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Exploring Movement in Creative Dance: Introducing ‘Dancemblage’ in Physical Education Teacher Education

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Abstract

Materialities play a crucial role in both the educational practice of physical education (PE), and in physical education teacher education (PETE). This article explores how, often unnoticed, materialities, human as well as non-human, play part in movement exploration in creative dance in PETE. The methodological point of departure is a pedagogical unit in creative dance enacted as part of an optional dance course in a Swedish PETE program where movement exploration was studied. In the unit, students and a teacher collaboratively explored movement and movement assignments, including the use of materialities. In order to understand how materialities ‘co-act’ in movement exploration during class, this article provides a post-anthropocentric and Deleuzian approach. The concept dancemblage is introduced both as a way to analyse materiality and as something to work with in pedagogical practice. Moreover, the article suggests that by recognising dancemblages in creative dance teaching, teachers can be given a tool to further learn about learners’ explorations and to become open to divergent understandings about what it means to participate in creative dance.

Keywords: *movement exploration; materiality; Deleuze; post-anthropocentrism; assemblage*

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Introduction

Materialities constitute a significant part of the educational practice of physical education (PE), as well as of physical education teacher education (PETE). As will be seen in this paper, spaces for PE and PETE are filled with materialities such as wood, textiles, and plastic as well as muscles and bones. However, most often materialities are regarded in terms of objects, such as stands, rings, balls, rackets, and goals. Quennerstedt et al. (2012) argue that artifacts play a part in the constitution of humans’ actions and activities in a PE setting. From this point of view, materialities in the form

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of artifacts are expected to be used to generate movement learning that includes jumping, swinging, or throwing. In creative dance teaching, materialities other than the human body are often objects, such as scarfs, balloons, and photographs, regarded as means to provide opportunities for school pupils and university students to engage in movement exploration (Heikkinen & Mattsson, 2022; Murelius & Henriksson, 2022).

Although scholars have pointed out how materialities play a part in the constitution of humans' actions and activities in a physical educational setting, including creative dance, which will be explored further in this article, the phenomena have been studied from the perspective of the teacher or the learner, which can be seen as subject-centred and oriented toward human bodies. Implying an anthropocentric worldview, we educators are used to looking at schools as arenas where humans learn the skills and habits required to participate in society (Bhowmick, 2022; Snaza et al., 2014). In PE and PETE, post-anthropocentric approaches have been studied in relation to outdoor education. Öhman et al. (2016) show how outdoor education can be regarded anthropocentric as it produces an instrumental view of nature as a space that produces recreational experiences for school pupils. Influenced by Gilles Deleuze's philosophy, Mikael (2017) also suggests that traditional outdoor education practices in PE reinforce anthropocentric worldviews where human beings are seen as apart from and having power over the natural world, and therefore entitled to use it and control it to develop pupils' personal and social skills. Alternatively, Mikael invites educational scholars and PE practitioners to consider post-anthropocentric approaches to pedagogy that pay attention to the dynamic and constantly changing materiality of nature.

Educational sciences traditions have largely favoured certain aspects above others: culture over nature, thought over body, subject over relationality, and language over materiality. The main protagonists in educational research are the teachers and learners, and "[m]ateriality or nonhuman aspects are seen as objects about which knowledge can be received or as tools that can facilitate learning for the human individuals" (Ceder, 2019, p. 8). In recent years, educational studies have proposed sociomaterial, posthuman or post-anthropocentric reconceptualisations of education as an activity enacted through human and non-human materiality and relationality (cf. Ceder, 2019; Illeris, 2023; Lenz Taguchi, 2010; Pedersen, 2010; Waltz, 2006). In line with this proposal, Taylor (2019) encourages us to understand "the agentic force of material objects, analysing the minutiae of bodily practices, and highlighting... the assemblage of the classroom" (p. 48). Further, Taylor argues that it is important for both teachers and educational researchers to attend to materiality since it often goes unnoticed in the classroom.

