Physical Pedagogical Environments: Teachers' Views

New Zealand Journal of Teachers' Work, Volume 22, Issue 2, 247-266, 2025

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ABSTRACT

The pedagogical environment's significant role in education is viewed as a "third educator" in Reggio Emilia's pedagogical philosophy. This study employs a posthuman theoretical framework and an art-based educational research method to explore how teachers experience the role of physical pedagogical environments, the barriers that may hinder their use, and potential strategies to overcome the obstacles. The study was conducted in Sweden, and thirteen teachers shared their perspectives on physical pedagogical environments. Research data included teachers' drawings, interviews and open-ended questionnaires. Findings reveal that, while teachers recognise the importance of physical pedagogical environments in teaching, they encounter challenges in utilising them effectively and suggest ways to address these obstacles. Continuous education for teachers, inspiring physical learning environments in teacher education, and practical training are essential to fulfil the potential and enhance the use of physical pedagogical environments in accordance with the posthuman paradigm.

Keywords: physical pedagogical environments, Reggio Emilia pedagogical philosophy, posthumanism, art-based educational research, arts-based research

INTRODUCTION

The need for educators to use a rich communicative repertoire—incorporating verbal, non-verbal and spatial expressions, supported by interior design elements, such as artefacts, materials, colours, furniture and lighting—is emphasised by Hansson (2018), who explains that these elements may influence individuals' emotional states, for instance, by calming or stimulating them. Along similar lines, Åberg and Lenz Taguchi (2018) highlight the importance of creating irresistible physical learning environments that encourage children's exploration of diverse expressions. In a similar vein, Lind (2010) advocates for intelligent physical learning environments that not only inspire creativity but also open up new possibilities for learning and wonder.

Other scholars, writers and researchers within pedagogy, such as Göthson (2009) and Dahlbeck and Lagrell (2014), extend this discussion through the pedagogical principles of Reggio Emilia, where the physical learning environment is viewed as a "third educator," underlining its significant role in learning. Lenz Taguchi (2010) further highlights the interplay between physical environment and learning, suggesting that thoughtfully designed spaces enhance engagement and participation. Complementing this perspective, Braxell (2010) stresses the importance of environments that are clear, accessible and structured, enabling children to navigate and explore materials effectively. Taken together, these contributions foreground the physical environment as an active and formative element in the pedagogical process.

This research explores how teachers in Sweden perceive and utilise physical learning environments in their teaching. The Swedish school curricula emphasise the role of physical learning environments in preschools and primary schools, advocating for accessible, inspiring spaces that encourage play, learning, exploration, imagination and development (Skolverket, Curriculum for the Preschool, 2019; Skolverket, Curriculum for the Compulsory School, 2022). However, they do not offer specific guidelines for implementation, leaving teachers with significant autonomy. Teachers' beliefs, knowledge and attitudes shape the use of physical learning environments. This study examines teachers' perspectives on the value of physical learning environments in current institutions and their vision for ideal settings.

The central research question is: What are educators' perceptions of the value of physical pedagogical environments within their current institutions, and what is their vision for an ideal physical pedagogical environment? However, this research has sub-questions: How do educators use the physical pedagogical environments of their classes and interact with materials during the teaching process? Are teachers aware of posthumanism and how this is revealed in their drawings? Does the physical pedagogical environment change in connection with drama pedagogy?

A POSTHUMAN PARADIGM TO PHYSICAL PEDAGOGICAL ENVIRONMENTS

A posthuman theoretical framework (Barad, 2007; Haraway, 2016) was utilised in this study to explore the role of materials and spaces in teaching, challenging anthropocentric views by reinforcing the interconnectedness of humans and non-human entities. Posthumanism rejects the human-non-human binary, recognising materials and environments as integral to shaping human experiences. Posthumanism invites us to rethink the relationality between humans and non-human entities (Colucci-Gray & Burnard, 2020) and promotes a sympoietic system, a making-with, as Haraway (2016) explains, where humans and non-humans are in mutual transformation and co-creation. Barad's (2007) concept of intra-action defines this as the ontological inseparability of entities, accentuating that humans, materials and environments form entangled units rather than distinct, detached entities.

