Reducing inequalities among species through an arts-based inquiry in early childhood teacher education

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Abstract

This article is based on a study in outdoor arts-based education with Norwegian early childhood teacher students. Their teachers of drama and art & crafts (also the researchers and authors of this article) facilitated the specific arts-based learning environments and posed the following question: Which qualities of arts-based learning environments can challenge students to seek toward reduction of inequalities between themselves and more-than-human others?

Four narratives were constructed from four of the students' visual, verbal and audio presentations of their experiences from the outdoor places they engaged with. The students described their processes of connecting to the more-than-human inhabitants of those places, and more-less explicitly expressed changes in their attitudes toward the inhabitants and materials encountered at the places. The narratives, and their analysis, make visible how the students' arts-based engagements challenged their anthropocentric values and could potentially lead to reduction of inequalities between

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themselves and the more-than-humans they met at the places. The discussions at the end of the article focus on the first part of the research question and sum up four qualities of the arts-based environments that were present in the four narratives. These qualities are imagination, self-initiated actions, emphatic connections, and time for aesthetic engagement.

Keywords: reducing inequalities, SDG 10, SDG 15, more-than-human, early childhood teacher education

Introduction

The aim of the article

 This article is based on a study with early childhood teacher (ECT) students in their last semester of education. As teachers in art & crafts, and drama, we facilitated specific contexts for the students' arts-based learning processes with focus on ecological sustainability. Our study is a response to Norwegian governmental guidelines on implementation of Teacher Education for Sustainable Development (TESD). "Designing learning environments" is one of five types of inquiry frequently applied in TESD (Fischer et. al., 2022). In our study, we designed arts-based learning environments where our students were challenged to develop their relationship with nature through arts-based inquiry. We introduced the students to post-human theories and specific arts-based methods. We also invited them to choose an outdoor place where they could spend time and carry out their projects. Our study was based on the students' experiences from the specific learning environments, and had the following research question: Which qualities of arts-based learning environments can challenge students to seek towards reduction of inequalities between themselves and more-than-human others?

Grasping the complexity of entanglements between oneself and *Life on land* (SDG 15) demands new pedagogical strategies where students are challenged to develop awareness of how they affect and are affected by the nature. In our teaching we wanted to challenge the students' awareness about local as well as global biodiversity. To meet visions and goals for Global Biodiversity (IISD, 2021), we developed alternative forms of teaching to prepare our students for living in harmony with nature: "By 2050, biodiversity is valued, conserved, restored, and wisely used,

maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential human for all people" (IISD, 2021).

One of the UN's Sustainability Development Goals calls for *Reduced inequalities* (SDG 10). Ecological changes strike some environments more than others causing differences in suffering of people around the world, which calls attention to inequalities between people of different age, status, gender, culture, economies, etc. However, in this article, we are emphasizing the need to reduce inequalities also between humans and other species. Together with a rising community of researchers, we are addressing issues related to "the marginalized worlds of children and animals" (Taylor & Pacini-Ketchabaw, 2019, p.6), as well as the marginalized worlds of plants (as trees), materials (as clay) and elements of the Earth (as water). We anticipate that our students' discoveries that such marginalization exists, will encourage them to seek toward more just relationships between themselves and the marginalized animals, plants as well as young children.

The students' curricula in ECE pedagogy concerns primarily relations between humans, however some of the literature they have read addresses *actor-network-theory* (ANT), analyzing children's play with toys and objects (Nome 2017). In ANT, material is seen as an equal participant in networks – relations are built between humans as well as nonhuman partners. By addressing humans on equal terms with animals and materiality*,* we expand the scope of the Sustainable Development Goal number 10, which originally addresses reduction of inequalities among humans. We will argue for our understanding that much research regarding reduction of inequalities is driven by an "overriding commitment to exclusively human(ist) notions of social inclusion and social justice" (Taylor & Pacini-Ketchabaw, 2019, p.1). However, like Taylor & Pacini-Ketchabaw (2019) we suggest that our responsibilities, and the responsibilities of our students – the teachers of future generations - need to be expanded in an ecologically holistic manner (Fredriksen, 2019). "Justice cannot be only for us [humans] if our lives are already inextricably entangled with the full range of heterogeneous others in our common worlds" (Taylor & Pacini-Ketchabaw, 2019, p. 2). Consequently, when we in this article address the questions of reducing inequalities, it is the process of challenging our students to reduce inequalities between themselves and more-than-humans in their environments that we are addressing. And to reduce inequalities between oneself and others, one first has to become aware of the existence of such inequalities that often derive from our

anthropocentric values. Reduction of human's privileged position in the global ecosystem demands questioning of own attitudes and actions.

The context of the study and our research position

The study presented here builds on three weeks of intensive educational practice in the spring semesters of 2019, 2020 and 2021. The contexts of teaching were also the contexts of the research study. About 20 students participated each year, a total of about 60 students. The first year (2019), most of the outdoor investigations were conducted in small groups of students, however, due to the covid pandemic, the processes had to be individual for the two last groups (2020 and 2021). The students from each of the three years documented their processes by photo, video, sound, written text, and supervision was digital the two last years. The final presentations were multimodal. The students' documentation process played an essential role in their learning; their detailed observations and performative actions served as foundation for the ongoing reflections and supervision aiming at eco-awareness. The same student documentation was data for our study.

Early childhood teacher education in Norway is largely organized as interdisciplinary clusters of subjects (Ministry of Education and Research, 2012), hence subjects intertwine in a holistic way for children as well as for students and teachers. As teachers of drama and arts & crafts we have often taught and researched together in roles of a/r/tographers (Irwin, 2004, 2013). The specific a/r/tographic inquiry allows different roles of an artist (a), researcher (r) and teacher (t) to merge in a rhizomatic manner (see for example Irwin, 2004, 2013, Irwin et. al. 2006). This means that doing research at the same time as being a teacher is not an obstacle for the research, but rather an asset. The third role of "an artist" in our case came into play through our supervising the students to utilize artistic effects, like choices of time, space, materials, movement, etc. Our professional guidance had a form of improvisation-based teaching (Fredriksen, Nordbø & Cruz, 2016) such as knowledgeable improvisation (Bresler, 2006a) where we employed our professional understanding of the students' arts-based performative practice.

Our intentions with the project, was to invite the students to re-build conceptions of nature, relations to materiality, and thinking about human responsibility. Instead of teaching *about* environmental issues, we urged the students to *involve* with environmental issues and critical thinking. As suggested by the UNESCOs roadmap

for Education for Sustainable Development toward 2030 (UNESCO, 2019), we were facilitating transformative learning environments, for students' *Performative Bildung* (Tynæs, 2013), which is characterized by the three aspects: 1. an expanded conception of language, 2. collective processes, 3. reconstruction and formation of opinion.