The aim of this paper is consequently to explore how, often unnoticed, materialities, human as well as non-human, play part in movement exploration in creative dance in PETE. We hope to open up new ways of understanding how movement exploration is made through what Taylor (2019) defines as, "the concerted co-constitutive acts" (p. 49) of materialities. Our methodological starting point is a pedagogical unit

in creative dance in PETE in which students and a teacher collaboratively explored movement and movement assignments. In this paper, we revisit specific parts of the pedagogical unit to focus on what we call *dancemblages*, where materialities co-act in the movement exploration. The concept of *dancemblage* is introduced both as a way to analyse materiality with a post-anthropocentric and Deleuzian approach and as something to work with in pedagogical practice. To address our aim, two research questions (RQs) form the basis of studying this pedagogical unit: RQ 1) How do human and non-human materialities co-act in movement exploration in creative dance?, and RQ 2) What are the pedagogical implications when materialities constitute a significant part of movement exploration in creative dance?

Movement exploration in creative dance

In this section, we will present a background of movement exploration as a part of creative dance in PE and PETE. Movement exploration is a common part of creative dance and signals the use of pedagogies whereby students are given opportunities for embodied exploration so they can expand their movement possibilities and gain new movement experiences (Frisk & Karlsson, 2022; Ørbæk, 2018; Ravn, 2022). Several studies emphasise the significance of movement exploration for learners, following a human-centred view seen repeatedly in educational research. By participating in movement exploration, pupils and students alike develop creativity (Neville & Makopoulou, 2021; Torrents et al., 2013), learn bodily communication (Lundvall & Meckbach, 2012), stimulate social intelligence (Keun & Hunt, 2006), and learn to operate within new and unpredictable situations (Engdahl et al., 2021; Mattsson & Larsson, 2020; Ørbæk, 2018). Despite its important contribution to movement education, creative dance is something PE teachers, PETE students and school pupils are often unfamiliar with and insecure about (Adamčák et al., 2023; Engdahl et al., 2021; Mattsson & Lundvall, 2015). This is an effect of their inexperience with dance, presumptions of what it means to learn dance, and the subject area's traditionally feminine and artistic connotations.

The main protagonists of creative dance (and this can be said of education in general), are usually the educational subjects, the teacher and the student or pupil. In dance teaching the teacher is often described as a sounding board or supervisor who facilitates learners' creative processes (Larsson & Karlefors, 2015; Mattsson & Larsson, 2020; Ørbæk & Engelsrud, 2021). Some studies have explored materialities other than the human body as constitutive components in movement exploration in creative dance in PE and PETE. One reason for engaging with materialities other than the human body in teaching is to invite exploration of a space that might otherwise be considered unfamiliar and unsafe (Engdahl et al., 2021; Heikkinen & Mattsson, 2022). Informed by Laban's work and signalling a socio-cultural view of artifacts, Murelius and Henriksson (2022) discuss the use of photographs in creative dance class as a means of inviting students to explore their habitual modes of

moving. In addition, when studying the literature on movement exploration in creative dance in school outside the context of PE, things like scarves or ribbons are used in class to provide for the development of children's cognitive, affective, physical, and social abilities (Gilbert, 2015). Again, materialities other than the human body are considered, mainly because of their potential value to help pupils develop their physical abilities. Some phenomenologically – oriented studies show how students in creative dance classes explore, transform, and create movements through their embodied interaction not only with other students but also with the environment (Ørbæk, 2021; Ørbæk & Engelsrud, 2021). Studying students' relationship to "the physical reality" in creative dance has provided the field with an understanding of how objects such as scarves, balls, or hats become extensions of the body and and, in so doing, increase students' movement possibilities (Heikkinen & Mattsson, 2022; Ravn, 2014). Materialities other than the human body are in the phenomenologically – informed studies regarded as extensions of the bodies, and thus part of constituting what it means what it means for students to explore movement. As such, the clear distinction between the subject of student and object fades.

