Messily mediating milieu: Enclothed cognition in environmental education

Connie Svabo, Katrine Bergkvist Borch, Anja *Mølle* Lindelof, Catherine Bagnall & Jacob Andrew Malone

Abstract

This article contributes to environmental education by demonstrating how clothing, understood as mediations, can be used to design embodied, aesthetic and more-than-human learning experiences. As a case of practice-based fieldwork, we stage a forest walk and analyze how clothing reconfigures attention, orientation, and relation, shaping what we call enclothed cognition within an eco-mental milieu. We ask: what do garments do to environmental experience and how can clothing as a mediator support care-full, life-friendly forms of knowing in nature-based education? *Methodologically, we present the study as an annotated portfolio combining fieldnotes, reflective writing, and multimodal traces from an event during the International Ecoliteracy Research Festival. Across four cases (personae, a type-writer-as-sound machine, a blue velvet dress, and monstrous writing), we show how clothing operates as a low-tech pedagogical mediator that enables perceptual shifts, ethical attunements, and new relations with environment. We argue that clothing can function as scalable, teacher-adaptable tools for designing sustainability learning as worlding practice, where learning environments emerge through co-performance among bodies, materials, media and more-than-human atmospheres.*

Résumé

Cet article s'intéresse à l'éducation environnementale sous l'angle de l'habillement, considéré comme une forme de médiation utile dans la conception d'expériences d'apprentissage incarnées, esthétiques et plus-qu'humaines. Dans le cadre d'une étude de terrain axée sur la pratique, nous avons organisé une marche en forêt pour analyser la manière dont l'habillement réorganise l'attention, l'orientation et les relations. C'est ce que nous appelons la « cognition habillée » au sein d'un espace écomental. Nous nous interrogeons sur l'incidence des vêtements sur notre expérience de l'environnement et sur la manière dont l'habillement en tant que médiateur peut soutenir des enseignements en nature qui prônent l'attention et qui sont soucieux de la vie. Cet article présente l'étude sous forme de portfolio annoté, accompagné de réflexions écrites et d'une variété d'autres éléments provenant du festival écolittéraire International Ecoliteracy Research Festival. À partir de quatre cas d'étude (le rôle social, la machine à écrire comme machine à son, une robe de velours bleu, et une écriture monstrueuse), nous démontrons la fonction des vêtements comme médiateur pédagogique low-tech permettant un changement de perception, une syntonie éthique et de nouvelles relations avec l'environnement.

Nous soutenons que l'habillement est un outil mesurable et adaptable selon la personne qui enseigne, qui permet de concevoir l'apprentissage de la durabilité comme une pratique de mise au monde. La co-performance des corps, des tissus et de leur composition, et d'environnements plus-qu'humains crée le milieu éducatif.

Keywords: posthumanism, embodiment, atmospheres, more-than-human, multimodal, podic, portfolio as form, creative methodology, performativity, environmental aesthetics

Introduction

Environmental education as a spatial and sensory-aesthetic practice of *worlding*. We live in challenging times. The climatic state of the Earth threatens a multitude of species, including us, *Homo sapiens* (Paulsen et al., 2022). Education for Sustainable Development (ESD) is essential for our future life on Earth. The urgency of environmental response measures necessitates that environmental sustainability must be integrated into foundational education curricula to prepare our children and grandchildren to the challenges of climate change (Blenkinsop et al., 2022; Højholdt & Ravn-Pedersen, 2021). This global reality asks us how we can inspire environmental education to pioneer new approaches that foster critical thinking, produce creative solutions, and inspire action. The present article demonstrates how clothing, as an everyday medium, can be used to design low-tech, playful, and disruptive environmental education experiences. Such approaches involve moving learners from cognitive knowing towards embodied sensing in more-than-human worlds, followed by reflection, to achieve creative solutions – a posthuman and performative perspective on learning and knowledge (Barad, 2007; Pickering, 1995, 2005, 2025)

We understand learning environments as eco-mental systems: relational circuits in which perception, cognition, and responsibility emerge through relations among humans, materials, media, and other more-than-humans inspired by Bateson (1972/2000) and Haraway (1991, 2016)). Environmental education becomes a spatial and sensory-aesthetic practice of *worlding*, where learners are invited to enter relations differently and develop life-friendly modes of attention and response (Haraway, 2016). Clothing is our everyday entry point into this potential because clothing is the first external medium through which bodies meet weather, terrain, movement and socio-ecological co-presence. As the deceased philosopher Michel Serres (1991) wrote, "We never truly live either completely naked or completely clothed, never entirely veiled and never entirely unveiled—just like the world itself" (p. 81, authors translation). Clothing is an everyday mediator. We understand

mediation as a relational, generative process – namely, the making of connections (Latour, 2005; Pickering, 1995; Serres, 1982).

In a time of ecological uncertainty, there is an increasingly need for methods in environmental education that address complexity, embodiment, materiality, and more-than-human attunement (Ejsing, 2024; Fettes & Blenkinsop, 2023; Malone & Crinall, 2023; Paulsen et al., 2025; Paulsen et al., 2022). Building on work in environmental aesthetics (Carlson & Berleant, 2004) (Svabo & Ekelund, 2015), pedagogy in the Anthropocene (Paulsen et al., 2025; Paulsen et al., 2022) and STE(A)M education (Colucci-Gray, 2025; Colucci-Gray et al., 2024), we explore how clothing functions as an embodied medium that shapes learners' orientations toward place, atmosphere, and ecological relations. We research clothing as a mediating technology and play with personae, eco-literate experiences, monstrous mediations, and a hybrid dress in re-thinking pedagogy in the Anthropocene. We propose performance-based sustainability methodologies to move against persistent, rigid reproduction of the existing pedagogical systems. These monstrous methodologies can articulate the value of the unpredictable, the uncontrollable, and the emergent (Svabo, 2021; Svabo & Borch, 2026).