The relationship between physical environment and learning was explored by Lenz Taguchi (2010; 2011), who discusses how materials, such as pens, paper, clay and construction elements, are not merely passive tools but active agents in

the learning process. Taguchi supports that when children and materials intra-act, agency emerges from their dynamic interplay rather than being individually assigned. She further explores how learning and participation are deeply intertwined with the material aspects of educational settings, arguing that both human and non-human elements collaboratively shape learning experiences (Lenz Taguchi, 2010; 2011).

Posthumanism redefines relationships between subjects, objects and knowledge, emphasising the body and senses as central to understanding (Colucci-Grey & Burnard, 2020). Learning occurs through interactions with materials and the environment (e.g., human-objects), not solely between humans (e.g., child-child or child-educator). This perspective positions learning as a complex, multi-sourced process, challenging traditional views of knowledge development (Karlsson Häikiö, 2018). Knowledge, therefore, is actively constructed through direct engagement with the material world, challenging passive observation (Barad, 2007). In this active and dynamic construction, entities transform through continuous exchange, resulting in new formations or becomings (Haraway, 2016).

The creation of theatrical-like atmospheres through elements such as stage lighting, visuals, sound and props (materials that are part of the set) can also be seen in physical pedagogical environments. This is what the first author of the article refers to as *pedagogical scenography*, a form of set design with pedagogical purposes (Salti, 2025). Staging classroom materials involves more than placing objects; it requires strategic presentation. The purposeful staging of materials, visuals, sound and lighting creates interactive physical pedagogical environments to inspire engagement, curiosity, creativity and exploration within drama pedagogy (Salti, 2025).

Connections between the staging of materials and physical learning environment are drawn by Hansson (2018), who suggested that pedagogical rooms can act as scenes, when their design shapes and promotes interactions and encourages improvisation experiences. For instance, a book can be made more engaging by creatively highlighting it or associating it with staged objects, thereby transforming a classroom into a dynamic stage that fosters student engagement through interactive practices.

From this perspective, Campopiano et al. (2017) emphasise the multimodal nature of classroom design, noting that furniture, equipment, design and materials all have the capacity to "speak" and reveal the room's context. This communicative power of intentionally furnished spaces illustrates how design elements metaphorically address those who enter (Åberg & Lenz Taguchi, 2018). Moreover, authors draw on the ideas of Carla Rinaldi, an influential educator and pedagogical thinker of the Reggio Emilia approach, and argue that each space possesses its own identity and soul (Vecchi, 2014; Åberg & Lenz Taguchi, 2018). Recognising and exploring these qualities enables both educators and learners to encounter spaces in ways that support self-understanding.

ART-BASED EDUCATIONAL RESEARCH

An art-based educational research method was employed in this research. It derives from arts-based research methodologies when applied in educational settings (Barton, 2015). Barone and Eisner (2012) note that arts-based research

embraces multiple forms of meaning representation, including participants' drawings. Barone (2008) underscores that arts-based methods broaden researchers' perspectives and can complement other qualitative methods, like interviews, to deepen topic understanding.

The first author collected the research data in Sweden in 2021 (Salti, 2021). Thirteen teachers, who had diverse educational backgrounds, participated in the research. Nine participants had backgrounds in both artistic training, either in visual or performing arts, and pedagogical studies. Their teaching experience varied widely, from 2 to 45 years, covering all educational levels, from early childhood to higher education. Specifically, two worked in preschool education, four in primary education, another four in secondary and high school education, and three in higher education institutions. Participants volunteered to participate in the research through an invitation.

Participants shared their views on the role of physical pedagogical environments in education through drawings during individual online semi-structured interviews, lasting 90 to 150 minutes, and open-ended questionnaires before the interviews. Google Forms were used to design and distribute questionnaires, while interviews were conducted and recorded via Zoom, facilitating video. During the interviews, the participants were asked to make two drawings: one depicting their current physical pedagogical environment and another illustrating their ideal and preferred environment. Participants photographed their own drawings; thus, the research data consist of photographs of the drawings. The photographs of the drawings were sent digitally to the first author at the end of the interview.