To conclude, studies have shown that materialities such as objects and environment also play part in movement exploration in creative dance. In order to further understand *how* materialities play this part, we need to shift from socio-cultural and phenomenological approaches to other theoretical foundations than those used in the studies mentioned above. Hence, a post-anthropocentric and Deleuzian approach will be discussed next.

Post-anthropocentric and Deleuzian approaches to movement and materiality

To study how human and non-human materialities co-act in movement exploration in creative dance in PE and PETE, we have been inspired by several studies in other fields. In this section, we will describe our theoretical points of departure. We begin by outlining what we have learned from studying Deleuze's philosophy, particularly in relation to his immanent ontology, the concept of *assemblage* and how these ideas helped us approach materiality differently. This is followed by highlighting several educational studies with post-anthropocentric starting points, some of which expand on Deleuzian theory. These starting points will help us will help us develop a method of approach that can be used to explore how materialities – both human and non-human – co-act in movement exploration in creative dance and to study its pedagogical implications.

Deleuze's philosophical framework is beginning to make its way into the field of PE (Andersson, 2023; Larsson et al., 2021; Mikael, 2017). By reworking other philosophers' writing, Deleuze developed a unique position regarding ontology, more specifically an immanent ontology (Deleuze, 1994, 2002). As suggested by Deleuze, immanence means that everything which exists is in and through this world; hence, there is there is nothing transcendent beyond it. There are no outside forces

controlling the world; rather, the world is constantly becoming in and of itself. In Deleuze's view, one shared by his co-writer Félix Guattari, immanence means that all things are relationally interconnected, and that there is no inherent absolute hierarchy of being (Deleuze, 1994; Deleuze & Guattari, 1987). While Deleuze's work has not specifically targeted the role of materiality, his immanent ontology and concepts of becoming and assemblage have influenced many scholars interested in relational and post-anthropocentric approaches to materiality (for example Bennett, 2010; Braidotti, 2013). An immanent ontology invites us to think in terms of a relational field, where things always come assembled and interconnected with other things. These things can be ideas, practices, affects, and other forms of human and non-human materialities (Deleuze & Guattari, 1987).

In terms of immanence, assemblages are mixtures of particular co-acting materialities. For example, the muscles of human beings, the wooden floor in a gym space and the reflective surface of mirrors can all form a dance-teaching assemblage. The concept of assemblage invites us to work with materiality using a post-anthropocentric approach and regarding it as more fluid than distinct subjects and objects. Moreover, Deleuze's immanent ontology signals that there is a play of indeterminacy in the ways human and non-human materialities co-act. Similar to Deleuze's thinking, Snaza et al (2014) argue that one "can only know things by the relations into which they enter... we cannot predetermine or know beforehand what will materialise from the relations entered into, nor can we predetermine the relations that *will be* entered into" (p. 47). They invite analytical approaches that focus on assemblages of things – in this article materialities – and of the unpredictable ways they unfold.

To grasp the situated educational assemblages involving students, children, and teachers as well as materiality, post-anthropocentric and Deleuzian approaches have been used (Everth et al., 2023; Ringrose, 2011). Olsson (2009) explores preschools' attempts to regain movement and experimentation by seeing subjectivity and learning as an assemblage where everything is interacting and continuously changes. She encourages teachers to be on the lookout for what relational fields children are caught up in and try to latch on to these along with them, which in turn gives them the space they need to explore. Günther-Hanssen (2020) investigates a child's playful exploration and co-actions with a swing as ways to learn science. Günther-Hanssen claims that if teachers recognise the movement and materiality found in children's play, this can lead to multiple understandings of how it is possible for children to become scientific. Hultman and Lenz Taguchi (2010) investigate a child who is playing with sand, where "the sand can be understood as 'active' and 'playing with the girl' just as much as the girl is playing with. *They come into play*. The girl is in a state of *becoming with* the sand, and the sand is in a state of *becoming with* the girl" (p. 530). Thinking with Deleuze's relational field of immanence enables them to explore the co-acting elements in the play as occurring relationally and interconnected without any inherent hierarchy of being.

