

The Second International Conference on Embodied Education

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Book of Abstracts

Keynote Addresses and Parallel Sessions

Contents

Keynote Address 1 · Eeva Anttila.....	4
Keynote Address 2 · Dor Abrahamson.....	5
Keynote Address 3 · Juliene Madureira Ferreira	6
Keynote Address 4 · Matthew Crippen.....	7
Parallel Session 1 · Monday June 8th · 13:30 – 15:00	8
<i>Individual Paper Session 1.1 · A200 · Paper.....</i>	<i>8</i>
<i>Individual Paper Session 1.2 · A210 · Paper.....</i>	<i>9</i>
<i>Individual Paper Session 1.3 · A212 · Paper.....</i>	<i>12</i>
<i>Workshop Session 1.4 · A201 · Workshop.....</i>	<i>19</i>
<i>Workshop Session 1.5 · A203 · Workshop.....</i>	<i>19</i>
<i>Workshop Session 1.6 · A222 · Workshop.....</i>	<i>19</i>
Parallel Session 2 · Monday June 8th · 15:30 – 17:00	16
<i>Roundtable Session 2.1 · A222 · Roundtable.....</i>	<i>19</i>
<i>Workshop Session 2.2 · A210 · Workshop.....</i>	<i>22</i>
<i>Workshop Session 2.3 · A203 · Workshop.....</i>	<i>28</i>
<i>Individual Paper Session 2.4 · A200 · Paper.....</i>	<i>28</i>
<i>Individual Paper Session 2.5 · A201 · Paper.....</i>	<i>28</i>
<i>Individual Paper Session 2.6 · A212 · Paper.....</i>	<i>30</i>
Parallel Session 3 · Tuesday June 9th · 10:45 – 12:15	33
<i>Individual Paper Session 3.1 · A210 · Paper.....</i>	<i>33</i>
<i>Individual Paper Session 3.2 · A214 · Paper.....</i>	<i>35</i>

<i>Individual Paper Session 3.3 · A212 · Paper.....</i>	<i>37</i>
<i>Paper & Workshop Session 3.4 · A200 · Paper & Workshop.....</i>	<i>40</i>
<i>Workshop Session 3.5 · A201 · Workshop.....</i>	<i>41</i>
Parallel Session 4 · Tuesday June 9th · 13:15 – 14:45	43
<i>Workshop Session 4.1 · A201 · Workshop.....</i>	<i>43</i>
<i>Workshop Session 4.2 · A203 · Workshop.....</i>	<i>44</i>
<i>Workshop Session 4.3 · A210 · Workshop.....</i>	<i>46</i>
<i>Workshop Session 4.4 · A212 · Workshop.....</i>	<i>48</i>
<i>Individual Paper Session 4.5 · A200 · Paper.....</i>	<i>48</i>
<i>Individual Paper Session 4.6 · A214 · Paper.....</i>	<i>51</i>
Parallel Session 5 · Tuesday June 9th · 15:15 – 16:45	55
<i>Individual Paper Session 5.1 · A200 · Paper.....</i>	<i>55</i>
<i>Individual Paper Session 5.2 · A210 · Paper.....</i>	<i>60</i>
<i>Individual Paper Session 5.3 · A212 · Paper.....</i>	<i>62</i>
<i>Individual Paper Session 5.4 · A214 · Paper.....</i>	<i>65</i>
<i>Individual Paper Session 5.5 · A222 · Paper.....</i>	<i>67</i>
<i>Workshop Session 5.6 · A201 · Workshop.....</i>	<i>69</i>
<i>Workshop Session 5.7 · A203 · Workshop.....</i>	<i>71</i>
Parallel Session 6 · Wednesday June 10th · 11:00 – 12:30	72
<i>Roundtable Session 6.1 · A201 · Roundtable.....</i>	<i>72</i>
<i>Workshop Session 6.2 · A222 · Workshop.....</i>	<i>73</i>
<i>Individual Paper Session 6.3 · A203 · Paper.....</i>	<i>75</i>
<i>Individual Paper Session 6.4 · A210 · Paper.....</i>	<i>83</i>
<i>Individual Paper Session 6.5 · A212 · Paper.....</i>	<i>83</i>
<i>Individual Paper Session 6.6 · A214 · Paper.....</i>	<i>83</i>
<i>Individual Paper Session 6.7 · A200 · Paper.....</i>	<i>85</i>
Parallel Session 7 · Wednesday June 10th · 13:30 – 15:00	88
<i>Individual Paper Session 7.1 · A200 · Paper.....</i>	<i>88</i>
<i>Individual Paper Session 7.2 · A210 · Paper.....</i>	<i>90</i>
<i>Individual Paper Session 7.3 · A212 · Paper.....</i>	<i>97</i>
<i>Individual Paper Session 7.4 · A214 · Paper.....</i>	<i>97</i>
<i>Individual Paper Session 7.5 · A222 · Paper.....</i>	<i>97</i>