Theory

Aesthetic sensibilities to the natural environments

As we are becoming aware of the complex entanglements among humans and other species, to act upon these new insights we need education that is more imaginative, creative, and radical (Jickling & Sterling, 2017). Imagination, creativity, and ability to be truly attentive to own environments, are nurtured through arts education (Eisner, 2002). Through the arts, one can allow oneself to engage in different ways than one often does in the "ordinary life", rushing from place to place, from task to task. Aesthetic attention is fundamental for nuanced perception, which again plays central role in understanding of the world (Eisner, 1991). However, it is not easy for a student or any other adult, to suddenly change modes of attention when told so. Being able to sense and notice depends on one's ability to be present, attentive and stay with the challenges that emerge; to "stay with the trouble" (Haraway, 2016) and engage with what emerges. "Attention demands time for dwelling and a will to engage" and is only possible in the moment (Dewey 1930); retrospective attention does not exist" (Fredriksen, 2016, p. 106). What was initially unnoticeable, can become apparent when we apply time to observe, explore and engage. On the other hand, *recognizing* or categorizing something too quickly can prevent other perceptions which could have expanded the prior categories.

Arts-based approaches acknowledge embodied ways of knowing and are open for new impulses. Some researchers suggest that arts-based research *is* a form of post-qualitative research (Rousell, 2019, p. 888). For instance, a/r/tography is a "living inquiry" - which means that the artists/researchers/ teachers are aware of the constant transformations both in themselves and in the world around them, and they include these changes into the process, rather than try to avoid them. This, however, demands continual self-reflections, ethical considerations, and critical choices. In the process of making methodological choices for the student project, we were inspired by Bresler's (2006a) "prolonged engagement", and Trigg's, Irwin's and Leggo's

(2014) "eco-pedagogical walking" where acts of walking facilitate "relational aliveness" among humans and other species. Bresler (2006a) emphasized the importance of time, dwelling and true presence with whatever the subjects of the engagements are. She writes about five aspects of the process of perceptual contemplation of a phenomenon, that she calls "prolonged engagement": noticing details, seeing relations between parts, seizing the "whole as a whole", the lingering caress, and mutual absorption. Her model of "Prolonged engagement" as a way of engaging with data in qualitative and arts-based research was initially inspired by Armstrong's (2000) "Intimate philosophy of art". Even though neither Armstrong's nor Bresler's approach were associated with the world of non-humans, we apply their thinking in our project that is inspired by post-humanism. We do not see this as problematic, but rather as an extension from qualitative to post-qualitative and post-human thinking.

The main aim of this article is to try to understand how the arts contributed to the students´ involvement in their personal transformative processes. More specific, we are looking for qualities embedded in their processes of engaging with the natural learning environment, and we are trying to understand how qualities of arts-based inquiry can challenge anthropocentric values. Prior to this project, we believed that the arts could provide a powerful arena for connecting to the life on land; discovering inequalities between humans and non-human forms of life could support the students´ reflective thinking and transformative actions. The examples in this article show how.

Influential forces and the significance of sensation and "affect"

Prior to the study, we were influenced by post-human perspectives, as part of contemporary tendencies in research and philosophy, hence we had been confronted with being part of our earlier anthropocentric viewpoints, as well as relating to research methodology before post-human thinking. Referring to earlier research with embedded anthropocentric positions can often be problematic (Hultman and Taguchi, 2010), but do not have to be. Merleau-Ponty's (1962) phenomenology of perception, for instance, suggests that the human perceiving body is mediated by senses. And in his late works (Merleau-Ponty & Lefort, 1968 pp.136-143), he emphasizes "intercorporeity" as feeling the sensibility of the others; circles of the touched and the touching, the visible and the seeing. Applying such a phenomenological approach

does not necessarily exclude contemporary post-humanist acknowledgement of non-human bodies. In our context "intercorporeity" includes more-than-human bodies.

The concept of *affect* indicates something important about the significance of the senses. According to Deleuze & Guattari (2008), affect does not concern feelings in a psychological sense, but emerges as a sudden connection between memory and sensible experience present here-and-now (Nordbø, 2017). Affect, in this sense, means that bodily sensation - for example taste - forces memory into consciousness mediated by the sensing body. Pre-subjective sensations can have shocking effects that can disturb sensorimotor habits, forcing new ways of thinking (Deleuze & Guattari, 2008, Patton 2010).

> "Affect is the change, or variation, that occurs when bodies collide, or come into contact. As a body, affect is the transitional product of an encounter, specific in its ethical and lived dimensions and yet it is also as indefinite as the experience of a sunset, transformation, or ghost" (Coleman 2010, p. 11).

Besides the concept of *affect*, we also find Deleuze's and Guattari´s concepts of *extensive* and *intensive terms* (Jagodzinski 2018) to be important for our understanding of the students' processes. The concept *extensive terms* concern affections and perceptions; Extensive terms do not help us "think," since they are categorical and representational. They do not "shock" the thought. On the other hand, *intensive terms* are linked with material affects and percepts of presubjective sensations (aistheis) and are potential forces to disturb sensorimotor habits. Intensive terms can thereby force renewed thinking (Jagodzinski, 2018). In short, this means that disturbance of sensorimotor habits can provoke transformed thinking. Embodied actions in natural environments can evoke the senses to the extent that such sensible events evoke memory in an involuntarily manner. This can, in the next turn, be crucial for changed conceptions of and attitudes to the natural environments.

Sharing agency with more-than-humans
According to Barad's (2007) in agential realism, both humans and materials are "performative mutually intra-active agents" (Hultman and Taguchi, 2010, p. 527). However, accepting agency of others has implications for how human subject is understood in this entanglement of mutual intra-actions. "To be a subject is not to act

autonomously in front of an objective background, but *to share agency with other subjects that have also lost their autonomy*." (Latour, 2014, p. 5, original emphasis). Granting agency to non-humans, matter and elements of nature, and appreciation of their intra-activities, is also a way of promoting more ethical teaching and research practice (Hultman and Taguchi, 2010). Transforming one's own anthropocentric orientation - an act of socioecological justice and teaching that can challenge students' anthropocentrism - can be labeled a "total liberation pedagogy" (Oakley, 2019, p. 20). We are seeking towards "intergenerational and multispecies environmental justice" (Taylor & Pacini-Ketchabaw, 2019, p. 5) where every tree, stone, horse, or ant can become an active agent that contributes to the complex "tentacular thinking" (Haraway, 2016). Such recognition of animal subjectivity "opens up a new model of interpretation and application in the dynamics of animal learning" (De Georgio & De Georgio-Schoorl, 2016, p. 16). In a mobile and open system of forces and between forces, everybody is "affector" and "affected" (Patton 2010) by other existential "bodies", in time, space, and materiality. The "oppressed" nature has, indeed, the power of changing our lives, for instance earthquakes, eruptions, floods, and disease, or just rain, sun, and seasons.