More specifically, participants were asked to draw the physical pedagogical environment they currently use to teach, motivated by questions like the following: How does the classroom you often use for teaching look, and where do you place yourself in this environment? How would you describe your teaching approach in this environment? When the drawing was ready, a discussion followed based on how the classroom looked, what colours and materials it had, and how the teacher interacted, or not, with the physical environment. Moreover, they were also motivated to envision an ideal classroom and describe the physical environment and materials they wished they had access to. Sometimes, teachers felt the need to create additional drawings that depicted their teaching approach in these environments. Thus, the drawings provided a visual perspective of the environments and their teaching approaches, revealing visual patterns in parallel with the textual data, with both forms of evidence complementing one another.

As this study utilised synchronous online interviews and questionnaires, research data from the questionnaires were clarified or elaborated upon during interviews, ensuring that participants' responses accurately reflected their beliefs and experiences. This enhances data validity and explanatory power as explained by Vehovar and Manfreda (2008).

In the questionnaires, participants were asked whether they had undertaken any courses related to the use of physical pedagogical environments, either during their teacher education or through in-service professional development seminars, and they were invited to provide a brief description of these experiences. They were also asked to reflect on specific concepts and phrases, for instance the following: "What does the expression of the physical pedagogical environment as a third educator mean to you? How do you interpret the idea that a physical pedagogical environment incorporates 100 languages: a

metaphor used in Reggio Emilia pedagogy to refer to different learning and expressive ways in the teaching process?"

In addition, participants were asked to comment on the value of materials and objects within the physical learning environment, and to describe how they employed these pedagogically in their daily work. Further questions addressed teachers' perspectives on the relationship between the arts and the classroom environment, the role of favourite objects or materials in their teaching practice, and the ways in which these were used. These issues were subsequently elaborated on during the interviews.

Thus, participants' drawings are used to visualise their physical learning environments and understand their approaches to utilising space and materials in their practice and aspirations. In visual art-based research practices, such as paintings and drawings, art serves as data and a means of presenting findings (Leavy, 2020). In this article, drawings are analysed, and some of them are presented to communicate the insights of the teachers' experiences. Observations and discussions of participants' drawings during the interviews uncovered challenges and proposed solutions for the use of physical environments in the pedagogical process. This approach provided insights into teachers' verbal and visual representations, offering a richer understanding of their conceptions.

Ethical considerations followed Babbie's (2008; 2017) guidelines on anonymity and confidentiality. Participants were assigned numbers based on interview order, ensuring anonymity. Consent was obtained for participation, recording and using responses and drawings for data collection, analysis and presentation. Participants were informed of their voluntary participation and their right to withdraw at any time.

The participants explained the significance of forms and colours in their drawings, and thematic analysis was applied to identify themes across the qualitative textual and visual data. The first author identified key elements related to research questions and underlined significant points expressed by participants. The first author coded the data by starting with the most frequently mentioned views and moving to those mentioned only once. Themes and subthemes were created. Each subtheme included participants' quotes from the interviews. The drawings helped identify visual patterns alongside the textual data. As Colucci-Gray and Burnard (2020) state, drawing exposes similarities and differences visually, just as textual data exposes them conceptually.

Research data collection also included a study on the arts' role in education. Participants created drawings depicting the arts' value in the current educational system and others depicting their ideal educational system. These drawings will be analysed in a following article on the role of arts in education. Discussions on art's role in education fostered considerations of physical pedagogical environments and the use of material elements as part of the "third educator", the physical learning environment.

FROM FRONTAL TEACHING TO U-SHAPE OR CIRCULAR CLASSROOM LAYOUT, COSY ENVIRONMENTS, SENSORY PEDAGOGY AND THE POSSIBILITY TO MOVE

Linné (2015) notes that classroom layout and teacher positioning reflect power dynamics. Only a few drawings depicting current physical pedagogical

environments consist of a classroom setup with the teacher at the front and pupils' desks arranged in rows. In this conventional layout, the teacher has a central position. One of the participants described the lesson's atmosphere as uninspiring and dull. The teacher noted that the row-based seating hindered collaboration and a sense of belonging among students.

After making two drawings of the current and ideal learning environments, the teacher made two complementary drawings to express visually the shift from teacher-centred to student-centred teaching in connection with the physical environments (Figures 1 and 2). Figure 1 illustrates a dull, grayscale lesson, symbolising a teacher-centric approach, following a drawing where pupils' desks were arranged in rows and the teacher portrayed themselves teaching while standing close to the board. In contrast, Figure 2 features a vibrant, multi-coloured drawing, representing inclusivity, creativity and polyphony, following the drawing of an ideal physical pedagogical environment in a theatre. The participant explained that this shift encourages recognition of individual voices and ideas, underscoring the importance of listening to and expressing diverse perspectives.