<i>Workshop Session 7.6 · A201 · Workshop.....</i>	<i>100</i>
<i>Workshop Session 7.7 · A203 · Workshop.....</i>	<i>102</i>
Parallel Session 8 · Wednesday June 10th · 15:30 – 17:00	104
<i>Workshop Session 8.1 · A222 · Workshop.....</i>	<i>104</i>
<i>Roundtable Session 8.2 · A201 · Roundtable.....</i>	<i>106</i>
<i>Individual Paper Session 8.3 · A200 · Paper.....</i>	<i>111</i>
<i>Individual Paper Session 8.4 · A210 · Paper.....</i>	<i>114</i>
<i>Individual Paper Session 8.5 · A212 · Paper.....</i>	<i>116</i>
<i>Individual Paper Session 8.6 · A214 · Paper.....</i>	<i>118</i>
Parallel Session 9 · Thursday June 11th · 9:30 – 11:00	121
<i>Roundtable Session 9.1 · A222 · Roundtable.....</i>	<i>121</i>
<i>Individual Paper Session 9.2 · A201 · Paper.....</i>	<i>124</i>
<i>Individual Paper Session 9.3 · A200 · Paper.....</i>	<i>126</i>
<i>Individual Paper Session 9.4 · A203 · Paper.....</i>	<i>129</i>
<i>Individual Paper Session 9.5 · A210 · Paper.....</i>	<i>131</i>
<i>Individual Paper Session 9.6 · A212 · Paper.....</i>	<i>134</i>
<i>Individual Paper Session 9.7 · A214 · Paper.....</i>	<i>136</i>

Keynote Address 1 · Eeva Anttila

The linguistic body: Exploring embodied language learning—and what's art got to do with it?

Eeva Anttila · Professor in dance pedagogy, Theatre Academy, University of the Arts Helsinki, Finland

This presentation begins with an overview of an interdisciplinary research project entitled Embodied Language Learning through the Arts (ELLA, 2021-2024), coordinated by Uniarts Helsinki. Further, it unravels the meaning of art in embodied language learning. The conceptual framework for this inquiry revolves around embodied learning, language, (trans)language, art, and arts education.

The ELLA research project focused on broadening the conceptions of language and learning. It explored how *embodied language learning through the arts* can contribute to renewing pedagogical practices in various educational settings. The premise for this research was the conception of language as active doing, as language. The multidisciplinary ELLA team also adhered to a broad conception of learning that engages learners as a whole and connects them with their social and material environment. The team developed and examined embodied and creative activities that involve multimodal and multisensory ways of meaning making in various settings with a focus on how art and language are intertwined as phenomena and practice.

As language is a key element in learning, the way language is understood, taught and practiced matters greatly. Language expands the notion of language towards sensing, seeing, about becoming visible to others, about becoming a linguistic body. The linguistic body refers to an idea that we both see language and do language; we practice and perform language through our bodies, through all possible semiotic resources. The linguistic body is our connection to others and the world. It is about becoming visible, being seen, seeing others. Creative, artistic, and performative practices are vital in this process.

The notion of language and of the linguistic body widens our understanding on how art works in educational situations. Following this line of thinking, it becomes possible to claim that artistic practice *is* language and further, that arts education is language education. If we understand how language and art as vital phenomena are intertwined in a multitude of ways, then embodied and artistic activities should no longer be considered a separate areas in education.

The ELLA project illuminates wide potential and various possibilities to develop pedagogical practices at all educational levels and contexts. It broadens and deepens understandings of language education and has implications for all education, including arts education.

Keynote Address 2 · Dor Abrahamson

From Joint Action to Mathematical Concepts: The Case of OЯTHO, a Digital-Tabletop Dyadic Game

Dor Abrahamson · Professor of Cognition and Development, University of California, Berkeley, USA