These studies engage with Deleuzian and post-anthropocentric approaches when examining materiality and movement in children's play and learning. As will be

seen in the next section, these approaches helped us distinguish assemblages in the empirical material.

Method: Introducing dancemblage

In this section we will first describe the pedagogical unit performed and empirical materials produced. After that, we will return to the theoretical starting points again again to discuss how to think about assemblages as an analytical strategy and what the introduction of dancemblage has meant for this paper.

The pedagogical unit

This paper is part of a larger study on movement exploration in creative dance in PETE. During this study, a pedagogical unit was inserted into an optional dance course in a Swedish PETE program. The teaching program is directed towards upper secondary school. The first author of this paper was the teacher of the unit and the primary researcher in the project. The first author had been a professional dancer and taught creative dance for more than 10 years prior to the study. One aim of the pedagogical unit was to study movement exploration in creative dance in PETE, more specifically aspects of unfamiliar and unpredictable movement experiences. Eleven PETE students (6 females, 5 males), ranging in age from 22 to 28 and enrolled in their fifth and final year of the teacher education program, participated in the study. Prior to participating in this particular pedagogical unit, the students had been enrolled in three courses in sports didactics, where creative dance was a minor part of the teaching curriculum. The unit contained seven 90-minute lessons, each of which involved collaborative planning, performing and evaluating the enacted unit. The course provided the students with the opportunity to develop their content knowledge as well as pedagogical knowledge of movement and dance.

Because the study took place during the COVID-19 pandemic, objects such as jump-ropes and hula-hoops were used with the aim of ensuring physical distance in class while engaging in exploratory dance assignments. In addition, blindfolds were used as a means to invite students to engage in movement exploration. The materials were sterilised, and all soft textiles were machine washed between classes. To focus the participants' exploration of movement in creative dance, the students were invited to read relevant course material before attending the first class session. The students' reading of Mattsson and Larsson (2020) generated discussions of how to work with pedagogies by which the students were given opportunities to explore movements. Following this reading, it also became important for the participants to develop pedagogical approaches to serve as a counterweight to teaching consisting of instructions for practicing specific and predetermined movements. During the pedagogical unit, the teacher and the students worked together iteratively to explore and revise assignments.

Empirical material and analysis

In order to study movement exploration in creative dance in PETE, video observations were performed. The rectangular composition of the gym space required the two cameras to be placed in opposite corners to produce a general impression of the activity taking place. The video recordings comprised approximately 18 hours of film and allowed repeated viewings of the dance lessons both in terms of the participants' embodied movement exploration and their verbal reflections.

The empirical materials were processed through a series of actions. Firstly, the video material was viewed by the first author following instructions that had been jointly created by both authors. These instructions included documenting sequences where human and non-human materialities seemed to constitute a particularly active part of the movement exploration. In addition, it was important that an element of unpredictability was prominent in the documented sequence (Snaza et al., 2014). In this process, two sequences were particularly conspicuous. To point out the particularity of the assemblages being focused on and concerning human and non-human materialities in a specific creative dance class, these assemblages were playfully named 'dancemblages'. The viewing involved a process of slowing down the video sequences to make visible the multitude of movements and materialities that the empirical materials provide (Gunnarsson & Bodén, 2021). The selected dancemblages were brief shots lasting only a few seconds each. Secondly, the authors discussed the dancemblages in light of the research questions and made a closer analysis of them. In this analysis, the concepts from Deleuze and the post-anthropocentric educational studies contributed a vocabulary that drew attention to details of agential materialities in the movement explorations, including questions of how and when these explorations occurred. Each of the two dancemblages were first described in words, then contextualised and visually communicated. These descriptions did not focus on the human subjects and non-human objects, instead prioritising the flows, shifts, and connections of the materialities in the dancemblages. Further, we contextualised the short sequences to make it possible to discuss the educational aspects of the movement exploration. From the video recordings, we extracted eight screenshots to visually communicate the sequences.