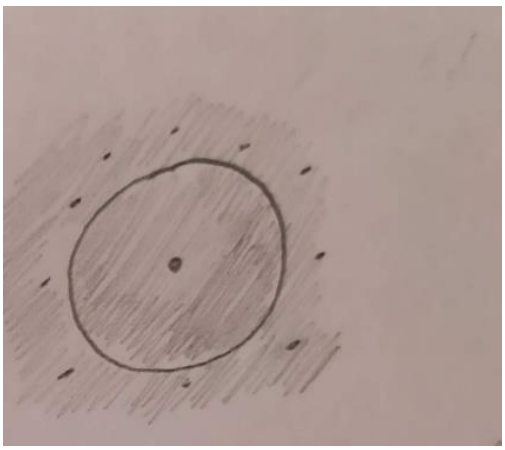

Figure 1: Teacher-centred, current learning environment.

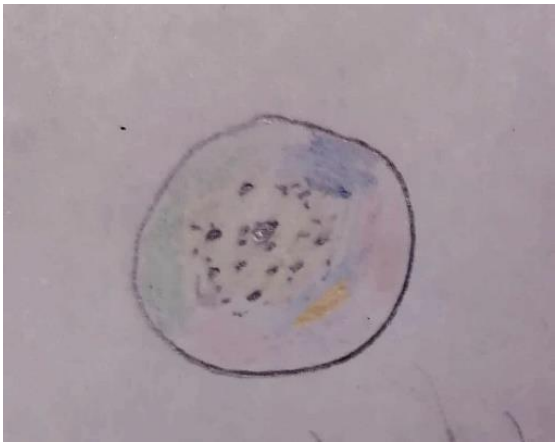

Figure 2: Inclusion, ideal learning environment.

Participants noted that the physical layout of the learning environment can facilitate or hinder group discussions. Through their drawings, circular or U-shaped seating arrangements emerged as common practices to ensure visibility and foster a sense of belonging. One stated, "The physical environment has a huge impact on students; for example, we always use a U-shaped or circular seating arrangement. So, we can discuss together, looking at each other, not the back." This layout was considered to foster inclusivity and better connections, bridging the gap between students and teachers.

Some participants described the importance of having a cosy atmosphere in the physical pedagogical environment. Instead of strong lighting coming from the ceiling, one favoured the option of natural lighting, coming through the windows or floor lamps. The participant added stage-like seats and a digital board, facilitating movement and interaction, while students could sit in different areas of the classroom during the lesson (Figure 3). The participant called attention to the importance of circular group tables, where students can work together, being able to see each other, or a sofa to read their books.

The importance of designing classroom environments that communicate through their design and speak metaphorically to those who enter is strongly connected with the Reggio Emilia pedagogical approach, motivating students' learning and engagement. The participant explained that cosiness is communicated to those who enter this classroom, due to its design, physical elements, furniture (sofa), lighting (floor lamps), colours and plants. The teacher explained the aim to facilitate a welcoming classroom as part of a welcoming teaching approach.

Figure 3. Sofa, lighting, natural colours, rounded tables, stage seats, plants, smart board and windows.

Some participants drew classrooms where students can actively interact with the physical pedagogical environment. They underlined the importance of offering materials that physically activate pupils in the learning processes. Some examples of those mentioned were Pilates balls for those students who want to sit on them instead of chairs, or climbing walls and pull-up bars in the classroom for students to exercise after completing a task or during a break from their math or language activities.

One participant drew a green wall of plants to purify the air and act as an aesthetic element in the classroom. Another portrayed a green and blue corner which represents a micrography of water and nature (with plants, and insects) in the ideal classroom, pointing out the importance of nature, "I think that everyone would be much happier and more active in such a huge classroom that you can use your body, go around, go to the water or plant area, and take a small break." The use of the body, natural materials and experiencing learning via the senses is vital to both Reggio Emilia pedagogical philosophy and posthumanism, where physical elements are not merely passive tools but active agents in the learning process, as Taguchi (2010; 2011), amongst others, highlighted in her work.