OЯTHO is a dyadic digital-tabletop game — a cross between Etch-a-Sketch and mini-golf — in which a “ball” needs to get from the Start of a maze to its End, yet while one player (the x-axis person) can only move the ball horizontally, the other player (the y-axis person) can only move it vertically. So the two players have to figure out how to move the ball together along diagonal legs of the maze, or else it’s “Game over!” OЯTHO was designed to create opportunities for young players to first encounter the Cartesian system. By figuring out how to move together, children are to cultivate what we call “coordinate perception” — a techno-scientific two-dimensional attention to space whereby an object’s planar location is constituted as a cross-product of its respective x- and y-axis indexical projections, and its anticipated linear trajectory to the next target is likewise socially distributed as orthogonally apportioned axial thrusts. OЯTHO advances through three game-mechanics levels that gradually shift hands-on action to symbolically mediated control, as our designed means of introducing disciplinary re-description of physical enactment in normative semiotic register, namely ordered pairs (e.g., [4, 7]). The game has been on exhibit in the LivingLab wing of the Copernicus Hall of Science in Warsaw, Poland, since the spring of 2023. Ever since, we have collected action logs, so we are now at about .5 million plays. For some of the pairs we also collect audio-video and eye-tracking data. This empirical corpus serves as a large-N research context to evaluate the design conjecture that mathematical concepts can emerge from the discourse that players develop spontaneously as their means of coordinating the enactment of simultaneous joint action. From the perspective of complex dynamic systems, we will consider how the mazes’ structural constraints, such as navigating a narrow branch of the track, give rise to more efficient coordinated action tactics that endure after the constraints have been removed (hysteresis). I will explain the game as exemplifying the action-based genre of the embodied-design framework, share results from our mixed-methods data analyses, raise pedagogical dilemmas around scaffolding curricular objectives in informal contexts, and sketch an underway project using machine-learning to extract optimal teaching practices and implement them in the form of an AI-driven virtual-reality OЯTHO companion for remote learners.

Keynote Address 3 · Juliene Madureira Ferreira

Student-AI-agent cognitive systems and students' relationship with knowledge in higher education

Juliene Madureira Ferreira · Associate Professor in Education, Faculty of Education and Culture, Tampere University, Finland

Generative AI is rapidly becoming entangled in everyday academic practices as an increasingly active participant in the cognitive systems through which students learn and engage with knowledge construction. This keynote engages with the 5E cognition framework to examine how human–AI couplings are reshaping the nature of studying in higher education. While the 5E cognition traditions have long acknowledged the role of tools in thinking, generative AI challenges us by introducing systems that are not only supportive but also generative, opaque, and quasi-agentic.

Drawing on an ongoing empirical study from the Kone Foundation–funded project (Un)Making Knowledge: Students' Relationship with Knowledge from Modernity to AI, this keynote explores how higher education students engage with AI agents during independent study. The study followed over one academic year 75 students in degree programmes at a Finnish university, combining log-transcript data of student–AI interactions, observation taken during study sessions, and follow-up interviews. Considering the context of different study tasks, our analytical attention to the log data is directed at three dimensions of human–AI coupling: operational (the cognitive processes involved), integrative (how the cognitive work is distributed) and agentic (student epistemic agency). Interviews provide understanding of the experiential aspect of studying with and AI agent, contributing to unpacking the relationship students' establish with knowledge through their studies. Preliminary analyses reveal several paradoxical tendencies. Rather than presenting findings as isolated observations, the keynote uses these empirical insights to surface broader transformations in contemporary learning with AI: (1) students (in)ability to evaluate the operationalization of a cognitive system while critically reflecting on one's actions within it; and (2) the need to overcome ambiguities such as those related to authorship and ownership of knowledge, which emerge in the experience of studying with AI that do not exist in other types of cognitive systems.

Building on these observations, the keynote provokes us to rethink concepts such as authorship, ownership, autonomy within the 5E framework applied in education and to rethink learning in hybrid cognitive systems. The keynote concludes by returning to embodied education and asking what is at stake when the friction, effort, and materiality of learning are reconfigured through AI. Rather than positioning generative AI as either threat or solution, the talk offers a space for collective reflection on what is the educational project we should encourage our students to fight for.

Keywords: extended cognition, distributed cognition; offloading cognition; outsourcing cognition, artificial intelligence, higher education

Keynote Address 4 · Matthew Crippen

Education Across Cultures: Selective Permeability, Intergenerational Affordances and Situated Epistemic Injustice

Matthew Crippen · Professor, Department of Global Studies, Pusan National University, South Korea

This paper examines multicultural classrooms through the selective permeability model, which holds that individuals encounter different action possibilities—or affordances—within the same setting. I first explore selective permeability in relation to what Gibson calls “positive” (enabling, beneficial) and “negative” (action-closing, harmful) affordances. Within these considerations, I look at how cultural psychology and regional geographies shape habitual, embodied norms that channel affordances for learning, flipping a given avenue from positive to negative. My own qualitative and quantitative results follow, showing how culture moderates what students encounter as helpful or hindering. After this, I introduce intergenerational affordances. While others mobilize this term to describe affordances usable by both young and old, I redeploy it to expand thinking on intergenerational trauma.