Ethical considerations

The researchers followed the Swedish Research Council's principles for social science research to protect protect all participants' identities (Swedish Research Council, 2017). The student participants had been informed about the study beforehand, including the fact that they would be participating in the project by being part of the documentation, and that the materials would be used for research purposes prior to collecting empirical materials. Participants gave their consent to be recorded on video upon signing a letter of consent (which was also signed by the first author). Participants also gave their consent to publish images from the video recordings in an article. All participants were notified that their participation in the study was fully

optional and that they could withdraw their participation at any time. Ethical aspects were considered at all times throughout the study including when information about findings, etc. was shared with the first author's colleagues and at research seminars. The specific episode of the second danceblage was discussed specifically in the case of the accident. The first author was both the teacher and the researcher; however, they were not involved in grading in the course. The students were informed that their participation – or refusal to participate – would not affect their course grade. Confidentiality was ensured by storing all raw data in the secure cloud-space Drive and assigning a pseudonym to each participant.

Movement exploration as danceblage in creative dance

In this section, we explore how human and non-human materialities co-act in movement exploration in creative dance (RQ1). Here we turn the article into a detailed empirical exploration of danceblages to show how movement explorations are enacted through human and non-human materialities. By drawing on the theoretical starting points outlined above, our analysis covered two danceblages.

Danceblage no 1: muscles-gravity-floor-plastic



Figure 1. 1a, 1b, 1c, 1d; images of the sequence in one of the video productions

In the pedagogical unit, both students and teacher collaboratively explored dance assignments aimed at movement exploration. In the first danceblage, we have analysed a four-second sequence during an assignment taught by two students, Julia and Hanna. Their objective was to provide opportunities for the students to, while dancing in pairs, “explore relations to each other” (Julia) while wearing blindfolds and holding a hula hoop between them. Julia asked the participating students to explore the following idea: “What happens when you interact with someone else but have something between you? ... Explore what happens if I lift up [the hula hoop], do we follow if we turn it, then down to the floor... maybe if I pull [the hula hoop] towards me or push [it] away” (Julia). As mentioned, due to COVID-19 restrictions, materialities such as the hula hoops came to be important components for creating a boundary between the students to prevent contamination while at the same time creating a relationship meant to co-act in the movement exploration. The use of blindfolds was inspired by the participants' reading of the literature prior to the pedagogical

unit, aiming to create an environment for movement exploration where the dancing students were invited to engage in movement exploration beyond what was “okay socially in that group” (Hanna) and to not experience discomfort by being observed and potentially judged by other students (Gard, 2006; Nilges, 2004). Overall, the students expressed that they felt comfortable in the learning environment during the unit. Yet, not all students knew each other, which might have influenced the participants’ decision to employ blindfolds while engaging in movement exploration.

The reason why we chose to focus on the short sequence of two students dancing (Elliot and Alexander) was because the movement exploration at this moment shifted from a reproduction of well-known movement expressions into an exploration of readjustments, falls and pulls. As Elliot and Alexander began to dance, they were both doing it along with the music, a pop song that both the students seemed to know, starting to dance in a way that they had likely done before (Mattsson & Larsson, 2020). After a short while, however, they began to elaborate with the hula hoop by lifting it up and pulling it back and forth. One of the students observing the sequence in class said after the assignment; “It was cool because you didn’t only explore movements but also began to relate to the actual hula hoop” (William).