Performance Design and Creativity

To contribute to rethinking ESD pedagogy, we, four researchers within educational research, performance, communication, and design have assembled several examples of fieldwork to synthesize posthuman approaches with performative design strategies. We draw on recent work where we have explored monstrous methodologies as posthuman and performative approaches within science education and educational research (Borch, 2026; Svabo & Borch, 2026).

The present article models a framework for new methodologies to explore the potential for tangible, inventive, transdisciplinary, and hybrid analyses of performance-based environmental education with an eye toward practice-based education design. We draw on a workshop for researchers and secondary and tertiary teachers held at an International Ecoliteracy Festival in 2025. We approach our empirical material through four perspectives: 1) *Performative Schizoid Method* and Co(a)gency, 2) Typewriter as a Sound Machine, 3) The Blue Velvet Dress, and 4) Monstrous Writing.

Through these case studies, the article rethinks issues of environmental education through the concept of clothing as an active mediating entity. The case studies demonstrate how enclothed thinking extends pedagogy by shifting the learner from cognitive knowing to embodied sensing within context.

Theoretical Framework: Mediation as Orientation and Relation in Eco-mental Milieu

The question that guides us asks *how clothing participates in the ongoing reconfiguration of knowing, acting, and relating within more-than-human learning ecologies.* Clothing is understood as a material-semiotic practice through which bodies, environments, and forms of attention are differentially attuned and brought into relation across scales. From this perspective, cognition, performance, and participation are not separated domains but emerge as interwoven modalities within the experience ecologies. We think with clothing as medium and this foregrounds how sensing, moving and knowing are co-constituted through situated encounters. Here, we draw on Barad (2007) and their understanding of intra-action and we understand clothing as an actor with agency in this configuration being the intra-action.

This contextual framing raises the question of *how clothing might be engaged as a design-relevant mediator in ESD*: not as an add-on or a representational device, but as a way of re-configuring how participants can engage, respond and attune ethically within more-than-human worlds.

We use mediation as an analytic and design concept. Mediation is about active orientation and relation-making – and does not merely refer to transmission. In eco-mental environments, mediation shapes what becomes perceptible, what becomes possible and what becomes care-worthy. Clothing is a great mediator because it is both material and semiotic. It is both sensory and socio-material: it calibrates temperature, texture and movement, while also cueing identification, role, and position. When clothing changes, the environment changes with it; new relations are staged and enacted.

Clothing functions as a design opportunity to develop pedagogical strategies. Not only does clothing shape how we sense, feel, think, and perform within environments, clothing can be used as a learning apparatus for eco-literacy. As we come to know and feel our environment *through* and *by means of* our clothing, we can also analyze the nuances of enclothed experiences as pedagogic practices, which inform and so re-shape approaches to environmental education.

As with the case studies presented in this article, clothing as a *device* dictates and bestows a series of user tactics by which the wearer re-configures with his/her environment. Clothing is an onto-epistemological medium (see: Barad, 2003, 2007). It enables orienting and relating of the body, and the human to the environment; it formulates along with sensation as the basis of the experience ecology. To consider the orientational and relational powers of clothing is to ponder the ways that clothing forms connections, both social and material, among the natural and cultural worlds we inhabit. The ubiquity of clothing marks perhaps the first external medium one experiences, the first component of an extra-corporeal habitat we contact, the first socio-material architecture we perceive. Clothing becomes an environment we adopt. It alters our sensory fields, guides how we create knowledge, and bridges experience.

Mediation does not arise as a free-flowing, unbiased process of information exchange, but is rather a creative, dynamic and ongoing system(s). Mediation can frame, reinforce, and distort data. Following the concepts of Michael Serres' (1982) mediation ontology and Actor-Network Theory, we consider mediation as a creative process that proceeds through an orientational and a relational information exchange (Latour, 2005; Svabo, 2010; Svabo & Borch, 2026) and, further, mediation is always contextual, co-constitutive, and co-creational throughout the process (Shanks et al., 2025). Knowledge is a performative process, with active and agential dimensions that influence the relationality of assemblage; knowledge formation thus also involves a configurative practice, following Pickering's (1995) conceptualization of performativity . As Pickering indicates, within mediation subject and object (human or more-than-human) are both *transformed* through a mutual process, ever shifting and susceptible to deviations (Pickering, 1995, 2005, 2025). Mediation therefore involves a dynamic morphing of materiality that is always situated within ongoing streams of observation and analysis. Mediation co-agentially transforms all positions in a knowledge assemblage, including matters and objects of study (Colleague et al., 2025).

For environmental education, this means that clothing is not just a covering but a medium that shapes how learners' sense, interpret, and engage with place. Clothing orientates bodies toward atmospheres, materials, and more-than-human presences; it configures relations and co-creates experience. Understanding clothing as an environmental mediator opens new pedagogical possibilities for designing experiential, embodied, and relational learning situations. For environmental education, understanding clothing as medium foregrounds the ways learners co-create environmental experience through embodied, affective, and material engagement. Mediation, in this sense, is not abstract but ecological: it shapes how bodies relate with more-than-human atmospheres, landscapes, and sensory conditions. This perspective resonates with international traditions of land-based learning, environmental aesthetics, and relational pedagogy, providing an onto-epistemological foundation for practice-based eco-literacy.