One participant drew an ideal outdoor learning environment to express the need to connect more with oneself and nature while teaching (Figure 4). The teacher explained that students and teachers could sit on a rug and pillows in a high-tech school, where they have computers, cameras and projectors. “It’s a splendid environment for art, very colourful, as it has the colours of nature, having an environmental approach in everything being done…One could hear the birds in the garden.” Another teacher drew an outdoor environment with trees and rain, where students learn about rain pollution in the forest. Outdoor education has the potential to activate students and foster their connectedness with the environment and materials (Huhmarniemi et al., 2021; Raatikainen et al., 2020). Researchers in art education who follow the posthuman paradigm have developed art education strategies and methods that encourage students to interact and collaborate with elements of a more-than-human nature (Huhmarniemi, 2023; Jokela et al., 2024).

Figure 4. An outdoor physical pedagogical environment.

These examples show a correspondence between teaching approaches and physical pedagogical environments. Young et al. (2017) find that classroom changes alone have a limited impact without innovative teaching, a view echoed by the study’s participants, who stress the educator’s role in activating students. Similarly, Merriënboer et al. (2017) supported that collaborative learning is facilitated by group tables and open spaces that promote discussions and engagement. However, they argued that education quality declines when pedagogies and physical learning environments are misaligned. They note a lack of teachers’ guidance on how to effectively align the two. These examples are to show the need for teaching and helping educators to shift pedagogy together with the physical learning environment.

One of the participants shared feelings of disconnection and detachment from themselves and their senses while teaching in a classroom setup with the teacher at the front and desks in rows. This relates to broader themes of embodiment and sensory pedagogy, which were recurring topics throughout the interviews. These discussions aligned with the views of Biswas (2021), who suggested that adults often feel detached from their own embodied selves, stressing the need for sensory education. According to Todd et al. (2021), bodily and sensory experiences are central to a living educational practice, making it

essential to investigate the embodied and sensory aspects of teaching and learning. This is to say that, as for pupils, the use of senses during teaching processes is also important for teachers.

ENGAGEMENT WITH MATERIALS: A STEP TOWARDS POSTHUMANISM

Some teachers focused attention on the importance of music, diverse fabrics, varied lighting and aroma from essential oils in engaging students' senses and stimulating participation through imagination and sensory experiences. One participant stressed the role of the physical pedagogical environment, using fabrics and music to transport students into an adventurous world. According to the participants, the sensory aspects and ambiance of the classroom are essential in fostering learning through experiential and imaginative engagement. This aligns with Salti's (2025) pedagogical scenography concept, where environments aim to inspire engagement and learning based on a Reggio Emilia pedagogical viewpoint and posthumanism. More specifically, in Salti (2025), stage lighting, visuals, sounds, stories and the use of materials in the teaching process strengthen the use of sensory education and the sympoiesis of human and more-than-human agency, creating imaginary worlds where new becomings may arise, based on a posthuman paradigm.

In his theory of multiple intelligences, Gardner (1983) supports the importance of various ways of learning. Some participants explained that classrooms with various materials can cater to children's interests and needs. For instance, sensory and visual items can promote relaxation or enhance visuality in teaching. Examples include using pictures to enhance activities, emotional balls for expressing feelings, and fabrics for puppetry. Some participants highlighted the importance of having a plurality of materials, such as digital, natural, recyclable and artistic materials, in the physical pedagogical environment.

One kind of dream classroom (Figure 5) is an art classroom, where students can work in groups with different materials, such as clay, wire, printmaking or painting. Some participants noted that each art form contains various languages and that the art materials themselves are languages. They pointed out how different materials, such as brushes, pencils, paints and musical instruments, serve as languages and must be visible and accessible. One said, "I like to let children try as many languages as possible, different paint brushes, pencils. Hopefully, music teachers also introduce different music genres or instruments." This is strongly connected with the Reggio Emilia pedagogical characteristic of "one hundred languages", a metaphor that supports the incorporation of different expressive, communicative and learning ways in the pedagogical processes. Thus, this metaphor can be embodied in the physical pedagogical environment and the availability of materials.