Methods and research design

Facilitating transformative arts-based learning environments
The main activity of the three-week project was students' physical engagement with one small outdoor place; each student's learning depended on whatever emerged from her/his meeting with the specific place, its inhabitants, and materials. As teachers, we facilitated learning possibilities so that certain forms of learning could be possible, but none could know in advance what would be learned (Eisner, 2002). Prior to individual dwelling at their outdoor places, the students took part in a few theoretical and practical or digital lectures about post-human theoretical perspectives, improvisational approach to exploring, as well as popular science[3]. After the introductory lectures, the students were expected to learn from experience, using their visual sense, touching materials, exploring movement. The students were asked to be attentive, over time, to materials, objects, plants, and other living beings, and

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[3] The Hidden Life of Trees, by Peter Wolleben (2018)

were encouraged to document by photo, video, sound recordings and written notes. Whatever emerged from their prolonged engagements formed a basis for discussions in their class and further supervision.

The students responded in varied ways– all of their projects cannot be mentioned in this article; we present a few examples. We intended to create a context where teachers as well as students could take a risk to say or do something unusual and to break habits, aiming to seize the opportunity to discover something subjectively unique; The students who allowed themselves to engage with the place ended up doing something extraordinary, learning something unique about relations between themselves and what the places and situations had to offer - afford them with (Gibson, 1979).

Research methods

Since the process of teaching was connected to the research process, the students' documentation and assignments served as part of the data. This means that much of the data was constructed by the students: their photos, videos, sound recordings, notes as well as their multimodal presentations delivered at the end of the project. Consequently, what was available to us was already selected, constructed, and interpreted by the students. On the other hand, our own participatory observations from student supervision were an important part of the data. The fact that the two of us conducted all the supervisions as a pair of teachers, and that our backgrounds are from two different subjects, enriched our ongoing reflections about our shared participatory observations. This was a form of researcher triangulation.

We treated each of the student's processes/cases as unique, and we studied "how things worked" (Stake, 2010) within each of them. It is not our intention to compare or measure the students' personal transformations, but to make visible the qualities in each of these selected cases that can illustrate a challenge of their anthropocentric values. Our selection of cases/examples for this article is made with intention to show diversity of organisms and materials that the students engaged with. The processes of reducing inequalities among themselves and horses, ants, trees, and clay, challenged them in different manners and levels. Our choices were also based on the premise that one of us (Anne Lise) is a drama teacher and interested in performative aspects of students' engagements with nature, and the other one (Biljana) is interested in relations between human and non-human animals.

Some students invested more of themselves into the project than others; some were more influenced by their own processes than others; and some of them departed the project more transformed than others. A few students avoided the challenges or did not invest efforts to spend time in their self-chosen outdoor place, and some of them delivered superficial assignments that did not show significant learning. Hence, the chosen examples are not necessarily representative for all the students. However, the most important reason for choosing the four examples, is to highlight the way these students conducted their arts-based explorations and documented their processes. We emphasize specific qualities rather than discussing variety in learning outcome.

The process of constructing the narratives was a form of contextual analysis. The narratives are (as any narrative) pieces of "virtual reality" (Bresler, 2016b) constructed from the students' voices, visual representations, and their reflections about new insights. The narratives are meant to make visible the processes that led to the students' discoveries of marginalization between themselves and the horse, the ants, the tree, the water, and the clay.

Research ethics

Although a/r/tography means that our roles of teachers, researchers and artists were merging, we are aware of that such fusion of teaching and research can be ethically challenging; first, because the students could not withdraw from the teaching project or withdraw their assignments, which contradicts the ethical requirement that research participants should always be able to withdraw from a research project. Our teacher authorities could compromise the researcher obligations. We informed the students about our research prior to the teaching period of three weeks, and carried out our teaching in a way that the students were not significantly affected by our research. We also promised the students that we would ask them personally if we wanted to address their projects in our research (which we did with four of the students). Second, because our arts-teacher roles entail that we were deeply involved, hence influencing the artistic choices in the students´ processes, we have emphasized transparency about our roles in the process. We have taken the necessary precautions to inform the students about the premises of voluntary participation in the research part, to ensure ethical and just treatment of the students both during and after the study. The students are anonymized, and the fact that the

study is conducted over three years' time makes them even less recognizable. A third aspect of ethical challenge we met was that qualitative and post-qualitative research demand continual attentiveness to others; acting so that none got hurt emotionally, mentally, or physically was a continuous consideration.

In this study, ethical challenges were not only a matter of relations between the teachers/researchers and the students/informants; one of the main themes of the study was the ethics of the relationships among humans and other species. How the students experienced and acted upon non-human others, as well as how they represented, acknowledged, and respected them, is closely related to potentials for reduction of inequalities between all beings. We might speak of radical ethics, parallel to how Blanchard and Nix (2019) address "radical pedagogy": when students are challenged to identify ethical questions regarding 'marginalized others.´ Being able to identify marginalized others and to start treating them more ethically, depends on teachers abilities to "create possibilities for students to connect more ethically with 'otherness' when investigating diversity, human rights and civil society—as the research encounter is highly contextual and continually in negotiation" (Blanchard and Nix, 2019, p. 67). In our context, the marginalized others were ants, horses, trees, water, and clay.

Supervision
Apart from spring 2019, before the covid pandemic, we were not present at the students' outdoor sites, but we asked them to show photos videos and tell us as much as possible about their places. The students' verbal, visual and audio narratives had a central role during the supervision that was individual but conducted in groups online.

At times, some students started to assume that there was nothing special with what they had noticed, so we supervised the students to discover the uniqueness of their own experiences and to seek motivation to move further into personal and detailed encounters with their places. We realized that the contexts of supervision facilitated unique arts-based learning environments characterized by "knowledgeable improvisation" (Bresler, 2006b). The fact that the two of us have different subject-specific background, made the flow of supervisions "knowledgeable" in terms of guiding the students to relate more profoundly with their material spaces by sensible and embodied action; to explore by senses, touch and express themselves by

movement, pace, space, tempo, rhythm. We adjusted our guidance to the changing conditions and situations at the variety of sites, materials and individuals concerning which artistic effects to suggest or encourage. We helped them to adjust the walking and prolonged engagement methods to their situations.

The narratives

The students' narratives constructed by Biljana

The bridge and the horse
One of the students (A) chose a place by a narrow creek where she often rode her horses. She wondered why one of her horses refused to cross a wooden bridge over the creek. During her rides, her attention was focused on trying to get her horse over the bridge, but during the project she visited the place alone and explored the landscape, the ground, soil, and grass. She heard cars, birds, insects, wind in the surrounding trees and running water. She sensed the smell of fresh water and rotten wood.

On her next walk to the place, she took her sceptical horse with her. She decided to be open-minded and creative in exploring different possibilities how to get the horse over the bridge, but not focus on this goal too much. To begin with, she let the horse do what he wanted, and they spend 30 minutes there, eating grass and moving very slowly. Then she let the horse go in front of her and asked him to cross the bridge, but this just made him more anxious. Next, she turned the horse away from the bridge just a second before the horse tried to run away from the bridge. As the "training" evolved, they were still not getting any closer to the bridge.