Significance

Clothing mediates our every experience with the environment. As we participate and perform environment through clothing, so too does *enclothed cognition* mediate our experience of that environment. We draw on Adam and Galinsky (2012) who argue that:

> . . . wearing clothes causes people to "embody" the clothing and its symbolic meaning. Consequently, when a piece of clothing is worn, it exerts an influence on the wearer's psychological processes by activating associated abstract concepts through its symbolic meaning—similar to the way in which a physical experience, which is, by definition, already embodied, exerts its influence. (p. 919)

In this manner, the mediating of clothing constitutes forms of *enclothed* cognition to experience the situatedness of the human, always embedded within the environment. We explore these methods for ESD and STEM-education to innovate novel approaches to study embodiment and to engage with affect, the senses, and bodies as situated within and emerging through their relations with more-than-human environments. This mediation-oriented perspective allows us to see learning environments not as backdrops but as co-constituted assemblages in which clothing, materials, bodies, and atmosphere jointly shape environmental knowing (Borch & Svabo, 2025).

Emergent Methodologies in Environmental Education

Concept: Fieldwork

The fieldwork for this study is a walk in the (He)art Forest of Denmark, staged as a 90-minute open-invitation event during the International Ecoliteracy Research Festival on August 15, 2025 in Ry, Denmark. Conference participants took part in the practice-based event to explore the ways in which clothing redefines the onto-epistemological relationship between the human walker, other human participants and more-than-humans, including landscape, plants, fungi, animals etc. and to the knowledge ecologies that emerge.



Figure 1. The participants at the end of the walk.

Here participants were invited to join a "meeting of people, nature, and life-friendly vision… and [through] play, and communal activities, we aim[ed] to create a space for dialogue, learning, [and] centering the more-than-human world without extensive use of electronics" (conference participation call) and to use clothing: including props, tails, antennae, lab coats, etc. as onto-epistemic media.

Methodology: Annotated Portfolio as Generative Form

Utilizing transdisciplinary backgrounds, we use an annotated design portfolio (Gaver & Bowers, 2012; Hall, 2020) as a scaffolding for the empirical examples in the article to demonstrate how emergent methodologies can transform and design environmental education. Following methods outlined in "*Monstrous Mediations: A Posthumanist Portfolio of Strange Methods*," where Svabo and Borch (2026) establish emergent, monstrous research methods to approach the study of more-than-human agency via the analysis of sensory-corporeal materializations, and drawing upon a long history of *generative disruptive* work among the contributors, the present article synthesizes several approaches to human-situatedness of environmental aesthetics (see also: Kosovac, 2023, p. 87).

These methods repeatedly emphasize the relational displacement, performativity, and speculative experimentation inherent in analysis of *dynamic assemblages* of knowledge formation. The foundation of *assemblage* in actor-network theory (ANT) grounds a relational understanding of the always-fluctuating coordinates of knowledge; assemblages encourage relational theory to evaluate the chimeric, shifting processes of knowledge made visible through instances of socio-material manifestation (Latour, 2005; Latour & Woolgar, 1979; Law & Mol, 2002).

Practice-based Research Methodologies: Creative Making and Wearing as Inquiry

The walk involves outlined structures for participants and includes multimedia documentation:

Context and Participants

- Open-invitation forest walk, 90 minutes
- Location: (He)art Forest / Himmelbjerggården in Ry, Denmark
- Date: August 15, 2025
- Participants: 13, including conference attendees and workshop facilitators. Participants included researchers in environmental education as well as teachers in secondary and tertiary level.
- Documentation: photos, fieldnotes, reflective annotations, participant utterances, artefacts/clothing traces
- Parallel: Catherine Bagnall performed a walk in parallel in her environment at Butterfly Creek in New Zealand. Her experience delivers additional

perspectives on the reflections of the practice-based research in another geographical context.

Event Documentation, Materials and Traces
- Fieldnotes written immediately after
- Photographs by authors
- Post-event reflective writings
- Artefacts: garments, props (tails, antennae, lab coats, typewriter)

Analytic Approach: (Re-)Connecting with Theory
- Theoretically and conceptually driven practice
- Portfolio curation (selection and ordering of cases)
- Compilation according to analytical themes
- Generative and iterative design: events as prototypes for education practices

By design, the walkers, amblers, crawlers, and callers of the day afforded the contributing authors with reflections after the walk at several stages.



Figures 2-5. Images of the participants during the walk.

The annotated portfolio format aligns well with contemporary environmental education, which increasingly values situated, multimodal, and practice-based inquiry. By combining fieldwork documentation, embodied experimentation, and reflective annotation, the portfolio demonstrates how learners and researchers can attend to atmospheres, relations, and more-than-human presences. The annotated portfolio captures multiple perspectives and levels of participation (Bowers, 2012; Gaver & Bowers, 2012). Drawing on Malone's (2026) work on autoethnography and posthumanism, we combine personal experience and observations to foreground morethanhuman elements and to rethink conventional fieldwork. The portfolio's multimodal documentation and participant annotations allow for multiplicity and reflexivity: contributors

move between roles as ethnographers and metapragmatic autoethnographers, producing commentary that responds to the collective processes of the project.

