challenges of diverse contexts. This shift may allow unpredictability, context specific nature of posthuman learning, allowing for ethical, responsive and locally attuned educational practices. The design principles as explained in the earlier chapter are: Speculative fabulation: Storying otherwise, Art of noticing, Collaboration, Multisensory and multimodality.

## 6. Conclusion

I still remember being eight years old and asking my mother, why am I me? And why don't I see what others see? Why can't I feel what others feel? Reflecting on these questions, I realize that my understanding of empathy does not align with its strictest definition of feeling what the other person feels. Instead, my perception has been often limited like viewing the world through a single camera angle. But over time, I have come to realize that empathy in its conventional form, is not the only path to meaningful connection. While I may not experience empathy in a conventional sense, I can still strive to understand, acknowledge and deeply examine my relationship with others, ultimately working to strengthen those connections. This approach has shaped my perspective that empathy does not need to be a mirroring of the other to foster connection, it can emerge through deliberate attention, acknowledgement and willingness to sit with confusion and gaps in understanding.

This research began as an exploration of how embodied, sensory art interventions could foster multispecies empathy in educational contexts. The study revealed both potential and limitations of such an approach, after an iterative cycle of design, testing and reflection situated in Pakistan and Denmark. While this project did not yield any definitive solutions to paradoxes of empathy, it opened up a platform for questioning: How can art education nurture multispecies empathy and kinship without reimposing hierarchies and erasing differences. How can art pedagogy ethically embrace uncertainties?

Multispecies studies are non-linear and messy, it often unsettles human expectations. As Haraway (2011) and Tsing (2013) remind us, such an approach includes unanswered questions, ethical dilemmas and often involves unequal power dynamics. Meaningful change often emerges from small, unexpected interactions or "partial recuperations" rather than monumental solutions. The pressing challenge, however, is to integrate these "more than human socialities" into our educational practices (Taylor & Ketchabaw, 2015, 525-526).

Instead of producing definitive answers as a conclusion, this research can be seen as a provocation and an invitation to teachers, students, artists and readers to dive into this messy web of reimagining our place in the world with response-ability, humility and care.

With Love,

Your entangled friend

## References

- Alanen, A., Presnal, G., & Ali, N. (2024, May 31). *Symbioscenery* [Paper for interventions for change in communication and art pedagogical practices at Aalborg University].
- Ali, N. (2024, Dec 19). *Semester iii- Track 1- Internship* [Organisational analysis: NXT]. submitted to Aalborg university Copenhagen.
- Amiel, T., & Reeves, T. C. (2008, October). Design-Based Research and Educational Technology: Rethinking Technology and the Research Agenda. *Journal of Educational Technology & Society: International Forum of Educational Technology & Society*, 11(4), 29-44. <https://www.jstor.org/stable/10.2307/jeductechsoci.11.4.29>
- Anderson, T., & Shattuck, J. (n.d.). Design-Based Research: A Decade of Progress in Education Research? *Educational Researcher*, Vol.41, No.1, 16-25. 10.3102/0013189X11428813
- Atkinson, D. (2017). *Art, Disobedience, and Ethics: The Adventure of Pedagogy*. Springer International Publishing. 10.1007/978-3-319-62639-0
- Bakoff, M. (2015, 02 26). Entangled Empathy: How to Improve Human-Animal Relationships. *Psychology today*. <https://www.psychologytoday.com/us/blog/animal-emotions/201502/entangled-empathy-how-improve-human-animal-relationships>
- Baumgartner, E., & Bell, P. (2002, April 3). What will we do with design principles? Design principles and principled design practice. *AERA 2002: American Educational Research Association*.
- Bentsen, P., Stevenson, M. P., Mygind, E., & Barfod, K. (2018). Udeskole: education outside the classroom in a Danish context. *The Budding and Blooming of Outdoor Education in Diverse Global Contexts*, 81-114. <https://www.naer.edu.tw/files/11-1000-981.php>
- Boeckel, J. v. (2009). Arts-based Environmental Education and the Ecological Crisis: Between Opening the Senses and Coping with Psychic Numbing. In *Metamorphoses in children's literature and culture* (pp. 145-164).
- Braidotti, R. (2019). *Posthuman Knowledge*. Polity Press.
- Braun, V., & Clarke, V. (2008, July 21). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 77-101. 10.1191/1478088706qp063oa
- Buhl, M., Hanghøj, T., & Henriksen, T. D. (Eds.). (n.d.). Reconceptualising Design-Based Research Between Research Ideals and Practical Implications. *Nordic Journal of Digital Literacy*, 17, 205–210. <https://doi.org/10.18261/njdl.17.4.1>