Another day she visited the place without the horse but pretended to be a horse herself. She observed the bridge from different perspectives – she imagined what the horse could see, hear, and smell when he was eating grass, and when his head was high up. She tried to pay attention to the details and observe the landscape as one whole. She examined the bridge more closely and discovered that she could see the water surface between the planks, and what it mirrored. By putting weight on the bridge planks, she sensed their slight instability. When she kneeled, she could both see and smell the rotten and weak parts of the planks. She realized that she could hear falling water but could not see where the sound was coming from. She

concluded her explorations with an assumption that it probably was the sound of an invisible waterfall that was scaring her horse.

The ants

Another student (B) started her journey by asking herself: "Who am I when I am alone in the woods?" In her notes, she recalled her childhood memories from life in a large city, where walks were taken to museums and theatres, never to the woods. Building on her past experiences she wrote: "The nature has always been something mysterious to me."

The first time she was at her chosen place, she brought pencils and paper with her, and she drew what she saw. Back at home, she reviewed her drawings and noticed a dark area beside a toppled tree she had drawn. She went back to see what the dark spot was and discovered that it was a hole in an anthill. It was not until now that she noticed the anthill, and she started to observe the ants. Few of them were active around their home this day, and she felt confident to get quite close.

The next day when she went to observe the ants, she was disappointed: "The place was crowded with ants!" She wrote in her notebook:

> "There was so many of them! And they were so active and fast … They seemed a bit angry, too. I did not feel welcome. The ants made so much noise, and their sounds were scary. I had to stand at a distance to observe. I did not dare to get close to the anthill, and I started to wonder if I should, after all, choose another place for my project. But how could I ever get to know the ants if I do not dare to approach them?"

The next time she approached the anthill, she saw a tall stick and an ant that had climbed on it. She took a picture of him and wrote: "This ant became very curious about me, it stretched towards me ... I immediately associated his posture with someone who guards. Here he stands, right outside the anthill and guards it from unwelcome guests." She hoped she was not an unwelcome guest, and she moved with respect around the place.

The next day, she observed how much efforts the ants were investing in repairing the hole in the anthill, and she felt sorry for them. They were carrying pine needles and she wanted to help them. She collected pine needles herself and placed them at the

opening of the anthill. A few days later, she discovered that the needles were gone. She wrote: "Possibly it was the wind that had blown them away, or some animals displaced them, but I choose to believe that the ants had taken the pine needles to repair the anthill."

She returned to her place yet one more time, she discovered a new development: "What a wonderful end to my project! The ants had managed to close the hole! And I may have contributed a little bit ... »

The students' narratives constructed by Anne Lise

Climbing and dancing with a tree

Another student (C) selected a place in a forest area, with high pine trees with brown bark. The ground was soft consisting of layers of dry needles and bark. Light sparsely reached the ground between the trees. She walked between the trees and moved into that space, sensing space, light, sound, birds, shadows, and a woodpecker flying, and she documented everything by photos and video. She remarked she got the urge to climb a tree, but thinking this was somewhat odd, she rejected her urge. At this early phase she was feeling a bit awkward and frustrated by the task.

She then focused all her attention on one pine tree, finding branches and bark of special interest. She placed herself on the ground, sitting, and lying on her back, for fifty minutes, using her senses, discovering details. Her hands felt the bark, and she experienced her body side by side with the tree trunk. Looking up, she noticed the very blue-sky background to the crown of the tree.

She could no longer resist the impulse to climb the tree. By climbing and taking a new perspective from high up in the pine tree, she noticed a dry branch and compared the dry wood to the little green spruce on the ground. She was attending to more qualities of details like color, size, and proportion, and applying more time on her prolonged engagement.

She was now "walking" in an unusual direction: strait up, and the walking became climbing. Her repetitive climbing movements had variegating tempo. She was influenced by the ambient, as she engaged with her own improvised actions. She proceeded by climbing blindfolded, focusing on her embodied experiences beyond the visual. The climbing made her associate with "dancing". She wrote:

"... Dance. Remembered the movements very well – been a part of me. Choreography –Repetition of movements. Left leg left arm right arm right leg left arm right leg right arm left leg left arm … (repeatedly)."

Water and clay
The student D, in our last example, went to the woods, she thought, but found herself in a bare forest area where all the trees had been cut down. She passed that area searching for a "better" ecosystem to explore and found a stream of water with a pile of stones in the middle.

The clear water on the right side drew her attention. She immersed her finger into the water and noticed that the water got hold of her finger "as if" the water did not want to let the finger go. Her emotions surprised her when she finally managed to get her finger out of the water: She was indeed mourning that this "holding" moment slipped away, "all these materials and moments being so beautiful and wonderful» she wrote. She hoped to encounter such moments again.

When she visited the site again, the water had risen and covered the stones. The water was now muddy and unclear at the right side of the stones. The left bank, which she earlier neglected as uninteresting, now attracted her attention. So far, her sensations focused mostly on vision and gentle touch by hands, but then she decided to take her shoes off and wade barefoot in the water.

As her feet examined the muddy bank, her actions made the water muddier by provoking sediments to spread in the water. Her emotions evolved and she felt the urge to apologize for interrupting the water. Thinking she was sorry for the water that was "urged to absorb the clay", she wrote "What did I do? I am sorry!", as if she apologized to the water for making it muddy. Yet, she explored further, by performative actions, walking on the riverbank examining qualities of the clay with her feet. While walking she was sliding repeatedly into the water and struggling to get up on the clay bank again.

Finally, she lay down on the clay, her whole body was touching the clay and water and her body was sliding on the slippery clay.

The analysis

Some of the qualities of the arts-based learning environments we facilitated for the students (and addressed in this study) depended on our (teachers') choices, while other qualities depended on the students' choices; we took certain theoretical and methodological choices prior to the three weeks of teaching, and the students chose their places, forms of action/interaction/intra-action, and selected experiences they wanted to share during supervision. In this section we will analyse the qualities of the arts-based learning environments as experienced by the students - more particularly: the qualities that seemed to challenge their anthropocentric views.

Analysis of the examples with horses and ants

The students A and B explored the chosen places with their companion species: the horse and the ants. Both students showed growing interest for their non-human friends' points of view. The student A become more familiar with the space and materials around the creek, and her horse helped her pay closer attention to the specific qualities of the materials found there. It was, indeed, her horse that motivated her prolonged engagement and in-depth explorations of the place, especially when she explored the place as if she was a horse. When she tried to imagine how her horse was experiencing the environments, her imagination helped her to look, listen and smell from the horses' point of view to understand him better (Efland, 2002). This change of perspectives can also be understood as a sign of acknowledgement of her horse's experiences. She was empathizing with her horse by showing him, and us, that she cared. The project that demanded her prolonged engagement seemed to help her pay better attention to the horse's emotions and needs, for instance the need for slow and prolonged observations of the bridge. The fact that the student A chose the place particularly because she was puzzled that her horse experienced it differently from herself, facilitated learning environments where she was challenged to expand her understanding of a non-human agent – her horse – as well as her own senses.