Several conclusions emerge. First, when a student’s cultural norms clash sharply with tacit classroom expectations, the situation resembles arriving at a rink with rollerblades only to be placed on ice: the learner encounters negative, action-closing affordances and undergoes situated cognitive harm. Second, incongruent norms are not always detrimental; under certain conditions, they may catalyze growth. Third, children may inherit habits tied to lower socioeconomic status and racialized exclusion—both shown to reduce autonomy in the U.S. while sometimes increasing resilience. Such inheritances may close some affordances while opening others across generations. Fourth, although autonomy, independence and individualism are often treated as inherent goods, these ideals have mixed value across and within cultures and can even correlate with mental illness in Western jurisdictions. Without wishing to undercut such ideals, this variation reinforces a warning John Dewey issued during his lectures in China: “sweeping generalizations” and “universal laws” seldom hold, and we usually do better to focus on “individual cases in particular situations.” This suggests that exceptional teaching is artistic, demanding sensitive adjustment to the evolving peculiarities of unique circumstances.

Parallel Session 1 · Monday June 8th · 13:30 – 15:00

Individual Paper Session 1.1 · A200 · Paper

Embodied relational protocols for co-creating kind and effective learning communities with young adults. #16

Danielle Denichaud

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What happens when embodied practices are systematically integrated into didactics through intentional community building? This presentation shares the results from two years of salutogenic (health-promoting) praxis in the context of three undergraduate courses focused on wellbeing education for the performing artist, one undergraduate course on health education theory and practice, and one undergraduate course on movement education. Sharing the experiences of working with 189 students (ages 17 – 21), specific embodied relational didactics and pedagogical orientations will be introduced along with summative thematic reflections from distinct cohorts of young adult students in diverse programs of study (drama, dance, design, forensics, education, economics).

Translating therapeutic somatics and trauma-informed dialogue approaches into protocols for co-creating kind learning cultures in classroom settings produced consistent results across these diverse populations of learners. Quality of learning, in-class participation, teacher-student trust, student creative productivity and safer vulnerability consistently improved over a standard 12-week course length, despite variations of age, program of study and length of class (1 – 3 hours).

What has emerged is a compelling and hope-fecund praxis for supporting educators co-create kinder and more effective learning cultures with student populations inclusive of neurodivergence, diverse cultural backgrounds and distinct programs of study. Participants can expect to encounter emotional co-regulation theory, trauma-informed protocols, pedagogies of kindness, anti-oppressive education, insights for trust building and sharing leadership with young adults.

Keywords: belonging, community-building, didactics, wellbeing, trauma-informed

Mind - Body Practices for Transformative Adult Education and Well-Being #29

Olubunmi Adebola Olanipekun

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Contemporary adult education is increasingly being operated within contexts characterised by psychological distress, social precarity and rapid change. Adult learners manage several roles as workers, caregivers, and community members, and often do so under the conditions of heightened stress and uncertainty. This literature-based article focuses on how mind-body practices (such as mindfulness, breathing techniques, grounding practices, embodied movement and reflective somatic awareness) can be used as transformational pedagogical tools in adult education. Drawing from

interdisciplinary scholarship in fields of study in education, psychology, and wellbeing studies, the article positions practices in mind-body projects in frameworks for embodied and transformative study of learning. It synthesises information about mental health struggles experienced by learners, the processes of mindfulness and emotional regulation, embodied pedagogies, welfare-based and embodied curriculum and settings, and contexts of adult literacy. Particular attention is placed on the practices of reconfiguring learning environments, how these practices foster self-awareness, as well as agency and inclusion and on supporting resilience. The review also discusses implications for adult education in the Global South referenced in case of Nigeria. By incorporating mind-body practices into the realm of adult education, educators can shift away from cognitive-centered models of education and move instead toward forms of learning which are more holistic, humane and responsive to social realities and to educational and existential needs. The article makes the point that mind-body practices may not be the wellness tools that are ancillary to an education for learning adults, but ones that are fundamental in a transformative adult education in a world fraught with complexity and vulnerability.

Keywords: embodied-learning, mind-body-practices, adult-education, transformative-learning, learner-well-being

Feelings and Embodiment of Involvement in Education #49

Merete Wiberg

Aarhus University, Aarhus, Denmark

The paper aims to develop an understanding of involvement to describe educational situations in which something in an educational context matters to the student in a way we may understand as emotional. I draw on the Hungarian philosopher Agnes Heller's work, *A Theory of Feelings* (Heller, 2009), with a specific focus on her definition of feelings as 'being involved in something' (Heller, 2009, p. 11). Heller distinguishes, in her categorisation of feelings, between feelings and emotions in a rather subtle way. Feelings can be basic and sometimes quite primitive, such as, for example, drive feelings and affects (Heller 2009 p.63); however, emotions are feelings that are, according to Heller, always cognitive and situational. Involvement is not a neutral phenomenon, as Agnes Heller reminds us. Involvement may be negative or positive. Involvement means that something matters to us, whether we like it or not (Heller, 2009, p. 11). Without involvement, nothing will touch a person. To feel involved means that a person is emotionally open to and engaged in a situation. Involvement is not just a feeling but also an embodied phenomenon. I will draw on Malthe Brinkmann's phenomenological approach to discuss how involvement can be understood as a bodily phenomenon (Brinkmann 2021).