- Cartens, D. (2020, April 1). Toward a pedagogy of speculative fabulation. *CrisStaL: Critical studies in teaching & learning*, 8, 75-91. 10.14426/cristal.v8iSI.267
- Chao, S., & Celermajer, D. (2023). Multispecies Justice. *Cultural Politics*, 19(1), 1-13. 10.1215/17432197-10232431
- Chiew, F. (n.d.). Posthuman Ethics with Cary Wolfe and Karen Barad: Animal Compassion as Trans- Species Entanglement. *Theory, Culture & Society*, 31, 51-69. 10.1177/0263276413508449
- Coats, C., Sinha, S., Zuiker, S., & Riske, A. K. (2022, 12 08). Time Unbound: Framing Encounters for Embodied Connection and Ecological Imagination. *Studies in Art Education A Journal of Issues and Research*. 10.1080/00393541.2022.2116681
- Cozza, M., & Gherardi, S. (2023). Posthuman feminism and feminist new materialism: towards an ethico-onto-epistemology in research practices. In *Handbook of feminist research methodologies in management and organization studies* (pp. 55-66). Edward Elgar Limited.
- Desire an Irresistible Circular Society. (27 Nov 2023) Presenting the Garden Caretaker - in the New European Bauhaus initiative [video]. YouTube. <https://www.youtube.com/watch?v=eWppUWPEXJc>
- Derrida, J. (2000, December 1). HOSTIPITALITY. *Angelaki Journal of Theoretical Humanities*, 3-18. 10.1080/09697250020034706
- Derrida, J. (2011, 02 12). The Animal That Therefore I Am (More to Follow). *The University of Chicago Press*, 369-418. <http://www.jstor.org/stable/1344276> .
- Dooren, T. V., Kirksey, E., & Munster, U. (2016, May). Multispecies Studies Cultivating Arts of Attentiveness. *Environmental humanities*. 10.1215/22011919-3527695
- Duobliene, L., & Vaitekaitis, J. (2021, April 09). Posthumanist Approach To Human/Child-Centred Education. *Journal of Futures Studies*, 26(2), 37-50. 10.6531/JFS.202112\_26(2).0003
- Entangled Empathy*. (2022, Nov 27). Ethical Society of St. Louis. <https://www.youtube.com/watch?v=HGYHpVFom-k>
- Foucault, M. (1970). *The Order of Things* (2nd ed.). Routledge. <https://doi-org.zorac.aub.aau.dk/10.4324/9781315660301>
- Goldkuhl, G. (2011). Pragmatism vs interpretivism in qualitative information systems research. *European Journal of Information Systems*, 21, 135-146.
- Gruen, L. (2015). *Entangled Empathy: An Alternative Ethic for Our Relationships with Animals*. Lantern Books.
- Graham, M. A. (2007). Art, ecology and art education: Locating art education in a critical place-based pedagogy. *Studies in Art Education*, 48(4), 375–391. <https://doi.org/10.1080/00393541.2007.11650115>
- Hammersley, M., & Atkinson, P. (2019). What is Ethnography? In *Ethnography: Principles in Practice* (fourth ed., pp. 1-20). Routledge: Taylor & Francis Group.