In doing so, the portfolio makes visible the iterative, relational, and emergent character of a reflexive knowledge apparatus (Hall, 2020). Its ongoing annotations preserve both proximal and distal viewpoints, simulating the situatedness of scholarly work within transdisciplinary discourse and the intertextual relations among contributors.

Case Studies:

The following four cases demonstrate four distinct analyses of *enclothed cognition*. They are all thematically connected to the walk Messily Mediating Milieu at Himmelbjerggården area in Denmark and present four different perspectives of *enclothed cognition*.

Case 1: Performative Schizoid Method and Co(a)gency

Situating the Encounter: Connie Svabo has extensive experience in developing design-based personae using clothing to scaffold development (Svabo, 2021; Svabo, 2023; Svabo et al., 2008). Here, using the material and social cues of a lab coat, allows the ethnographer to generate personae, hybrid identities, and extensions of self (Haraway, 1991; Michael, 2000; Svabo, 2021). The personas reengage with the environment in new ways during the forest walk.



Figures 6-8. The customization of the lab coat, the locus of the personal development.

Reflections from the Walk (Connie Svabo, 2025, translated from the original Danish):
"What did I experience in the situation?...

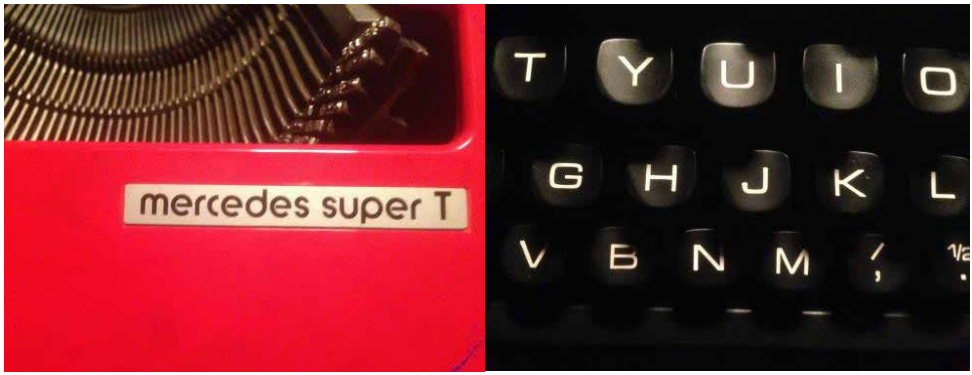
I think it was FUN. Liberating. Lovely. I felt safe with them and had a great time with what we achieved and what we wanted. It was a bit crazy (quite crazy), but also quite wonderful. And there were some wonderful Dutch participants, who made it memorable and really brought out the contours…The naked scientist. Catherine Bagnalls poetic New Zealand tailed beast - who swung in trees, knocked on traffic signs, went barefoot, and reeeeaaally enjoyed that… How nice it was to DO something."

How Clothing Participates in the Situation: Through the *performative schizoid method* (Svabo, 2021), participation is reconfigured. Agency becomes distributed across social roles, materials, and semiotic expressions. As cognitive knowing is remediated into embodied, collective sensing, previously hidden aspects of identity surface. The redesigned lab coat with leaves painted all over, the Haraway inspired compost tiara, and woman transformed into a more-than-human assemblage: *the naked scientist*. A bear-like dress with tail, a hood with ears, and a man with beard transformed into *bouncy bear-man*. New personae evolved, co(a)gents (Michael, 2000), situated at the walk. This materialization of the social allows researchers to see, feel, and reflect on the in-between and more-than-human dimensions of their work. In these inter-objective reconfigurations, both researchers and environments are transformed. The case demonstrates that scientific identity formation is embodied, mediated, and situated. Working experimentally with personae unsettles normative assumptions about expertise, neutrality, and objectivity. The lab coat becomes a mediator for exploring how environmental knowledge is performed and experienced.

Pedagogical Openings: Such practices can be adapted in environmental education settings to open discussions about authority, positionality, and the more-than-human aspects of environmental practice, creating new possibilities for experimental and sustainable curricula. Clothing can be a pedagogical participant and as with *'bouncy bear-man'* and *'naked scientist'* clothing can be redesigned to act as an intentional mediator for relations between humans and more-than-humans.

Case 2: Typewriter as a Sound Machine

Situating the Encounter: Performance-based and scenographic approaches to educational design research involves a balance between notions of mediacy and immediacy, experiential shifts that simulate oneness, liveness, in-betweenness, and performance elements as results of modes of communication. The typewriter, a Mercedes Super T, when used as a sound machine upsets the relationality of human-milieux.



Figures 9 & 10. The clacking typewriter-turned soundwriter.

Reflections from the Walk (Anja Mølle Lindelof, 2025, translated from the original Danish):
"Disturbances & playfulness

Silence, slowness, minus movement, supported by the fog in the trees and the dew on the grass, very few people to see. Very beautiful in itself, a feeling that the symposium had succeeded in creating a radical alternative to a classic conference for the exchange and production of academic knowledge…

I remember the experience of arriving and thinking that the disruption might be too great and thus intrusive and provocative rather than playful and productive.