In Figure 5, the participant portrayed a classroom that is close to nature and has big windows. This characteristic of nature or natural elements, big windows and sunlight coming into the classroom is something mentioned by many participants in this study, as many connected it with relaxation, calmness, wellbeing, sounds of nature and fresh air. The importance of natural elements is a reminder of posthumanism, while elements of nature are considered in addition to human agency.

Figure 5. Various materials and languages in the ideal physical pedagogical environment.

Figure 6. Fabrics, music and balls in a circle of interaction.

Humans and materials can form active relationships, where objects may have agency, influence actions, and affect results. Agency can be understood as the outcome of interactions within an assemblage that includes people, material objects and technologies (Gregor, 2004). One of the participants illustrated a net of connection (Figure 6). The drawing connects students to the teacher and the physical pedagogical environment, such as music, fabrics (used as props or storytelling tools) and an emotional ball (for expressing feelings). The participant explained that yellow, an invisible and warm colour, symbolises these relationships between humans and materials. The classroom environment influences students, and the teacher can create magic through the use of physical elements, encouraging students to embark on adventures. The happy face in the drawing signifies that drama is a joyful, creative process, with both students and the educator as part of the same circle.

The drawing illustrates the significance of physical pedagogical environments and materials in the drama process and their impact on students. During the interview, the teacher explained the importance of these materials in the teaching process, portraying materials as co-agencies and co-creators, and showing that the teacher's actions and thoughts suggest posthumanism without referring to the particular term. This also recalls the Reggio Emilia concept of the physical learning environment as a "third educator," where materials play a vital role in the teaching process. The participant stated:

> We all interact. There are connections between us and the objects…We use scarves, fabrics and an emotion ball, because I often work with feelings expression… There is also music, so a musical language is involved. The yellow colour represents connections between people and materials, because for me, it is a nice colour, and it's something transparent, because the connection is something you feel.

Some participants view materials as subjects, not just objects, advocating for the use of versatile materials in teaching, such as clay, wire, paper, fabrics, natural

and recyclable items, which can serve multiple roles, like set decoration, costumes, props or puppets, promoting sustainability and creativity. These transformative materials encourage imaginative exploration, transformation and sensory engagement in drama and art activities. One participant shared:

> When you enter an environment, you get ideas. It's not just about putting ideas into the materials; you also get ideas from them. The material communicates with you, and that's a way of understanding it. It's like a meeting between you and the material. It's an exploration of both the outside world and your inner world.

Materials can shape us as we shape them. This aligns with posthumanism, where both human and non-human elements are considered co-agents that shape experiences. This process of co-constitution between humans and materials reshapes entities through ongoing exchanges, giving rise to new formations or becomings (Haraway, 2016).

DRAMA PEDAGOGY, INTERDISCIPLINARY TEACHING AND THE DESIGN OF PEDAGOGICAL ENVIRONMENTS

One of the dream drawings envisions an interdisciplinary collaboration between theatre and music classes. The scene includes theatrical props and musical instruments, blending live music with dramatic processes to enhance the sensory experience. Another participant illustrated an ideal and preferred physical learning environment located in a theatre setting, in which students actively engage in pedagogical processes (Figure 7). This ideal physical pedagogical environment fosters learning-by-doing experiences, focusing on body movements, gestures and imagination. The integration of body and mind enhances the learning process, making it enjoyable for students, as the participant explained.

This participant spotlighted that access to costumes, music and props enriches sensory education and deepens students' learning in an interdisciplinary history and drama class. In this vibrant, colourful setting, the atmosphere reflects the playful and dynamic nature of both the environment and the pedagogical process, the teacher explained. This approach fosters interactive learning, with the teacher positioned below the stage to support students' learning, as they explore historical eras, events and figures through engaging drama activities.

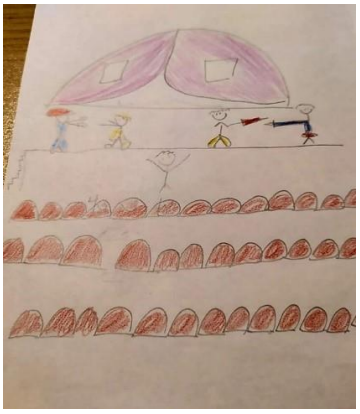

Figure 7. Theatre as an ideal physical pedagogical environment. Drama and history class.

Figure 8. Role-play in a preschool environment.