- Hanghøj, Händel, Daphne, V., Duedahl, Visgaard, T., Gundersen, & Bukovica, P. (2022). Exploring the Messiness of Design Principles in Design-Based Research. *Nordic Journal of Digital Literacy*, 17(4), 222-233.  
<https://doi.org/10.18261/njdl.17.4.3>
- Haraway, D. (2016). *SYMBIOGENESIS, SYMPOIESIS, AND ART SCIENCE ACTIVISMS FOR STAYING WITH THE TROUBLE*. Duke University press. <https://lccn.loc.gov/2016019477>
- Haraway, D. J. (2016). *Staying with the Trouble: Making Kin in the Chthulucene*. Duke University Press.
- Haraway, D. J. (2016). *Staying with the trouble: making kin in the chthulucene*. Duke university press.
- Hiltunen, K., & Campbell, G. (2024, Feb 13). Creating Feminist Futures by Imagining Lessons Differently: Using Speculative Fabulation and Poetic Inquiry as Methods to Trouble Classroom Expectations. *Australian Feminist Studies*, 103-122. 10.1080/08164649.2024.2315419
- Hohti, R., Kervinen, A., Rautio, P., Saari, M. h., Tammi, T., & Aivelo, T. (2024, 02 28). Ratty places – unsettling human-centeredness in ecological inquiry with young people. *Environmental Education Research*, 1129–1146. 10.1080/13504622.2024.2314037
- Hickey-Moody, A., Cutter-Mackenzie-Knowles, A., Rousell, D., & Hartley, S. (2021). Children’s carbon cultures. *Cultural Studies & Critical Methodologies*, 21(3), 214–224. <https://doi.org/10.1177/1532708621997582>
- Jagodzinski, J. (2015). Affirmations and Limitations of Rancière’s Aesthetics Questions for Art and its Education in the Anthropocene. In *Posthumanism and Educational Research* (pp. 121-131). Routledge.
- Kerr, S., Adams, E., & Pittard, B. (2014, November 19). What is Intra-Action? From Three Minute Theory: <https://www.youtube.com/watch?v=v0SnstJoEec&t=83s>
- Kallio-Tavin, M. (2020). Art Education Beyond Anthropocentrism: The Question of Nonhuman Animals in Contemporary Art and Its Education. *Studies in Art Education*, 61(4), 298–311. <https://doi.org/10.1080/00393541.2020.1820832>
- Kangas, R. S. (2023, 01 27). Matter(s) of Empathy in Art Education & Rese. [Doctoral dissertation, University of Helsinki], 1-71. <https://helda.helsinki.fi/items/46aa7ff8-7179-444f-893e-e2527cd83810>
- Lambert, L. M. (2024, August 21). Ecological empathy: relational theory and practice. *Ecosystems and people*, 20(1). <https://doi.org/10.1080/26395916.2024.2396919>
- Lanzoni, S. (2018). *Empathy: A History*. Yale University Press.
- Mitman, G. (2019, June 18). *Donna Haraway and Anna Tsing Reflect on the Plantationocene*. Edge Effects. Retrieved April 8, 2025, from <https://edgeeffects.net/haraway-tsing-plantationocene/>

- Moody, A. H. (2016). *A Femifesta for Posthuman Art Education: Visions and Becomings- Posthuman Research Practices in Education* (C. Taylor & C. Hughes, Eds.). Palgrave Macmillan UK.
- Morris, M. (2015). Posthuman Education and Animal Interiority. In N. Snaza & J. H. Weaver (Eds.), *Posthumanism and Educational Research* (pp. 43-54). Routledge.
- MYISHA CHERRY. (2017, Spring). What an [En]tangled Web We Weave: Emotions, Motivation, and Rethinking Us and the “Other”. *Hypatia*, 32(2). <https://doi.org/10.1111/hypa.12325>
- Novaes, M. M., Onias, H., Lobao-soares, B., Kozasa, E. H., Araujo, D., Santaella, D. F., Andrade, K. C., & Fontes, F. (2020, 05 20). Effects of Yoga Respiratory Practice (Bhastrika pranayama) on Anxiety, Affect, and Brain Functional Connectivity and Activity: A Randomized Controlled Trial. *Frontiers*. [//doi.org/10.3389/fpsy.2020.00467](https://doi.org/10.3389/fpsy.2020.00467)
- Olsen, D. (2025). *Media Arts Education: Transforming Education Through Multimodal Cognition, Holistic Learning, and Techno-embodiment*. Routledge, Taylor & Francis Group. 10.4324/9781003430834
- Pedersen, H. (2021). Education, anthropocentrism, and interspecies sustainability: confronting institutional anxieties in omniscidal times. *Ethics and Education*, 16(2), 164–177. <https://doi.org/10.1080/17449642.2021.1896639>
- Rautio, P. (2012, 07 19). Being nature: interspecies articulation as a species- specific practice of relating to environment. *Environmental Education Research*, 445-457. 10.1080/13504622.2012.700698
- (n.d.). Retrieved from desire an irresistible circular society: [https://www.irresistiblecircularsociety.eu/assets/uploads/About/Manifest-and-principles/Desire\\_Manifest\\_Principper.pdf](https://www.irresistiblecircularsociety.eu/assets/uploads/About/Manifest-and-principles/Desire_Manifest_Principper.pdf)
- Rodriguez, J. (n.d.). *Art as a way to re-explore the world*. CrAft: creating actionable futures. <https://craft-cities.eu/stories/art-as-a-way-to-re-explore-the-world/>
- Rotas, N. (2015). Ecologies of Praxis. In *Posthumanism and Educational research* (pp. 91- 102). Routledge.
- Sadik, R. I. (2017). THE JOYS AND OBSTACLES OF A CHANGE AGENT TEACHING IN PAKISTAN’S ONLY POSTGRADUATE ART EDUCATION PROGRAM. In R. Mateus-Berr, & L. Reitstätter (Eds.), *Art and design education in times of change : Conversations across cultures* (p. 220). De Gruyter, Inc.
- shin, S., & Tsing, A. (2021). *Carrier bag fiction*. Tank Magazine. <https://magazine.tank.tv/tank/2021/06/carrier-bag-anna-tsing#>
- Smith, D. W. (2012). *Essays on Deleuze*. Edinburgh University Press.
- Smith, G., & Macquarrie, J. D. (2009). ‘Placing’ Pedagogy and Curriculum Within an Ecological Worldview. *SFU Educational Review*, 1, 30-40. [//doi.org/10.21810/SFUER.V3I345](https://doi.org/10.21810/SFUER.V3I345)