The video sequence is enacted through a multitude of material engagements and relations: Tightly woven fabrics of blindfolds affect students’ visual perception, putting their hand-to-eye coordination on hold and heightening their sensory awareness of touch. The force of gravity, together with contracting muscles and bending an arm, generate a quick and slight pull on the hula hoop (see Figure 1a). For a moment, the pull supplies energy to the structure of the plastic which in turn stretches the hula hoop into an oval. When the two arms approach each other, the pulling decreases, and the plastic hula hoop then returns to its original round shape. The arms are in a state of *becoming with* (Hultman & Lenz Taguchi, 2010) the plastic, and the plastic is in a state of *becoming with* the arms. Following Hultman and Lenz Taguchi, the plastic can be understood as ‘actively’ exploring the students’ arms as their arms are equally exploring the hula hoop. The assemblage of the left arm’s biceps and triceps muscles, electrical and chemical signals of neurons in the brain and the bones in the arm co-act to generate yet another pull. This combination affects Alexander’s body, causing him to lose balance. (see Figure 1b). The gravitational force pulls human and non-human materialities towards the compact foundation of the floor. The phenomena of gravity and the materialities (Günther-Hanssen, 2020) force the students to move their bodies in certain ways choreographed ways. When observing the video sequence, it becomes evident that the dancemontage is an improvisation of matter. The cold, hard, and compact wooden floor readjusts the movements of the spine, flesh and hoodie (see Figure 1c). The floor molds muscles around the thoracic spine, forcing a slight balance dislocation to the side which, when fueled by another energy supply to the hula hoop’s plastic structure through a pulling movements, causing the bodies to make unfamiliar twists in a type of playful struggle. (see Figure 1d). When the rubber soled athletic shoes hit the floor, this generates momentum whereby the

body attached to these shoes turns, thereby forcing a readjustment of arms and shifting of hands that are holding the hula hoop.

This presentation of the dancemblage suggests that the movement exploration entails an unfamiliar work of creation and a playful struggle by which human and non-human materialities dance through constant flows and movements. The movement exploration is not to be understood primarily as one in which specific students gain subjective sensorial experiences of movement, but rather, in accordance with Günther-Hanssen (2020), in terms of matters in motion that co-act in a process of exploration. When analysing the dancemblage, movement exploration shifts from one permeated by the primacy of students' human agency of students to a relational field of human and non-human materialities. The hula hoop used here is a light-weight plastic ring that allows human hands to hold it and human muscles to lift it. Its plastic material allows it to be mass produced and cheaply consumed; as a result, hula hoops may be found today in a majority of school gymnasiums. Its hard surface causes it to make a unique sound when landing on a polished wooden gym floor. In the dancemblage, it co-acts in movement exploration together with human and non-human materialities.

Dancemblage no 2: textiles-friction-forehead-wood



Figure 2. 2a, 2b, 2c, 2d; images of the sequence in one of the video recordings

In the second dancemblage, we have analysed an additional three-second sequence during an assignment planned and taught by the first author. The aim of the assignment was to explore movement through various spatial volumes and levels. One instruction was, for instance, “try to vary the space you occupy while moving. Movements that occupy a lot of space and movements that occupy small space” (the teacher). While students were encouraged to use blindfolds, the teacher assured them that doing so was voluntary. This was because the teacher was aware that some students might be uncomfortable with, or even frightened of, using blindfolds (or just closing their eyes) while dancing (Ørbæk, 2018; Ravn, 2014). However, the students expressed the opposite, signalling that engaging with the textile materiality gave them

a sense of being able to explore movements beyond what was socially acceptable in that group. In addition, using blindfold could also provide the potential of augmenting perceptual sensitivity of other senses like as tactile awareness while participating in movement exploration (Murphy & Dalton, 2016). In the end, all the students chose to wear the blindfolds.

One factor that made us select the three-second sequence was due to an unprecedented event that occurred during the assignment. During the assignment, one of the students (Hanna) collided with a vertically suspended wooden construction attached to the wall to which the balance beam was connected during gym class. When this happened, Hanna stopped immediately, and the teacher ran over and made sure she hadn't been injured. Now acutely aware of the assignment's risky nature, the teacher started to gradually shut it down. In the meantime, Hanna fetched paper towels, returning and sitting out the rest of the assignment. Hanna participated in the rest of the assignments during that class. The object that had been employed to offer a safe learning environment for exploration seemed to have instantly shifted into an object involving risk of injury. When engaging with the empirical video materials, we became interested in exploring the few seconds of the seemingly multitude of relational arrangements leading up to this collision.