Other participants explained how everyday materials can foster role-play. Some emphasised that materials and environments help concretise abstract concepts, process and reflect upon experiences, and promote self-exploration, enabling students to try different roles and costumes and create varied drama settings to play imaginary games. One participant depicted a drama play area in a preschool resembling a kitchen, where the teacher and the child engaged in imaginative role-play with toy utensils, food items and a baby doll (Figure 8).

In the ideal physical learning environment of a teacher, the focus is on an uninterrupted drama classroom, outlined in green, with room for interdisciplinary collaborations with other teachers, represented by two green figures (Figure 9). This environment includes easily accessible materials and ample space for movement and drama games. It also features a small theatrical scene with quality lighting and sound, along with elements from other art forms, such as music, brushes and palettes. These additions allow students to enhance their drama experience by drawing characters or parts of the script. This drawing illustrates the Reggio Emilia metaphor of "one hundred languages" through its depiction of music, drawing, drama and stage lighting as they are embedded in the physical learning environment, which offers multiple avenues for engagement and expression in the learning processes.

Some of the participants aspire to work more with sound and lighting elements, projectors, props and quality art materials, such as brushes, papers and paints, in their ideal environments. Despite their efforts to rearrange furniture and enrich art and drama experiences, they often find their current equipment and classrooms insufficient. These limitations are often attributed to budget constraints or the school's attitude towards the arts, as explained by the participants. Physical rearrangements often require substantial institutional commitment and may not always be feasible (Young et al., 2017).

Ang'alika et al. (2016) found that school environments impact educators' wellbeing. The participants in the current study reinforced the importance of favourable conditions, such as temperature, lighting, ventilation and furniture arrangement for wellbeing. In the interviews, some art and drama teachers brought to the fore the stress caused by not having a dedicated drama or art classroom, using other teachers' rooms, moving desks before lessons and managing scattered materials and props across multiple classrooms.

Figure 9. Drama, painting, music, and stage lighting in an ideal physical pedagogical environment.

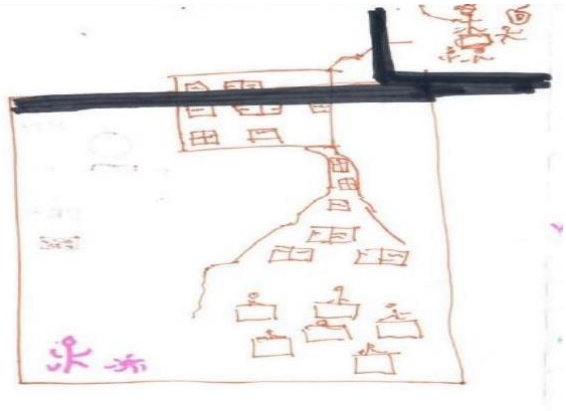

Figure 10. Falling books, financial constraints.

CRITICAL VIEW ON PHYSICAL PEDAGOGICAL ENVIRONMENTS IN TEACHER EDUCATION

One of the participants, who is a university teacher, described the physical pedagogical environment in teacher education programmes as limiting, expressing frustration at being confined to traditional methods with little opportunity for creativity (Figure 10). They stated:

> They put me in a box (metaphorically) and say, 'If you want to be creative, be creative.' But I don't have many opportunities. I try to talk about art, but this is the classroom! Theories and books are important. It's like a book factory, with books falling onto students. It's boring. Students sit in these seats and understand how to be playful teachers…

The teacher positioned themself in the bottom-left corner, right across from the office, where the decision-making takes place (top-right corner).

Many participants suggested incorporating interactive and creative environments into teacher education programmes and questioned why universities do not prioritise experiential learning for future teachers. They pointed out the contradiction between teaching future teachers about the importance of physical learning environments while lacking practical experience in university settings. To bridge the gap between theory and practice, they advocated for more inspiring, engaging environments, calling for a shift to courses that combine theories with practical experiences related to physical pedagogical environments. This, they argued, would promote more effective teaching methods, skills and better utilisation of physical pedagogical environments. As one participant noted,

> You need to have this experience as a university student before entering the classroom. If professors stand there talking about the importance of the environment, while students sit in chairs facing a white wall, it doesn't make sense to me.