Brinkmann, M. (2021). *Bildung of Emotion and Bildung Through Emotions: The Orientative, Evaluative and Bildungs-Effect of Shame*. In: Brinkmann, M. ; Türistig, J.; Weber-Spanknebel, M. (eds.). *Emotion-Feeling-Mood. Phenomenological and Pedagogical Perspectives*. Springer

Heller, A. (2009). *A Theory of feelings*. Rowmann & Littlefield Publishers, Inc.

Keywords: feelings, embodiment, agnes heller

Embodied teaching practices within the topic of ionizing radiation #88

Filippa Dalesjö, Magdalena Kersting, Ian Bearden, Julia Woithe

The European Organization for Nuclear Research, Geneva, Switzerland

The field of STEM (Science, Technology, Engineering & Mathematics) is struggling with a lack of diversity. One contributing factor for why students turn away from STEM is a lack of sense of belonging. Here, a sense of belonging can be defined as “a sense of being accepted, valued, included and encouraged by others” (Carlone et al. 2017) Clearly, embodied perspectives (Kersting et al. 2021) shape such a sense of belonging: Students do not simply think about whether they belong in science. They show it with their bodies through things like posture, gesture and spatial positioning.

This presentation explores existing practices in physics education with a focus on ionizing radiation from an embodied perspective to map opportunities and challenges for a sense of belonging to form among students. Specifically, we conducted a systematic literature review (BMJ) of instructional approaches in ionising radiation, a topic that students recognize and might have strong opinions about (Dalesjö 2025). As such, this learning domain is particularly well suited to study students’ sense of belonging. The systematic review identified 64 studies which were further analysed using the four senses of embodiment (Kersting et al. 2021). Our findings show several embodied mechanisms that lay the ground for how concepts of ionising radiation are introduced to students. During the presentation, we will present these mechanisms in detail and will connect them to opportunities to foster secondary school students’ sense of belonging. In doing so, our study contributes novel perspectives to the productive overlap between embodied education and STEM education.

BMJ (2021) ;372 doi: <https://doi.org/10.1136/bmj.n71>

Dalesjö, F. (2025). Radioaktiv strålning och joniserande strålning : En undersökande studie kring den uppfattade skillnaden mellan begreppen radioaktiv strålning och joniserande strålning. <https://urn.kb.se/resolve?urn=urn:nbn:se:uu:diva-557985>

Kersting, M. Haglund, J. Steier, R. (2021) A Growing Body of Knowledge: On Four Different Senses of Embodiment in Science Education. *Science & Education* (2021) 30:1183–1210. <https://doi.org/10.1007/s11191-021-00232-z>

Carlone, H. B., and Johnson, A. (2007). Understanding the science experiences of successful women of color: science identity as an analytic lens. *J. Res. Sci. Teach.* 44, 1187–1218. doi: 10.1002/tea.20237

Keywords: ionizing radiation, physics education, belonging

The potential of the EduSpaces laboratories within Embodied Education: a multilingual and interdisciplinary initiative at the Free University of Bozen-Bolzano in Italy #107

Stefania Moser, Federico Corni

Free University of Bolzano, Bressanone-Brixen, Italy

The EduSpaces are laboratories within the Free University of Bozen-Bolzano in Italy, characterized by diverse disciplinary and linguistic orientations. They engage in research, teaching, and third-mission activities, seeking to bridge theory and practice. Originating from a collaborative project involving four partner institutions (2016–2019), the EduSpaces network has grown since 2022 and currently comprises nine educational laboratories spanning disciplinary, pedagogical, historical-documentary, cognitive, psychological, artistic, environmental, linguistic, digital-media, and children’s-literature domains.

Conceived as a physical and mental space, the EduSpaces build on research that emphasizes the centrality of the lived body and challenges mind–body dualisms in learning.

Building on this theoretical grounding, the present proposal examines the educational transformative potential of the EduSpaces from the perspective of Embodied Education.

In an era marked by profound global challenges that question the role of education and by an idea of education powdered into separate disciplines, the EduSpaces initiative seeks to re-conceptualize education as a multidisciplinary and transdisciplinary process. At the same time, it acknowledges the grounding of such process in the world, namely the socio-territorial environment in which education is situated, highlighting how embodied learning processes emerge through interaction with place, community, and contextual meaning-making.