… the clothing itself created both disruption and playfulness in different ways and in waves, carried by the different strategies and ideas that the participants brought with them… My own sticky skin under the dense orange oilskin, which made it possible to walk with a ferocity that was almost aggressive, but which was also on the verge of being uncomfortable for myself. The lab coat as flasher-clothing. Connie's dress, Katrine in wedding white, Catherines beautiful fabrics in motion and the bag that was filled with the forest's archives as we walked … to concretize our encounter with nature in a different way than through talktalktalk."

How Clothing Participates in the Situation: *Liveness* in performance prompts an active negotiation of who, to whom, and what presents itself during an act of performance (Reason & Lindelof, 2016, p. 157). Clothing provides a shift, both as tool and agential medium that remaps social strategies to adapt to changing social courses. The *radical alternative* of an ambulatory symposium guides remediation of the group interaction among conference participants: the results are an increase in the scale of strategic intervention, both in number of affected social agents and in material interrelations among the involved groups.

The forest walk demonstrates how clothing can recalibrate sensory attention, social behavior, and ecological perception. The playful disruptions challenge dominant *quiet nature* scripts in environmental education and open space for more experimental eco-literacy practices.

Pedagogical Openings: These methods can be adapted for education by juxtaposing calm/attentive phases with playful/expressive phases, encouraging learners to explore how atmospheres, sounds, textures, and movements mediate their environmental relations. Hybrid forms of knowledge emerge as potential new configurations of learning (Svabo & Bønnelycke, 2020) and these explorations allow for non-verbal knowledge, something else other than *"talktalktalk."*

Case 3: The Blue Velvet Dress

Situating the Encounter: Enclothed fieldwork and locating the more-than-human: An animal form in the guise of clothing, a garb that suggests the more-than-human: performance enabling an experience of the in-between.





Figures 11 & 12. Catherine Bagnalls blue velvet dress: embroidered, dyed, and modified to enable posthuman morphing into the more-than-human.

Catherine Bagnalls broader research as a performance artist assumes the essence of the animal by means of her clothing, in a process of *becoming* (Bagnall, 2016a, 2016b). The medium of clothing transforms the potential of ethnography into performative action. Such practice allows for novel identity formation when the mediation and agency of place factor into the seamless engagement of body, mind, and clothing as something "in-between," hybrid and undetermined.

Notes from a Night Walk in a Blue Dress (Catherine Bagnall, August 2025):
"My velvet dress is the deepest midnight blue. Two years ago, I sewed the dress from a length of pink silk velvet that was given to me. I then dyed it a deep dark blue so it would become my dress for wearing to walk in the dark. It has small green moths that I embroidered at the collar and large pockets for collecting stars. Wearing it on a moonlit August night, I become a small part of the night sky or at least my dress collected some of the silver moon glitter that flickered over the leaves of the black night trees. The dress made me swirl and twirl and dance in the small clearing that I had walked through the trees to. The dress swished and was almost darker than the dark night, absorbing the dark night sky. Next to the clearing the stream gurgled with the voices of the night spirits and the ruru called. I wasn't scared because my midnight blue dress made me a part of that place, I danced in the night sky and I danced for the blue-black night sky. And then the creek was so cold as it flowed over my bare feet, and I knew there were eels under the overhanging mossy bank all along the edge of the creek.

If I am honest my boots made of pony fur kept me very much a creature of and on the ground and I danced and swirled as if hoofed but with my bare feet in cold water and I felt the fullness of it all.

Talking with night spirits – talking with angels was what people did in medieval times because it was possible – because what we regard now as 'normal' subject / object positions had not taken hold then ...

As part of citational practice I reference the Creek: Butterfly Creek, August, 2025"

How Clothing Participates in the Situation: Clothing as mediation calls upon the user to imagine a sustainability that is simply putting into practice what it means *to fashion*. This is an act. The *fashioning* of oneself to become a part of the night sky rather than *fashion* as a noun, the name of the fashion system. Such liberation from the systemization of *fashion* reestablishes connection with the environment via performative mediation (Svabo, 2021). It models a pedagogy of transformative potential and the creative reforging of seemingly entrenched systems by altering one's relation with the knowledge ecology. Here pocketsful of stars align the celestial-human amalgam. In *becoming* part of the night sky, she shifts her orientations of practice surrounding a centralized knowledge and practice architectures to a relational disparate mode of embodied, enclothed experience (Kemmis & Mutton, 2012). This knowledge ecology extends from the celestial to the chthonic, as sleeping coils of eels at the edges of her embodied perception merge with creek-soaked feet, mediated in a linked singularity, *as* eel-water-clothes-human. Both stars and eels disappear and become, *becoming* a oneness-assemblage. The potential to fashion further, multivariate and distinct assemblages remain at the heart of clothing's disruptive, resilient, and messy

means of decentering. Like the embodied mediations of the forest walk, the Butterfly Creek and the blue velvet dress offer new orientations in experience and expressivity. Such formations of assemblage can also be found in the monstrous mediating hybridity described by Svabo & Borch (2026).

Pedagogical Openings: This case highlights the role of environmental aesthetics, darkness, fear, and more-than-human presence in place-based learning. The blue dress mediates an intimate relation with night atmospheres, non-human life, and sensory uncertainty. Educators can use similar *enclothed night walk* activities to invite learners into deeper attunement with place, atmosphere, and ecological presence, especially in land-based and arts-integrated environmental programs. This case can also be adapted in environmental education by developing *fashioning* in conjunction with environmental practice to support learning practices as performative action, with the potential to reorient student-practitioner experience.