The student's human-centered thinking in teaching the horse, was challenged when the horse did not want to obey. The fact that she let her horse dwell by the bridge are signs of her will to listen to her horse, which in turn held potentials for reduction of inequalities among them – inequalities in agency. Her (human) listening to the horse made his empowerment possible. The horse was probably, more than she imagined,

aware of the qualities of the wood, soil, and water, as well as qualities of his own body: his weight, size of his hooves and so on. The horse's embodied knowledge was an asset to the student's understanding of the place, although humans often think that we know better and we lack capacity to fully understand non-human individuals (Broglio, 2011, p. xvi). Still, the student's anthropocentric assumptions seemed to be shaken during the project, and we could sense a tiny twist toward reduction of inequalities between her and her horse.

The student B that engaged with the ants, was eager to listen to them. The fact that she did not have any experience with ants, helped her to approach them with openness, curiosity, and a bit of fear. Her prolonged engagement seemed to lead to development, thus, this did not happen without her efforts. She tried different artistic approaches; she made drawings of the place and offered the ants pine needles she had collected. She did not escape the challenges of fear she faced, but "stayed with the trouble" (Haraway, 2016) and endured even when she thought that the ants would hurt her. She returned to the place repeatedly and tried to sense it from the perspectives of the ants. Her admiration and care for them grew gradually, and she started to consider her imaginative thoughts about their needs more, and her own needs less. When she, at the end of the project, reflected about her earlier attitude, she called herself "selfish", realizing that her attitudes had changed during the project; earlier she was *using* the woods to meet her needs for jogging on soft paths, now she was watching her steps and caring for ants. She addressed her aesthetic awareness as significant for her process of value transformations: "I discovered something different, different in myself. I experienced being aesthetically aware, and I could experience compassion and empathy for these ants ... Inter-subjectivity." This description of her experience of the arts-based learning environments corresponds well with what we initially hoped to facilitate for our students.

Analysis of Anne Lise's examples with the tree, water, and clay
Transforming habitus in natural environments

I, Anne Lise, will in this section refer to the two examples from student C and D and their explorations of the tree, clay, and water. Both students changed their habitual ways of approaching trees and materials during their experimental walking processes. They both dwelled with details through their prolonged engagement, and both used their imaginative power. Like many other students, the students C and D,

at first, reported that they were feeling awkward when they were performing the arts-based tasks. However, they gradually abandoned their daily-like behavior and accepted their urge to dance and merge with clay and water, as substantial embodied experiences. Towards the end of the project, the student D said that she finally had grasped how to understand "aesthetic attention", a concept she had encountered several times during her education.

In these examples, changing habits involved progress through resistance (Dewey (2005 [1934]), discovering new ways of attending to natural environments and reducing inequality between self and other beings. For student C, her idea of climbing the tree was first rejected by herself, but when accepted, and put into action, climbing became part of applying the walking method. We can see a beginning transformation in her attitude towards playful forms of learning – which were originally marginalized and rejected as "childish". During the project, her encounters with the tree became embodied like a child in her climbing.

For student D, ambivalent emotional responses rose when the qualities of her place – the stones, water, and clay – changed after her first observation. Feeling unhappy about these changes, she became aware that she anticipated the stones to be lying there the same way as last time. When she accepted the changes in the natural environments, and encountered what was there, she accepted the everchanging conditions and adjusted to them. She built further on the response she received from the environment and developed new actions and responses. She realized that it was not only the clay itself but also her naked feet moving, that made the water muddy. Her empathy towards the water was now connected to the "actions" of the clay "mudding" the water, as well as consciousness about her own influence. She had the ability to be affected by these events. When she found the opportunity to move on the bank of the river, she perceived the clay having agency towards her body as she moved, as if the clay was slipping and sliding itself and her feet towards the water. Her aesthetic ability to imagine as if the water had human traits, a personality with wishes, feelings, and sensations – subjects with own agency – developed as well.

When she was lying on the clay riverbank, she noticed details, saw relations between the clay, her body, and water, seizing the "whole as a whole". She was in the process of perceptual contemplation (Bresler, 2006a). Being moved with and by the clay, she

exposed herself, with "lingering caress" (Bresler, 2006a) as she felt empathy towards the materials.

The clay became very present, and interesting to her, as she dwelled embodied on the clay riverbank. The clay "invited" her to lie down on the bank, exposing her whole body to the movement of the clay, together with the clay, toning into the qualities of the clay. Contemplating on her experience after the event, she interpreted what happened as a form of decomposing between her body and the clay. Bresler (2006) called this "mutual absorption", which is the last phase of the process of "prolonged engagement". The conscious empathy with the muddied water caused a rising awareness of her own role towards the natural environment. Through her ability to act, she developed consideration of response from materiality, and then response-ability (Haraway, 2016) of her own actions. Her performative doings offered her a moment of "mutual absorption" (Bresler, 2006a) that seemed to lead to further sensible affections. In that moment, the extensive terms that had to do with affections and perceptions influenced her eco-awareness.

Laying her body down on the clay, which gave her sensitive and sensible experience, named *extensive terms* according to Deleuze and Guattari's thinking (Jagodzinski, 2018), do not have potential to shock thought to provoke thinking. She felt sorry for the water and how it might have felt when it was infused by clay and her own body bringing even more clay to it. Her imagination caused a sense of mutual existence with the clay, and that sense of mutual absorption created new thoughts: she was kind of "shocked" in her thinking in *intrinsic terms* (Deleuze and Guattari in Jagodzinski 2018). When she discovered that her own body was a medium between the clay and the water, causing the effect of muddiness in the water, she disliked that new insight. She apparently did not like to be that medium, but by lingering with that provocative thought, she accepted and took responsibility for her own influence (power).

The student C also imagined herself being an active subject among trees, and imagined the trees also being subjects with own agency. Besides being able to adapt the arts-based methods, she enhanced them and developed her own embodied interpretations of what was going on, naming it reciprocal dance - dancing with. She was assigning the tree human emotions and actions, like wanting a hug (pine) and feeling small (spruce). Her imaginative ability influenced habitus, projecting a prior

known experience or content (climb, dance) on the actual object or material. Climbing higher in the pine, she experienced a branch touch her head, which provoked her to change her direction, and notice that she provoked some of the bark to detach. She reflects about the agency of the tree as a subject, revealing how her evolving eco-awareness led to her new ways of relating to the tree: The tree was no longer an object that could satisfy her desire to climb, but a subject with own feelings, will and agency. She found her own imaginative ability equally valuable as children´s. She knew that children often animate their objects, imagining objects or so-called dead materials to come alive. Thus, her thought of compatibility between adult and child imagination, goes beyond pedagogical instrumental thinking on behalf of children. On the contrary, she involves herself in actions like climbing a tree, and imagining the tree as a personality.