Keywords: transformative learning, sensory experience, transdisciplinarity

Mirroring: an educational device to enhance embodied education and foster reflexivity in pre-service primary teachers #114

Carla Cardinaletti

Free University of Bolzano, Bressanone, Italy

This proposal endeavours, firstly, to explore—through visual art—the function of the mirror in mediating the tension between the self, as conceptualised according to Gallagher’s pattern theory of the self (2013), and its image. Secondly, it seeks to illustrate the potential of the mirror as a meaningful pedagogical tool within educational environments. Utilised as a metaphorical device, a small personal mirror accompanied students throughout a semester-long workshop in “General Pedagogy”, with the aim of fostering a vital teaching competency: reflexivity. With perception framed as a psychosomatic act (Gibson, 2015/1979), students were encouraged to produce an artefact matching the dimensions of their mirror, using any preferred technique, to provide a tangible reflection on their individual journeys. The design of this pedagogical approach, endorsed by Full Professor Parricchi, the leader of the course—targeting first-year Primary Education students at the Free University of Bolzano (Italy)—, is grounded in the research undertaken by the transdisciplinary centre EduSpace MultiLab, which integrates imaginative (Egan, 2005; Fuchs & Corni, 2023), creative (Cardinaletti, 2025), and embodied (Gallagher, 2013) methodologies.

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Gibson, J.J. (2015/1979). *L'approccio ecologico alla percezione visiva*. Taylor & Francis.

Fuchs, H.U., & Corni, F. (2023). *Primary Physical Science Education: An Imaginative Approach to Encounters with Nature*. Springer.

Keywords: reflexivity, complexity, education, imagination, creativity

Individual Paper Session 1.3 · A212 · Paper

How Bodies Know: Embodied Spiritual Experience and Early Meaning-Making in Infancy #42

Maria Cristina Bussani, Giulia Joubran

Independent Researcher and Educator, Trieste, Italy

This paper explores how spiritual experience in early infancy emerges through embodied and relational processes that precede language and intentional action. While embodied cognition has increasingly informed educational research, little attention has been paid to spirituality as a dimension of embodied learning in the earliest stages of development. This study addresses this gap by examining how infants participate in meaning-making through bodily engagement, affective attunement, and relational presence.

Drawing on perspectives from embodied cognition, the sociology of childhood, children's spirituality, and psychomotricity, the research conceptualises spirituality not primarily as belief but as lived, corporeal experience. Empirically, the study is based on qualitative mixed-methods research combining ethnographic observation and semi-structured interviews with caregivers and celebrants across six baptism rituals involving infants aged between four and twenty-four months. An original observational framework was developed to capture embodied variables including gaze, movement, tonic dialogue, vocalisation, and crying.

Findings suggest that infants actively engage in spiritual encounters through sensorimotor orientation, rhythmic participation, and affective signalling. Moments of tactile contact, vocal invocation, and symbolic gesture generate heightened relational intensity, indicating that spiritual experience is co-constructed through bodily interaction and adult relational containment. By foregrounding spirituality as embodied early learning, this paper extends embodied education frameworks and offers a transferable approach for studying pre-verbal meaning-making across educational and caregiving contexts.

Keywords: embodied cognition, early childhood spirituality, pre-verbal development, early meaning-making, relationalembodiment

Reclaiming Creativity through Embodied Learning: A Theoretical Bridge from Enaction to Agency #47

Akhil Kumar Singh

MS Ramaiah University of Applied Sciences, Bengaluru, India

Creativity is a vital human capacity, yet modern education systems often suppress it through disembodied pedagogical models that prioritise standardisation, obedience, and abstraction over autonomy and imagination. This paper argues that the marginalisation of creativity can be traced to educational practices that undermine learner agency, which are rooted in epistemological assumptions of mind–body dualism. However, emerging empirical studies in cognitive science suggest that human beings are inherently embodied. Drawing on this conceptual background, and informed by 4E cognitive science, this theoretical inquiry explores how embodied interaction re-situates the learner as an agentic, sense-making being.

I propose that there exists a conceptual sequence linking embodiment, the emergence of agency, and the development of creativity. This connection is largely neglected in dominant educational discourses. Building on previous philosophical work on embodied education, I articulate this theoretical pathway and support it with insights from recent empirical and computational studies that model the co-arising of agency and creativity.

Although colonial education represents one historical example of the systematic suppression of agency, this paper situates the issue within a broader global frame, urging a shift toward pedagogical designs that engage learners as active participants in meaning-making so that the world may foster greater innovation. By revisiting the foundational role of the body in thought and learning, the paper contributes to current efforts to reimagine education as a space of human possibility and creative becoming.

Keywords: embodiment, creativity, agency, autonomy, enactive

Worlds Become in Sound: Music as Shared Time (Workshop in Music Creation) #8

Peter Schmidt Bruun

Royal Danish Academy of Music, Copenhagen, Denmark

In this workshop, we create a piece of music together. The process is designed so that everyone can participate, regardless of traditional musical skills or knowledge. We draw on the inherent musicality we all share. The piece we create will stand as a token of a small piece of shared time—a token we can keep, and perhaps share with others.