Case 4. Monstrous Writing

Situating the Encounter: Katrine Bergkvist Borch has worked with clothing as a part of personae formation in her PhD project about science education in nature-based learning environments wearing both an ice age landscape cloak in brow colors and a white and blue silk cloak which has both been used as a wave and the sky (Borch, 2026). Walks in cloaks are inspired by Catherine Bagnalls work. In her PhD project, Borch developed *monstrous writing methodologies* (Borch, 2026), a kind of situated embodied performance and method inspired by monster theory (Cohen, 1996; Weinstock, 2020), where the monster is representing the fragmented, hybrid, and impure. The writing is not a communication of research, but the writing itself is research, as for example inquiries of research questions through monstrous writing. The writing is contextually bound, a kind of situated knowledge, that unfolds woven together with the research process as act (St. Pierre, 2017).



Figures 13-17. Clothing as co-constitutive in the experience of landscape.

Reflections from the Walk (Katrine Bergkvist Borch, 2025, translated from the original Danish):
"We survey the area, dressed in clothing that stands out. Anja, in my Ice Age landscape cloak and ears, Connie in her lab coat filled with morethanhuman artefacts and symbolics. And me with my compost tiara.

We decide that Connie should arrive in her Mercedes and set the scene, to underline our intervention in the environment.

We make noise.
As we walk.

We struck the stones. Amplified the sound with the megaphone.

[Mega-important-megaphone]

A participant from another workshop passed by and asked us to be quiet. Exactly as intended, we kept making noise. The bears roared. I think. Maybe it was only in my head?

[What might the others come up with? They're all completely mad]"

How Clothing Participates in the Situation: Clothing as mediators illuminate the manifestations of material and social contexts, made visible as (monstrous) deviations from initial orientations. These shifts directly result from *uses* of clothing, deployed to create experiential breaks and contribute to *worlding* among groups (Serres, 1982, 1991). Reconfigurations of self, involve monstrous production, a method that drives the monstrous shift towards a variety of educational design pragmatics. Monstrous writing demonstrates how learners can explore more-than-human entanglements through hybrid forms of expression. Writing as a situated, embodied practice reveals ecological relations that exceed linear or representational modes.

Pedagogical Openings: Monstrous writing in relation to clothing experiments offers powerful possibilities for environmental education where learners can be invited to write from hybrid, relational, and more-than-human perspectives. This writing is a practice combined with *becomings* as assemblages between humans, clothes and surroundings amplify the assemblages.

Discussion

The four case studies related to the loud and messy walk at the Ecoliteracy Festival contribute to enact an *enclothed cognition* pedagogy as an attempt to demonstrate how clothing, as an everyday medium, can be used to design

low-tech, playful, and disruptive experiences across age groups and educational levels. The forest walk contributed to a situated experiment in foregrounding how garments act with agency in enacting co(a)gents in specific landscapes as assemblages of humans and more-than-humans (Svabo & Borch, 2026). The walk was an intervention in the peaceful, silent, and slow environment of the Ecoliteracy Festival. The first case demonstrated how designed clothes, for example lab coats, prompt the creation of *monstrous personae*. In the forest walk, several personae's or co(a)gents were enacted. We have already introduced *bouncy bear-man* and *naked scientist*, but also *the collector* and *fox-lady* appeared that day. They were present in that specific place, during that specific performance and in that specific liveness.

We found through the revisitation and reflection processes involved in this fieldwork experience that fieldnotes capture shifts in attention, orientation, and relationality. Participant's reflections during and after the forest walk bring back sensory, affective, and observational details that act in reshaping the experience. These posthuman processes open possibilities for educational re-thinking of teaching and learning. The hybrid, choreographed practices enacted in this article suggest new ways of structuring learning and designing teaching with *enclothed cognition*. Experimenting with multiple modes of sensing, mediating, and knowing supports more sustainable knowledge ecologies where both humans and more-than-humans act in learning processes. Drawing on several perspectives from four different researchers contributes to a widely branched annotation of the walk at the Ecoliteracy Festival bringing forward how disturbance and disruption can act as methodological tools combining design and performance practices with posthuman theories. Through these annotated portfolios we explore how garments mediate knowledge and enact intra-actions between humans and more-than-humans. These approaches challenge conventional methods in environmental education and invite to expanding methodologies including a kind of more-than-human ethnography. We propose a posthuman challenge to normative eco-literacy that decenters human-centric assumptions about expertise and learning. Through the annotated portfolio we have brought forward pedagogical implications grounded in relationality, materiality and more-than-human entanglements.

Pedagogical principles for *enclothed cognition* in environmental education:

1. **Garments as Mediation:** Begin with simple garments and artefacts to shift perception and open environmental attention. Experiment with different garments in specific settings, for example wedding dress in forest or rain jacket in classroom. These everyday mediations sensitize the experience, allowing for multiple perspectives.
2. **Attunement:** Design learning sequences that play with both quiet sensing and playful disruption. Our contribution is a *shout-out* to the loud, messy, playful experiences in outdoor settings allowing for a multiplicity of attunements in

environmental education. Be curious towards what kind of garments enact liveliness and messiness.