Thus, participants strengthened the importance of university teaching programs in preparing future teachers to use physical pedagogical environments effectively. Some argued that providing hands-on experience in inspiring settings during their studies would familiarise students with these methods, increasing their likelihood of using them in their teaching careers. Some participants, who studied theatre alongside pedagogy, noted that it was through their theatre studies that they received inspiration and tools to leverage physical learning environments and materials. These teachers also advocated for integrating physical pedagogical environment courses into university teaching programmes, providing future teachers with essential experience before entering the workforce.

Some participants noted that physical learning environments, viewed as a "third educator," are more prevalent in Reggio Emilia–inspired preschools, with such opportunities becoming increasingly limited from preschool through primary, secondary and even higher education. Marini (2020) notes that well-established pedagogies, like Reggio Emilia, Montessori and Waldorf, prioritise space and materials for richer learning experiences, though these approaches are less common beyond preschool settings. One participant reflected on the atmosphere in preschools and expressed a desire for a similar focus on elementary school environments, "It's often a good feeling to step into a preschool because of the environment (…) I wish this could be brought to elementary schools."

Linné (2015) emphasised the importance of integrating materials, objects, buildings and furnishings into the curriculum, advocating for a deeper understanding of the material aspects of education. Participants echoed this, suggesting a greater focus on physical learning environments in curricula and equipping educators with the skills to create engaging learning environments. Some participants recommended resources like videos and literature offered by the national agencies for education to help teachers better understand the pedagogical potential of physical classroom environments.

In addition, participants suggested integrating this knowledge into professional development courses for in-service teachers. Such courses could combine theoretical perspectives with practical experience to develop skills in utilising physical pedagogical environments in the teaching process. The university course on theatres as teaching environments, designed and facilitated by the first author, is an example of such a university course (Salti, 2025). In this course, primary school teachers, preschool teachers and university students within teacher education programmes can practically experiment and gain theoretical knowledge on drama pedagogy, pedagogical scenography, and the use of physical pedagogical environments in teaching processes, based on stories connected to environmental and social issues.

CONCLUSION

This study explored teachers' views on the importance of physical pedagogical environments in current and ideal educational settings. Using a posthuman theoretical framework, the research examined human-material interactions, showing that participants view the physical classroom environment as a valuable and important aspect of fostering engagement. Participants accentuated the transformative potential of everyday, natural and recyclable materials, like fabrics, which can serve as costumes, props or settings. Music, lighting and materials were noted for their role in transforming the room, making abstract concepts more concrete and encouraging exploration and engagement through the senses. The metaphor of one hundred languages as forms of learning and expression was also visually represented in the teachers' drawings through portrayals of different materials and pedagogical environments.

Although not all teachers were familiar with posthumanism or used the term to describe their practices, the researchers were still able to identify connections between participants' actions, the use of materials and the posthuman paradigm. Nevertheless, the researchers believe that introducing educators to the application of posthumanism in physical pedagogical environments, alongside the concept of the environment as a "third educator," within ongoing professional education and teacher education programmes, could be both inspiring and beneficial for teaching.

The study suggests that teacher education programmes should incorporate more courses that combine theory and practice, and facilitate teachers' experimentation with physical pedagogical environments. For example, classroom pedagogical design and pedagogical scenography could be introduced at the university level as part of teacher education studies or an independent course that in-service teachers can apply to as part of their professional development. Such courses could help future teachers or in-service teachers learn how to create and incorporate inspiring and interactive physical pedagogical environments in the teaching process.

The art-based research approach proved invaluable in capturing participants' perspectives on working with space and materials. Even those unfamiliar with drawing found it a powerful tool for exploring their thoughts, often using symbolic representations to express themselves visually. This approach was used to understand teachers' viewpoints and enable a visual aspect of their physical classroom environment or their ideal physical pedagogical environment. Having a visual aspect helped the researchers to understand participants' views on the research topic.

Building on these findings and the depiction of a theatrical stage as a teaching environment, future research could explore collaborations between theatres and educational institutions, such as universities or schools, to investigate the pedagogical potential of theatre spaces in education. In such spaces, in-service teachers or teacher trainees could experiment with pedagogical scenography and interdisciplinary teaching practices interwoven with drama pedagogy, gaining inspiration for how physical elements of space, like stage lighting, sound and props, could be utilised in teaching processes.

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