This practical approach rests on a deeper understanding of what music is and how it relates to human existence. “Music is not an a priori phenomenon of the natural world. It is created and recreated within a network of cultural conventions ...” (Burnard). In a world where music is omnipresent and ready-made musical enjoyment is always at hand, we easily forget that music comes from being human; it is,

foremostly, a doing (Small).

Drawing on phenomenological philosophy and the concepts of communicative musicality (Malloch & Trevarthen) and mutuality (Dissanayake), I have argued (Bruun) that music creation is both an ontological circumstance and an existential necessity: worlds become in sound. The musical world – complementary to that of language – unfolds a paradoxically silent, tacit dimension among us, where inner movements synchronize and being in time is shared. This dimension is as essential to our humanity as the capacity to argue and reason through language; it is a way of knowing and being that words alone cannot contain.

Implemented as experimental creative processes in pedagogical settings, music creation becomes an arena of exploration: while we explore the becoming of music, its emergence as an aesthetic phenomenon simultaneously explores participants' everyday being and togetherness.

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Keywords: communicative musicality, mutuality, togetherness, becoming

Moving Toward Presence: A Dance Movement Therapy Workshop #10

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Università degli Studi di Palermo, Palermo, Italy

This workshop proposes an experiential exploration of Dance Movement Therapy (DMT) as a pathway for cultivating embodied awareness, emotional regulation, and relational attunement within an educational context. Grounded in contemporary somatic and neuroscientific perspectives (Koch, Kunz, Lykou, & Cruz, 2014; Leventhal, 2018), the session invites participants to engage in guided movement experiences designed to enhance perception of internal bodily states, foster creative expression, and support processes of meaning-making through the body.

The workshop combines individual, pair, and group movement tasks that emphasize sensory grounding, rhythmic entrainment, and the integration of movement with reflective practices. Through these structures, participants will examine how nonverbal communication and embodied presence contribute to learning, resilience, and the co-construction of safe relational spaces (Chaiklin &

Wengrower, 2009).

The workshop draws upon core DMT principles – including movement as metaphor, kinesthetic empathy, and the therapeutic use of rhythm (Payne, 2006) – to highlight their relevance in educational environments seeking to promote holistic, learner-centered approaches. A brief facilitated dialogue will support participants in translating their movement experiences into pedagogical insights, with attention to inclusivity, emotional safety, and the development of embodied competencies.

By centering the body as both subject and tool of inquiry, the session aims to broaden the understanding of how creative movement practices can enrich embodied education, enhance engagement, and nurture self-awareness in diverse populations. Participants are not required to have previous dance experience; only openness to explore movement as a form of knowledge and connection.

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Keywords: dancemovement therapy, embodiment, education, somatic

Parallel Session 2 · Monday June 8th · 15:30 – 17:00

Embodied Rhythmic Systems for Musical Learning: From Bodily-Vocal Practices to Notated Processes #21

Edna Alencar de Castro

Hochschule für Musik Franz Liszt Weimar, Weimar, Germany

This workshop presents an embodied educational approach to musical learning grounded in the systematic construction of rhythmic-vocal scores derived from bodily practices. Rather than treating music-making as an intuitive or purely expressive activity, the workshop focuses on how embodied rhythmic actions can be translated into structured, notated processes that support learning, reflection, and pedagogical transfer. Participants engage in a step-by-step exploration of a creative methodology in which body percussion and vocal multiplicity function as generative systems for musical structure. The workshop explicitly reveals how corporeal actions are analyzed, organized, and transformed into a score, making visible the relationship between embodiment, structure, and learning. This emphasis on process allows embodied experience to be understood as an educational tool rather than as an ephemeral performance.

The approach draws on transcultural perspectives and is informed by practices developed in intercultural contexts, where rhythmic embodiment, social interaction, and collective coordination play a central role. The workshop is open to participants from diverse disciplinary backgrounds. For the practical demonstration of the notational system, a small number of participants with basic musical knowledge, including elementary score reading, may be invited to engage directly in the practice, while other participants follow the process through guided observation, listening, and collective reflection.

By situating musical notation as an emergent outcome of embodied practice, the workshop contributes to current discussions on embodied education by demonstrating how structured creative processes can support learning in social contexts. The session offers both an experiential

understanding of embodied learning and a conceptual framework for application in educational and research settings.