Student C asked: Who am I in relation to nature? stating that when "invited" to dance she experienced the co-play/interaction with the tree in a positive way. She even entrusted the tree which, as she wrote, "helped me to climb". As well, when the clay came to play a leading part for student D as she accepted the clay´s subjective quality, the clay was no longer considered as simply something that had negative effect on the water, but as a form of existence. She realized that the clay had power to move her body into the water and she exposed herself to experiencing the clay-body-movement.

Her care, compassion and will to reduce inequalities evolved from feeling sorry for the mud in the water. She started to explore mud, water, and body as equal existences with fundamental rights. These sensible experiences had power to disturb her sensorimotor habits (Jagodzinski, 2018). The way she contemplated about her experience after the event, displayed a human being who did not feel superior to the clay. And her reflections illustrate how her eco-awareness expanded and moved towards equality among more-than-human forms of existence.

The qualities of the arts-based learning environments

Presence of imagination
When walking in the woods in their ordinary lives, our students told us, they usually talk with family and friends or listen to music. Not all the 60 students changed this habit, nor experienced reduction of inequalities between themselves and more-than-

human individuals. Still, more than the four students we presented challenged their anthropocentric values, and we suggest that *presence of imagination* supported this process. Imagination plays an important role in the arts as well as in children's lives, and in practice of early childhood education teachers. However, play and imagination are often marginalized in "the adult world". The student C found her own imagination to be quite like a child´s imagination and in her choices of actions, she tuned in to the interpersonal universe (Stern, 1998) of both trees and children. She played with words and called her walking "a dance".

Her experiences of movements "dancing with" the tree made meaning for her, through her imagination, emotions, and thoughts. She underlined the importance of imagination in her interpretations of what was going on. During her prolonged *emotional* engagement, she perceived two branches as arms, and the tree as a subject like herself. Through this imaginative perception, she was opening her mind, and opening her arms as a response to the tree that "wanted her to" embrace it.

She was empathizing with the tree in similar manner as the other three students were empathizing with the horse, the ants, the clay, and the water, and since empathy is an ability to put oneself in someone else's shoes (Bresler, 2006b), imagination is a necessary asset of empathic connections with someone or something. However, when we imagine individuals of other species to be like humans, when we assign them human-like agencies, emotions or thoughts, such anthropomorphizing is often considered to be childish, "non-objective", or an anthropocentric viewpoint. Even if anthropomorphizing can cause missing an opportunity to encounter traits that are different than human traits, still imagination is a basic trait of humans, essential for the arts and other creative and innovative processes. Thus, anthropomorphisms can as well be "stimulating lines of investigation" (Hansell, 2009, p. 9) that can motivate further imagination and challenge anthropocentric values.

Self-initiated embodied actions

We have argued that sensitivity was important in the students' approach to their environments and non-human species. It was through their own senses and actions that the students could discover something that moved them. Their further discoveries depended on their next moves: how would they respond to their experiences. During the supervision we suggested the arts-based methods walking and prolonged engagement, and more details about what they could do, but it was up

to each of them to choose how to sense, explore and allow their bodies to move. The student A learned from her embodied experiences, through her self-initiated action of pretending to be a horse, but this was first possible when she managed to constrain her desire to push the horse cross the bridge. Similarly, the student B had to overcome her fear to be able to dwell in a friendly and respectful manner with the ants. When the student C started to climb the tree, her new insights emerged from her embodied experiences (Merleau-Ponty, 1962). And the student D, who in the beginning had ambivalent emotions, preferences and dislikes, ended up immersing herself with clay and water, merging with the materiality as if it was an embodied performative event. It was through her *self-initiated embodied actions* that her view on materials as "dead" modified, and she started to consider elements of the Earth as alive, or at least with abilities to affect her.

Emphatic connections

Empathic connections are the third of the significant qualities of the arts-based learning environments we found the most significant for the students' reduction of the inequalities. "Recognition of and engagement with more-than-humans as agential and communicative beings is at the core of a transformative sustainability learning" (Barrett et al., 2017, p. 132). The way the students engaged with the horse and the ants expressed their empathy for their fellow species, in a similar manner as the student C and D empathized with the tree, clay and water. Acknowledging agency of individuals that belong to marginalized groups, be it non-human animals, materials, or young children, is challenging (Taylor & Pacini-Ketchabaw, 2019), especially when their will oppose to our own. When the student A tried to teach her horse to cross the bridge, she did not seem to consider that the horse *knew how* to do that or had his reason not to. Curiosity towards what reasons a horse might have not to cross a bridge, can serve as an example of acknowledging non-human agency. Conflicting interests can interrupt habitual and institutionalized mastery of decisions, and we need to be provoked to be able to realize legitimate interests of others. Listening to matter and materials whose abilities to communicate with humans are extremely restricted, is even more challenging because it demands human's will to listen (Fredriksen & Kuhn, forthcoming). Listening to more-than-humans is a "step away from the modernist dismissal of nature and nonhumans as anything but resources" (Bastian et al., 2017, p. 2), and a step toward increased ecological awareness and reduced inequalities among species that share the same planet.

Time for aesthetic engagements

The fourth quality of the learning environments that was significant for the students' new insights was *time*. For example, the arts-based methods *walking*, and *prolonged engagement* required that the students at one point spent 50 minutes dwelling with the "object" of interest. Further, the aspect of time provided opportunity to use one's senses, observe, noticing details, and move into deeper embodied investigations through artistic effects like repetitions, variations, tempo.

During supervision, one of the students told us she was embarrassed to perform the tasks even though she was alone in the woods: she heard her mother's critical voice in her head. Then she invited her mother to join her at the chosen site and discovered that her mother's attitude was the same as "the voice in the head"; Taking time to expose herself to her mother's attitude, helped her to overcome the voice in her head, and continue investigating the place. For some of the students, it was demanding to accept the time-consuming assignment, and acknowledge that this "waste of time" had power to replace their critical attitude with renewed experience. Thus, time was applied as part of the methods and in some cases an artistic effect.

Children's in-depth explorations demand time. If future teachers in early childhood education would be willing to facilitate time-consuming outdoor activities for children, they would first have to experience the value of such engagements through their own bodies. Some of our students were provoked or even intimidated by our request to do something as simple as to stay at the same space and see what emerges from such prolonged encounters. And some of them managed to overcome this irritation and admit their mistaken assumptions, as one of them wrote: "So much remains invisible until we take time to look deeply, immerse ourselves and stay there as long as it takes".

In any educational setting, teachers are those in charge of time and schedules (Barnikis, 2015), be it university teachers, or early childhood teachers. Another student referred her new insights to her future profession of an early childhood teacher:

> "…it is important to give children time to discover and be in nature, without any other purpose or intentions than just being there. In this way, they can develop respect and humility towards nature. At the same time, to be able

> to recognize children's ways of gathering experience, it is important that one recognizes ones' own (adult) experiences" (Note from student C, spring 2020).

This student's reflections seemed to emerge from her own deep and prolonged engagement that increased her awareness and sense of responsibility for her future, young children.