Gym clothes' flexible textiles co-act with a body, which then form exploration of various kinds of movements. A blindfold's soft textiles and firm strap enable lengthy exploratory processes because the wearer's perception of visible light is suspended. Shoulder abduction and extension enable people to lift their arms to their sides (see Figure 2a). Hanna walks a few steps forward while moving her arms in a circular motion. The air resistance friction co-acts with the arms' weight, shoulder flexions, tendons and over 20 muscles to generate an increase in speed of the arms' circular motion (see Figures 2a and 2 b). The assemblage of the weight of the ribcage's weight, abdominal muscles, spine rotation and air resistance friction bends and rotates the upper body (see Figure 2c). The sliding friction of a sock that comes in contact with the texture of the floor (that is slippery due to the recent refinishing of the floor using wood polish), generating a quick shift of the body to the right (see Figure 2c). With the notion of how *matter comes to matter* (Günther-Hanssen, 2020), it becomes possible to see beyond this student (Hanna) being the only one of the dancemontage who has agency. Suddenly, there is the sound of a BANG (in between Figures 2c and 2d). It sounds like a door slamming or two large pieces of wood banging together. It is the sound of a frontal bone covered by muscles, tissues, and skin colliding with wood, with speed and weight behind the collision. For a moment, the forehead connects with the wood before bouncing back. The skin connects with a composite made up of cellulose fibres. This joining means that materialities engaged with speed (a quick movement of a head) and slowness (the solid, swaying wooden plank) enter into composition with each other. Pain receptors in the tissues respond to damaging stimuli. The body releases endorphins and oxytocin, which produces tears. Thus, the participation of, in this case, arms, textiles, friction, socks, and wood finish co-act in the movement

exploration in particularly precarious ways. The process can be understood as if materialities continuously coordinate with one another and *become with* each other (Hultman & Lenz Taguchi, 2010), even though this action can cause a safety risk.

In this section, we have presented two danceblages based on the method of approach in addition to the post-anthropocentric and Deleuzian starting point described in this paper. By asking the question of how human and nonhuman materialities co-act in movement exploration in creative dance (RQ1), we have illustrated how to attend to materialities previously not considered central to creative dance. St Pierre (2018) argues that using the Deleuzeguattarian concept assemblage is to step away from working with predefined entities such as distinct persons or objects. This paper follows St Pierre's line of thought by claiming, for instance, that the experiences of students and teachers, and the objects such as the hula hoops and blindfolds, are not the main characters of the danceblages. Rather, they are enacted as a result of the danceblages themselves. *Danceblage no 1: muscles-gravity-floor-plastic* made us aware that teaching objectives of movement exploration and how they are communicated can reiterate habitual anthropocentric worldviews. At the same time, we can see how the embodied exercises consisted of flows and engagements involving both human and non-human materialities. It brought about a shift from a reproduction of a well-known dance style to a playful yet challenging movement exploration of an unfamiliar assemblage of contracting muscles, gravitation, the compact foundation of the floor and the structure of plastic. *Danceblage no 2: textiles-friction-forehead-wood* shows how creative dance teaching involves exploration enacted by textiles like blindfolds and socks, different types of friction, tendons and muscles as well as floor polish and solid wood. The textiles of a blindfold were supposed to make the students feel safe to express themselves beyond norms of social acceptance (Gard, 2006). However, in this danceblage, the tightly woven fabrics that hinder light from reaching the retina and the brain's optic cortex, emphasise the unpredictability that is a constitutive part in this area of knowledge. It reminds us that we cannot know beforehand either what relations hips will become the danceblage or the results they might produce (Snaza et al., 2014). The materiality in the danceblage is not only co-acting the exploration of movements, but it also co-acts in producing the border between what is safe and unsafe for the students.

We have come to these insights by performing detailed analyses of the two danceblages. We also recognise how challenging it might be for teachers and students to be aware of all the aspects, material or otherwise, forming movement exploration in creative dance. In the next section, we explore the pedagogical implications of this claim (RQ2) and provide concluding remarks.