3. **Personae:** Use personae and clothing to invite more-than-human positionality. Use clothing to help new identity forming and enactment of personae. Be curious towards what different kind of garments enact in different settings. Clothing can support participants playing with new personae and becoming human and more-than-human assemblages. Be aware of designing and creating a safe place for experimentation and curiosity.
4. **Atmospheric Shaping:** Use atmosphere (fog, cold, sound, texture, darkness, etc.) to co-create the learning situation. Experiment with walks in different settings, seasons, and different times of the day, trying to relate in different atmospheres. Be curious towards how different atmospheres shape relations.
5. **Temporal Reflection and Care:** Use reflection in the process to engage temporal experience. This could for example be *monstrous writing* where situated, temporal, poetic aspects are enacted in the writings. These temporal reflections engage in a prolongation of the experience, amplify the assemblages, and can help foster careful and responsible relations.

These five pedagogical principles can act as inspiration in how *enclothed cognition* can contribute to environmental education. Foregrounding garments as an active mediator in learning experiences shows how clothing can function as a design opportunity to develop pedagogical strategies.

Conclusion

This paper explored how clothing participates in the ongoing reconfiguration of knowing, acting and relating within more-than-human learning ecologies. Through a messy and loud walk with garments as mediators we explored how clothing, as an everyday medium, can be used to design low-tech, playful, and disruptive environmental education experiences. Across four case studies in the form of an annotated portfolio, we show that garments act as mediators of attention and can be used to design learning experiences in environmental education that enact liveliness. From the annotated portfolios, we found that the use of personae can invite more-than-human relations and that atmosphere can be used with garments as mediators to shape relations. We also found that posthuman methodologies as *monstrous writing* and *more-than-human ethnography* can amplify and prolong the experiences. This work extends posthuman pedagogy by framing clothing as an active, hybrid mediator that co-constitutes knowledge ecologies rather than merely illustrating them. For educators in environmental education, we recommend starting with everyday garment and designing for atmospheric shaping and temporal reflection.

This study is limited by its context specificity, and future work should experiment with these methodologies across different settings. Especially it could be interesting to work with students across different age groups in future research. This study shows that when we treat clothing as pedagogy, we open pathways for more responsive, care-full, and experimental environmental learning.

References

Adam, H., & Galinsky, A. D. (2012). Enclothed cognition. *Journal of Experimental Social Psychology*, *48*(4), 918-925. https://doi.org/https://doi.org/10.1016/j.jesp.2012.02.008

Bagnall, C. (2016a). An experience of becoming: Wearing a tail and alpine walking. In: M. Reason & A. M. Lindelof (Eds.), Experiencing Liveness in Contemporary Performance (pp. 124-129). Routledge. https://doi.org/10.4324/9781315659701

Bagnall, C. (2016b). Explorations into creaturely sensations and trap-lines. The senses and society, 11(2), 199-205. https://doi.org/10.1080/17458927.2016.1196886

Barad, K. (2003). Posthumanist performativity: Toward an understanding of how matter comes to matter. *Signs*, *28*(3), 801-831. https://doi.org/10.1086/345321

Barad, K. M. (2007). *Meeting the universe halfway: quantum physics and the entanglement of matter and meaning*. Duke University Press.

Bateson, G. (1972/2000). *Steps to an ecology of mind*. The University of Chicago Press.

Blenkinsop, S., Morse, M., & Jickling, B. (2022). Wild pedagogies: Opportunities and challenges for practice. In M. Paulsen, j. jagodzinski, & S. M. Hawke (Eds.), *Pedagogy in the Anthropocene: Re-Wilding Education for a New Earth* (pp. 33-51). Springer International Publishing. https://doi.org/10.1007/978-3-030-90980-2_2

Borch, K. B. (2026). Omsorgsfuld og æstetisk naturfagsundervisning i naturbaserede læringsmiljøer: en monstrøs undersøgelse [PhD thesis, University of Southern Denmark].

Borch, K. B., & Svabo, C. (2025). Science Learning Environments in Higher Education: Researching Classroom, Laboratory, and Field Settings. Education Sciences, 15(2), 213. https://www.mdpi.com/2227-7102/15/2/213

Bowers, J. (2012). *The logic of annotated portfolios: Communicating the value of 'research through design,'* Proceedings of the Designing Interactive Systems Conference, Newcastle Upon Tyne, United Kingdom. https://doi.org/10.1145/2317956.2317968

Carlson, A., & Berleant, A. (2004). *The aesthetics of natural environments* (A. Carlson & A. Berleant, Eds.). Broadview Press.

Cohen, J. J. (1996). Monster culture. In J. J. Cohen (Ed.), *Monster theory. Reading culture.* (pp. 3-25). The University of Minnesota Press.

Colucci-Gray, L. (2025). Carbon entanglements: For a science education in the space of the sensible. *Policy Futures in Education*, *23*(3), 553-567. https://doi.org/10.1177/14782103251320828

Colucci-Gray, L., Ostergaard, E., Affifi, R., & Gray, D. S. (2024). Responding to the environmental crisis: Attentive listening to soil. Proceedings of the 14th Nordic Research Symposium on Science Education Iceland.