The explorative, open-ended approach we hoped to tune the students into, inspired many of them to investigate affordances of the chosen environments and engage in creative performative actions. We noticed how some of the students' increased ecological awareness affected their aesthetic and ethical judgements. We could also notice that they experienced mastery during their projects, especially during the final presentations when they realized how unique each of the projects was. Each of them left personal signature on their work (Eisner, 2002) and that made them proud.

Summary

This article is an empirical and theoretical attempt to understand how aesthetic forms of engagement related to Sustainable Development Goals 15 and 10 could contribute to the students' increased ecological awareness. The SDG 15, Life on land, was addressed by facilitating opportunities for our students' prolonged attention to their local outdoor environments and for their engagement with whichever form of life on land drew their attention. The arts-based learning environments invited the students to engage with Life on land – this was the context for the students' projects and for our teaching. We hoped that our students would engage in eco-aesthetic processes which would increase their ecological awareness and lead to different ethical choices toward the more-than-humans they encountered. We anticipated that this would further lead their attention to reduction of inequalities among them and different forms of life on land. Our anticipations guided our teaching choices; thus, we did not tell our student explicitly what to do: we advised them, but their choices and actions had to be their own. The ecological awareness had to emerge from their individual, personal and unique experience during the aesthetic learning processes.

Universities play essential roles in facilitating processes that can lead to more sustainable life on our planet (Malešević Perović & Mihaljević Kosor, 2020, p.517). The specific arts-based learning environments were, on one side, facilitated by our

choices of theory, methods, and form of supervision, and on the other side determined by the students' choices of places, forms of action and types of representation. What was possible to learn or achieve depended to some extent on these preconditions, but learning is a risky, complex, and unpredictable process (Biesta, 2013, Eisner, 2002) and each student had a unique path. During the process of analyzing the four cases, we identified four qualities that were present across the cases. These are the qualities of the specific arts-based learning environments that have contributed to challenging of the students' anthropocentric values:

- Imagination that can allow playful, openminded action and exploring "as if"-possibilities

- Personal, inner-driven, self-initiated, embodied actions – that can challenge one's perspectives

- Emphatic connections – that can lead to acknowledging other's agency and own responsibilities in interactions with them

- Time for aesthetic engagements

During encounters with other species, humans may learn that "we *are* nature", as one of our students put it. Some of the students, during their projects, moved one step closer to realizing that justice does not – and cannot - concern humans only, because humans, other animals, plants, matter, and forces of nature "are already inextricably entangled with the full range of heterogeneous others in our common worlds" (Taylor & Pacini-Ketchabaw, 2019, p. 2).

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References

Armstrong, J. (2000). *The intimate philosophy of art*. London: Allen Lane. The Penguin Press.

Barad, K. (2007). *Meeting the universe halfway: Quantum physics and the entanglement of matter and meaning*. Durham: Duke University Press. https://www.jstor.org/stable/j.ctv12101zq

Barrett, M. J., Harmin, M., Maracle, B., Petterson, M., Thomson, C., Flowers, M., & Bors, K. (2017). Shifting relations with the more-than-humans: Six threshold concepts for transformative sustainability learning. *Environmental Education Research*, *23*(1), 131-143. https://doi.org/10.1080/13504622.2015.1121378

Bastian, M., Jones, O., Morre, N., & Roe, E. (2017). Introduction: More-than-human perticipatory research: contexts, challenges, possibilities. In M. Bastian, O. Jones, N. Morre, & E. Roe (Eds.), *Participatory Research in More-than-Human Worlds* (pp. 1-15). Abingdon: Routledge. https://doi.org/10.4324/9781315661698

Barnikis, T. (2015). Children's perceptions of their experiences in early learning environments: An exploration of power and hierarchy. *Global Studies of Childhood*, *5(3)*, 291-304. https://doi.org/10.1177/2043610615597148

Bekoff, M. (Ed.) (2013). *Ignoring nature no more*: *The case for compassionate conservation*. Chicago: University of Chicago Press. https://doi.org/10.7208/chicago/9780226925363.001.0001

Biesta, G. J. J. (2013). *The beautiful risk of education*. Boulder: Paradigm Publ.

Blanchard, L.-A., & Nix, M. (2019). Creating spaces for radical pedagogy in higher education. *Human Rights Education Review*, *2*(2), 64-83. https://doi.org/10.7577/hrer.3363

Broglio, R. (2011). *Surface Encounters: Thinking with Animals and Art*. Retrieved from https://doi.org/10.5749/minnesota/9780816672967.001.0001

Bresler, L. (2006a). Toward connectedness: Aesthetically based research. *Studies in Art Education: A Journal of Issues and Research in Art Education*, *48*(1), 52-69. https://doi.org/10.1177/1321103X060270010201

Bresler, L. (2006b). Embodied narrative inquiry: A methodology of connection. *Research Studies in Music Education*, *27*, 21-43. https://doi.org/10.1177/1321103X060270010201

Deleuze, G. & Guattari, F. (2008). «Persept, affekt og konsept» from Qu`e est-ce que la philosophie? (1991). In K. Bale & A. Bø-Rygg (Red.), *Estetisk teori. En antologi* (p. 491–518). Oslo: Universitetsforlaget.

Deleuze, G., et al. (2013). *A thousand plateaus: Capitalism and schizophrenia*. London, Bloomsbury.

De Georgio, F., & De Georgio-Schoorl, J. (2016). *Equus lost? How we mistunderstand the nature of the horse-human relationship - plus, brave new ideas for the future*. North Pomfret, Vermont: Trafalgar Square.

Dewey, J. (1930). *Human nature and conduct: An introduction to social psychology*. New York: The Modern Library.

Dewey, J. (2005 [1934]). *Art as experience*. New York: Berkley Publishing Group.

Eisner, E. W. (2002). *The arts and the creation of mind*. New Haven: Yale University Press.

Eisner, E. W. (1991). *The enlightened eye: Qualitative inquiry and the enhancement of educational practice*. New York: Macmillan Publ. Co.

Efland, A. D. (2002). *Art and cognition: Integrating the visual arts in the curriculum*. New York & London: Teachers College Press.

Fredriksen, B. C. (2016). Attention on the edge: Ability to notice as necessity of learning, teaching and survival. *Visual Inquiry: Learning and teaching art*, *5*(1), 105-114. https://doi.org/10.1386/vi.5.1.105_1

Fredriksen, B. C. (2019). *Før sanden renner ut: Barnehagelærerens innsats for økologisk bærekraft*. Oslo: Universtitetsforlaget.

Fredriksen, B. C., & Kuhn, M. (in press). Why is it hard to listen to a magmatic rock? Questioning geophilia, geopower and material agency in sculpturing Larvikite. In B.C. Fredriksen & P. I. Haukeland (Eds.), *Crafting a relationship with nature through creative practice*. Oslo: Universitetsforlaget.

Fredriksen, B. C., Nordbø, A. L., & Cruz, F. (2016). Trust me, you will learn something! - Challenge and confidence in teaching improvisation. In M. Santi

& E. Zorzi (Eds.), *Education as Jazz* (pp. 139-158). Cambridge: Cambridge Scholars Publishing.