Pedagogical implications and concluding remarks

In this section, we will first present a post-anthropocentrically oriented reading of the pedagogical sequence's teaching. After that, we will discuss the pedagogical implications of movement exploration in light of the two danceblages.

The initial teaching objectives of the creative dance assignments studied in this paper were to give the students space to explore relationships to each other and expand on their movement experiences by encountering potentially new ways of moving. These objectives align with studies in creative dance in PE and PETE which suggest that learners' participation is of value for them because it is beneficial for their subjective, social and creative development (Engdahl et al., 2022; Ørbæk & Engelsrud, 2021; Persson & Arvidsson). The teaching aims indicate a human-centred worldview where movement learning is attached to the centrality of the human body. They align with the anthropocentric approach which suggests that participation in movement activities in form of physical exercise, game and sports is of great value for human beings because it is beneficial for them (Bhowmick, 2022). The intentions behind employing the objects of hula hoops was to serve the dancing students by protecting them from becoming infected by a virus and the use of blind-folds to provide opportunities for them to engage in exploration (cf. Heikkinen & Mattsson, 2022; Ørbæk, 2018). Alternatively, our analysis of dancemblages indicate a way of understanding the educational practice of creative dance whereby teaching becomes a task of paying attention to how human and non-human materialities are affording movement exploration.

Based on the insights from the dancemblages in this paper, we see two main pedagogical implications for teaching and research with regard to materiality. The first one is the importance of being attentive to the materialities that are already co-acting creative dance teaching. As shown in this paper, exploration can be understood in terms of how things like gravity, athletic shoes and the spine choreograph movement. A dancemlage invites teachers and learners alike, when they plan and perform creative dance classes in PE or PETE, to listen carefully (Olsson, 2009), to tune in (Illeris, 2023) and to be attentive to (Günther-Hanssen, 2020) how materialities co-act during class. By considering dancemblages, teachers, students, and pupils are provided means to engage with materialities as they come into play. Consequently, by listening carefully, tuning in and being attentive to the materialities that allow movement exploration can bring about alternative materiality-aware pedagogies to human-centred approaches.

The second pedagogical implication is to consciously introduce materiality into classrooms and allow students and pupils to be affected by these relationships when exploring movement. Teaching can be comprised of constructing assignments where different materialities are allowed to coordinate with one another. It might be the arrangements of materialities presented in this paper: “muscles-gravity-floor-plastic” and “textiles-friction-forehead-wood”, or any other combination of materialities at hand in the educational environment of the class room. Introducing materialities that teachers, students, and school pupils recognize and are familiar with, including balls, scarves or hula hoops, might create a safe learning space for exploration (Engdahl et al., 2021; Heikkinen & Mattsson, 2022). A teacher might, for instance, invite experimentation with the intricate play of supplying and releasing energy to the

structure of the plastic of plastic hula hoops or engaging in various movements generated by different types of socks that either slide or stick to different floor surfaces. However, it is worth remembering, as specifically pointed out in *Dancemblage no 2*, that teaching processes involve materialities implies that the teacher, as well as the learners, must recognise the unpredictable aspects of movement – human as well as non-human. Following Deleuze’s notion of indeterminacy and Snaza’s et al. (2014) argument of the unpredictable condition of relationships, one cannot have fully pre-determined what, nor how, materialities will co-act in movement exploration.

This is a small scale study, and the findings are based on a pedagogical unit consisting of seven lessons of creative dance in PETE. As stated, we have focused on material constituents of assemblages; further we acknowledge that there is much more to be said on the productive forces in movement exploration, including gender norms, formative feedback, and student group composition. Lastly, we would argue that by recognising dancemblages in creative dance teaching through the pedagogical implications mentioned above, teachers can be given tools to further learn about learners’ explorations and become more open to divergent understandings about what it means to participate in creative dance. We believe that it is important for both teachers and researchers to, critically commit to examining the current way in which materialities in the educational practice of creative dance, and perhaps on a much larger scale in PE and PETE.

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