- Snaza, N. (Ed.). (2015). *Posthumanism and Educational Research*. Routledge.
- Snaza, N., Appelbaum, P., Bayne, S., Carlson, D., Morris, M., Sandlin, J., Wallin, J., & Weaver, J. (2014). Toward a Posthumanist Education. *Journal of Curriculum Theorizing*, 30 (2), 39-55.  
<https://digitalcommons.georgiasouthern.edu/curriculum-facpubs/47>
- Springgay, S., & Truman, S. E. (2018). *Walking Methodologies in a More-than-human World: WalkingLab*. Routledge: taylor and francis group.
- Springgay, S. (2016). Meditating with bees: Weather bodies and a pedagogy of movement. In N. Snaza, D. Sonu, S. E. Truman, & Z. Zaliwska (Eds.), *Pedagogical matters: New materialisms and curriculum studies* (pp.59–74). Peter Lang.
- Stålne, K., & Greca, S. (2022, 12 09). *Imagination Activism and the Symbiosis Meditation*. IDG: Inner development goals. <https://idg.tools/imagination-activism-and-the-symbiosis-meditation-86324pm>
- Stark, W. (2016, August 15). *Intra-action*. New Materialism- how matter comes to matter.  
<https://newmaterialism.eu/almanac/i/intra-action.html>
- Tahir, R. (2023, June 16). Decolonising Art Education Will Help Pakistani Graduates In The Job Market. *The Friday Times*. <https://thefridaytimes.com/16-Jun-2023/decolonising-art-education-will-help-pakistani-graduates-in-the-job-market>
- Taylor, A., & Ketchabaw, V. P. (2015, May 02). Learning with children, ants, and worms in the Anthropocene: towards a common world pedagogy of multispecies vulnerability. *Pedagogy, Culture & Society*, 507-529.  
 10.1080/14681366.2015.1039050
- Taylor, C. A., & Bayley, A. (Eds.). (2019). *Posthumanism and Higher Education: Reimagining Pedagogy, Practice and Research*. Palgrave Macmillan. <https://doi.org/10.1007/978-3-030-14672-6>
- Tsing, A. (2010, winter). Arts of Inclusion, or How to Love a Mushroom. *Wild hearts: literature, ecology and inclusion*, 22, 191-203. <https://www.jstor.org/stable/41479491>
- Tsing, A. (2024, May 16). *Personal Communication*. Helsinki, Espoo, Finland.
- Tsing, A., & Elkin, R. S. (n.d.). *The Politics of the Rhizosphere*. Harvard Design Magazine. Retrieved April 8, 2025, from <https://www.harvarddesignmagazine.org/articles/the-politics-of-the-rhizosphere/>
- vagg, J. (2021). Experiencing-With Data: Exploring Posthuman Creativity Through Rhizomatic Empathy. *Posthuman Creativities: Pluralist ecologies and the question of how*, 28(5), 541-551. /doi.org/10.1177/10778004211069696
- Van Dooren, T., Kirksey, E., & Munster, U. (2016, 05). Multispecies Studies: Cultivating Arts of Attentiveness. *Environmental Humanities*. DOI 10.1215/22011919-3527695

Varpanen, J. (2025, January 31). A Place Regained Re-imaging education with immanence. *Doctoral dissertation, Tampere University Faculty of Education and Culture*, 216. <http://urn.fi/URN:ISBN:978-952-03-3759-9>

Williams, J. (2013). *Gilles Deleuze's Difference and Repetition: A Critical Introduction and Guide* (second ed.). Edinburgh University Press.

Wolfe, C. (2009). Introduction. In *What is Posthumanism* (pp. 1-24). University of Minnesota press.

Ylirisku, H., dufva, t. s., & Snellman, M. (2024, 06 20). ARTS EDUCATION IN A MORE-THAN-HUMAN WORLD. *Researches in Arts & Education*, 1-12. 10.54916/rae.145827

Ylirisku, H. (2021). *Reorienting environmental art education*. Aalto University School of Arts, Design and Architecture. (16-200)