Gibson, J. J. (1979). *The ecological approach to visual perception*. Boston: Houghton Mifflin.

Haraway, D. (2016). *Staying with the trouble: Making kin in the Chthulucene*. Durham and London: Duke University Press. https://www.jstor.org/stable/j.ctv11cw25q

Hansell, M. (2009). *Built by animals: The natural history of animal architecture*: Oxford University Press.

Hultman, K., & Lenz Taguchi, H. (2010). Challenging anthropocentric analysis of visual data: a relational materialist methodological approach to educational research. *International Journal of Qualitative Studies in Education*, *23*(5), 525-542.

IISD: International Institute for Sustainable Development (2021). *First Draft of Global Biodiversity Framework Identifies Four Goals for 2050*. https://sdg.iisd.org/news/first-draft-of-global-biodiversity-framework-identifies-four-goals-for-2050/

Irwin, R. L. (2004). A/r/tography: A metonymic métissage. In R. L. Irwin & A. de Cosson (Eds.), *A/r/tography: Rendering self through arts-based living inquiry* (pp. 27-38). Vancouver: Pacific Educational Press. https://doi.org/10.1080/00393541.2006.11650500

Irwin, R. L., Beer, R., Springgay, S., Grauer, K., Xiong, G., & Bickel, B. (2006). The rhizomatic relations of a/r/tography. *Studies in Art Education*, *48*(1), 70-88. https://doi.org/10.1080/00393541.2006.11650500

Irwin, R. L. (2013). Becoming A/r/tography. *Studies in Art Education*, *54*(3), 198-215. https://doi.org/10.1080/00393541.2013.11518894

Jagodzinski, J. (2018*). Interrogating the anthropocene: Ecology, aesthetics, pedagogy, and the future in question*. Cham: Springer International Publishing. Palgrave Macmillan. https://doi.org/10.1007/978-3-319-78747-3

Jickling, B., & Sterling, S. (2017). Post-sustainability and environmental education: Framing issues. In B. Jickling & S. Sterling (Eds.), *Post-sustainability and environmental education: Remarking education for the future* (pp. 1-11). Cham, Switzerland: Palgrave MacMillan. https://doi.org/10.1007/978-3-319-51322-5

Latour, B. (2014). *Agency at the Time of the Anthropocene*. New Literary History, 45(1), 1-18. Retrieved from https://doi.org/10.1353/nlh.2014.0003

Lee, N., Morimoto, K., Mosavarzadeh, M., & Irwin, R. (2019). Walking Propositions: Coming to Know A/r/tographically. *International Journal of Art & Design Education iJADE*, *38(3)*, 681-690. https://doi.org/10.1111/jade.12237

Lenz Taguchi, H. (2010). *Going beyond the theory: practice divide in early childhood education: Introducing an intra-active pedagogy*. London: Routledge. https://doi.org/10.4324/9780203872956

Lindgren, N., & Öhman, J. (2019). A posthuman approach to human-animal relationships: Advocating critical pluralism. *Environmental Education Research 25*(8), 1200-1215. https://doi.org/10.1080/13504622.2018.1450848

Løkken, G. (2012). *Levd observasjon: En vitenskapsteoretisk kommentar til observasjon som forskningsmetode*. Oslo: Cappelen Damm AS.

Malesevic Perovic, L., & Mihaljevic Kosor, M. (2020). The Efficiency of Universities in Achieving Sustainable Development Goals. *Amfiteatru Economic 22*(54), 516-532. https://doi.org/10.24818/EA/2020/54/516

Merleau-Ponty, M. (1962). *Phenomenology of perception*. London: Routledge & Kegan Paul.

Meleau-Ponty, M. & Lefort C. (Eds.) (1968). The visible and the invisible. Northwestern University Press, Evanston.

Morton, T. (2018). *Being Ecological*. UK: Penguin Random House. https://doi.org/10.7551/mitpress/11638.001.0001

Nome, D. Ø. (2017). De yngste barna og tingene deres – en ANT-analyse av lek i småbarnsavdelinger. *Nordisk barnehageforskning 14*. https://doi.org/10.7577/nbf.1800

Nordbø, A. L. (2017). Sceniske lekerom og ideen om å bli demokratisk. In Sæbø, A.B., et al. (2017). *Drama, teater og demokrati. Antologi I: i barnehage, skole, museum og høyere utdanning*. Bergen, Fagbokforlaget.

Oakley, J. (2019). What can an animal liberation perspective contribute to environmental education? In Lloro-Bidart, T., Banschbach, V. (Edst.) *Animals in Environmental Education*. Palgrave Studies in Education and the Environment. Cham: Palgrave Macmillan. https://doi.org/10.1007/978-3-319-98479-7_2

MacRea, C. (2020). Tactful hands and vibrant mattering in the sand tray. *Journal of Early Childhood Literacy*, *20*(1), 90-110. https://doi.org/10.1177/1468798420901858

Ministry of Education and Research (2012). *Nasjonale retningslinjer for barnehagelærerutdanning*. [National guidelines for kindergarten teacher education]. Retrieved from http://www.regjeringen.no/nb/dep/kd/dok/lover_regler/forskrifter/2012/nasjonal-forskrift-om-rammeplan-for-barn.html?id=684087

Patton, P. (2010). *Deleuzian concepts: Philosophy, colonization, politics.* Palo Alto, Stanford University Press.

Porter, R. (2009). *Deleuze and Guattari: Aesthetics and Politics*. Cardiff: University of Wales Press.

Rousell, D. (2019). Inhuman forms of life: On art as a problem for post-qualitative research. *International Journal of Qualitative Studies in Education*, *32*(7), 887–908. https://doi.org/10.1080/09518398.2019.1609123

Stake, R. (2010). *Qualitative research: Studying how things work*. New York: Guilford Press.

Stern, D. N. (1998). *The interpersonal world of the infant: A view from psychoanalysis and developmental psychology*. London: Karnac.

Taylor, A., & Pacini-Ketchabaw, V. (2019). *The common worlds of children and animals: Relational ethics for entangled lives*. London & New York: Routledge Taylor & Francis Group. https://doi.org/10.4324/9781315670010

Triggs, V., Irwin, R., & Leggo, C. (2014). Walking art: Sustaining ourselves as arts educators. *Visual Inquiry: Learning & Teaching Art*, *3*(1), 21-34. https://doi.org/10.1386/vi.3.1.21_1

Tynæs, A. K. (2013). Performativ danning - kollektive transformasjonsprosesser. [Performative formation - collective transformation processes] In K. Mjaaland Heggstad, S.A. Eriksson, & B. Rasmussen (eds.): Teater som danning, 162-175. Bergen: Fagbokforlaget.

UNESCO. (2019). Framework for the Implementation of Education for Sustainable Development (ESD) beyond 2019. Report from the UNESCO General Conference 40th, Paris. https://unesdoc.unesco.org/ark:/48223/pf0000261625