Ejsing, M. (2024). *Verden er ikke længere den samme. Økologiske krisefortællinger i det*

antropocæne. Hans Reitzels Forlag.
Fettes, M., & Blenkinsop, S. (2023). *Education as the practice of eco-social-cultural change*. Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-45834-7_2
Gaver, B., & Bowers, J. (2012). Annotated portfolios. *Interactions*, *19*(4), 40–49. https://doi.org/10.1145/2212877.2212889
Hall, C. (2020). TAKING NOTE: Annotated portfolio as a method to analyse the experience of design research practice. *Journal of Textile Design Research and Practice*, *8*(2), 209-231. https://doi.org/10.1080/20511787.2020.1751960
Haraway, D. (1991). A cyborg manifesto: Science, technology, and socialist-feminism in the late twentieth century. In *Simians, Cyborgs, and Women: The Reinvention of Nature* (pp. 65-107). Routledge.
Haraway, D. (2016). *Staying with the trouble: Making kin in the Chthulucene*. Duke University Press.
Højholdt, A., & Ravn-Pedersen, T. (2021). *Håbets og handlingens pædagogik*. Hans-Reitzels forlag.
Kemmis, S., & Mutton, R. (2012). Education for sustainability (EfS): Practice and practice architectures. *Environmental Education Research*, *18*(2), 187-207. https://doi.org/10.1080/13504622.2011.596929
Kosovac, E. (2023). *Making-with Marlo: An exploration of cross-species sentience through nosey means-to-an-end props and other attempts,* Auckland University of Technology.
Latour, B. (2005). *Reassembling the social: An introduction to actor-network-theory*. Oxford University Press.
Latour, B., & Woolgar, S. (1979). *Laboratory life: The construction of scientific facts*. Princeton University Press.
Law, J., & Mol, A. (2002). *Complexities*. Duke University Press.
Malone, K. (2026). Speculative interspecies autoethnography: Speaking-with the future. https://environmentalsustainabilityanthropocene.org/2026/04/10/speculative-interspecies-autoethnography-speaking-with-the-future/?utm_source = chatgpt.com
Malone, K., & Crinall, S. (2023). Children as worlding but not only: Holding space for unknowing and undoing, unfolding and ongoing. *Children's Geographies*, *21*(6), 1186-1200. https://doi.org/10.1080/14733285.2023.2219624
Michael, M. (2000). *Reconnecting culture, technology and nature: From society to heterogeneity.* Routledge, Taylor and Francis Group. https://doi.org/https://doi.org/http://dx.doi.org/10.4324/9780203135334
Paulsen, M., Illeris, H., & Reato, T. (2025). Wilding pedagogy with nature writings, propositions and minor experiences: Twisting with more-than-humans towards life-friendly education. *Australian Journal of Environmental Education*, *41*(2), 338-354. https://doi.org/10.1017/aee.2025.15
Paulsen, M., jagodzinski, j., & Hawke, S. M. (2022). *Pedagogy in the Anthropocene : Re-wilding education for a new Earth*. Springer International Publishing. https://doi.org/10.1007/978-3-030-90980-2_1
Pickering, A. (1995). *The mangle of practice: Time, agency, and science (1st ed.)*. University of Chicago Press. https://doi.org/https://doi.org/10.7208/9780226668253
Pickering, A. (2005). Asian eels and global warming: A posthumanist perspective on society and the environment. *Ethics and the Environment*, *10*(2), 29-43. http://www.jstor.org/stable/40339103

Pickering, A. (2025). *Acting with the world: Agency in the Anthropocene.* Duke University Press.

Reason, M., & Lindelof, A. M. (2016). Experiencing liveness in contemporary performance: Interdisciplinary perspectives (1st ed.). Routledge. https://doi.org/https://doi.org/10.4324/9781315659701

Serres, M. (1982). *Hermes: Literature, science, philosophy*. Johns Hopkins University Press.

Serres, M. (1991). *Lærred, klæde, hud*. Det Kongelige Dansk Kunstakademis Billedkunstsskoler, Illuprint.

Shanks, M., Svabo, C., Zhou, C., & Carleton, T. (2025). Creative Pragmatics—situated performances of knowing. In: C. Svabo, M. Shanks, C. Zhou, & T. Carleton (Eds.), Creative Pragmatics for Active Learning in STEM Education (pp. 29-48).

St. Pierre, E. A. (2017). Writing post qualitative inquiry. *Qualitative Inquiry*, *24*(9), 603-608. https://doi.org/10.1177/1077800417734567

Svabo, C. (2010). Portable Objects at the Museum. [PhD thesis, Roskilde University].

Svabo, C. (2021). Improvisatoriske videns-performances. In Improvisasjon: byliv mellom plan og planløshet (pp. 237-258). Scandinavian Academic Press.

Svabo, C. (2023). Production pedagogy: Exploring the potential of aesthetic production in project work – getting started on thesis writing. . Teaching for Active Learning: TAL, University of Southern Denmark.

Svabo, C., & Borch, K. B. (2026). Monstrøse Medieringer: En posthumanistisk portefølje af mærkelige metoder. Tidsskrift for Uddannelsesvidenskab.

Svabo, C., & Bønnelycke, J. (2020). Knowledge Catcher: On the Performative Agency of Scholarly Forms. PARtake: The Journal of Performance as Research, 3(1). https://doi.org/10.33011/partake.v3i1.477

Svabo, C., & Ekelund, K. (2015). Environmental Aesthetics Notes for design ecology. Nordes 2015: Design ecologies Nordic Design Research.,

Svabo, C., Sundbo, J., & Darmer, P. (2008). Experience Offerings: Who or What Does the Action? In (pp. 157-175). Edward Elgar Publishing. https://doi.org/10.4337/9781848444003.00012

Weinstock, J. A. (2020). Introduction: A genealogy of monster theory. In J. A. Weinstock (Ed.), *The Monster Theory Reader* (pp. 1-36). University of Minnesota Press. https://doi.org/10.5749/j.ctvtv937f.4