Keywords: embodiment, music, learning, notation, transculturality

Feldenkrais as Embodied Mindfulness in Teacher-Education #23

Orit Schwarz-Franco

Beit-Berl College, Kfar Saba, Israel

Feldenkrais as Embodied Mindfulness in Teacher-Education

Feldenkrais's writings (2010) clarify that Feldenkrais-Method (FM) is a holistic practice that cultivates self-awareness and demonstrates embodied learning (Author, 2001). FM is currently recognized as a form of mindfulness (Ergas, 2021), now attracting a growing attention within educational spheres (Hemming et. Al. 2025 ; Hadar & Ergas, 2025), alongside the interest in embodied education (Faella 2025; Hegna, 2024).

My professional background enables examining this unique synthesis. As a philosopher of education, I am grounded in pedagogical theory and practice. As a Feldenkrais instructor, I have experienced and facilitated embodied learning that cultivates kinesthetic intelligence. As teacher-educator I have been integrating these holistic aspects of teaching and learning. My research examines FM as humanistic education (Author, 2001, 2010, 2016), in light of Dewey's anti-dualistic legacy (1986, 2012), and Merleau-Ponty's phenomenology of embodiment (2013).

The pedagogical context of the suggested workshop is my teacher-education course 'Empathy in Movement – Feldenkrais-Method and Learning'. In the first conference of Embodied Education I introduced FM and its pedagogical implications. In this workshop I plan to deepen and update my contribution, starting with a movement-breathing lesson of 20 minutes (on mattresses), followed by a reflective group-discussion, in which I will share recent professional developments: the inclusion of Feldenkrais-based pedagogy in the frame-work of Mindfulness, and reflective insights gathered through self-study (Kitchen & Butler, 2024), examining my teaching of FM in a MA program: 'mindfulness as education' (Author, 2026). In this study I examine whether turning embodied implicit knowledge into verbal explicit one enhances its implication in educational work.

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Keywords: feldenkrais, mindfulness, teacher-education, implicit knowledge

Weaving embodied learning into education #43

Caroline Ribbers

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The workshop Weaving Embodied Learning into Education welcomes all teachers who feel drawn to exploring how embodied learning can take shape within diverse educational practices, and how it may open new pathways for teaching and learning.

Embodied learning is approached here as a way of learning deeply rooted in the breathing, pulsating, context-sensitive living body (or the body as we can experience it from within). Learning from and through the living body can heighten awareness of self, others, and surroundings, fostering resilience, wellbeing, and a sense of connectedness that supports meaningful engagement. It may spark daring ideas, generate radical new insights, and inspire creative problem solving.

The workshop opens with a brief guided practice that supports participants in arriving, softening, and tuning in. From there, they are introduced to a set of design principles for embodied learning. These principles draw on dr. Caroline Ribbers' doctoral research on embodied learning within higher dance education, as well as her collaboration with the international research network DEED (Designing Embodied Education in Dance), which investigates how tertiary-level dance education can be re-imagined through the integration of embodied practice and its underlying principles.

Rather than offering fixed prescriptions, the presented design principles for embodied learning serve as invitations or doorways into imagining how it may take shape within one's own context. This paves the way for teaching and learning that is responsive, grounded, and attuned to learners and their contexts.

Keywords: embodied learning, design principles, dance

Moving Into Belonging: Experiencing Embodied Research Through Cultural Dance #52

Megan Rivera Hughes

Trinity College, Dublin, Ireland

How might we research embodied experience without reducing it to disembodied text? This interactive workshop invites participants to experience Collaborative Choreographic-Poetic Inquiry, an arts-based methodology developed for studying how cultural dance shapes belonging among secondary students in Ireland's increasingly diverse schools.

Grounded in Merleau-Ponty's intercorporeality and enactivist perspectives on cognition, this methodology treats movement not as data to be observed but as a mode of inquiry. A way of knowing that precedes language. Drawing on my positionality as researcher and Latin dance practitioner, participants will first attune to the clave, the rhythmic heartbeat underlying Afro-Caribbean music, experiencing how cognition extends through rhythm into a shared cultural space. Through simple partnered movement, we explore somatic empathy, the pre-reflective, bodily understanding that emerges when two people negotiate movement together. Reflective poetry creation using blackout techniques offers a bridge between felt experience and language.

Through this experiential sequence, we investigate how "choreographic contact zones" emerge when diverse bodies move in relationship, not as spaces where individuals adapt to dominant norms, but as transformative sites where belonging is negotiated intercorporeally. The workshop surfaces questions central to embodied education research: How do we honor bodily ways of knowing while producing shareable insights? Whose movement traditions enter educational spaces, and on what terms? What can methodologies rooted in cultural practice offer to research on inclusion, identity, and belonging?

No dance experience will be required, only willingness to move and reflect.

Keywords: embodied education, belonging, 5e cognition

Workshop Session 1.4 • A201 • Workshop

Workshop Session 1.5 • A203 • Workshop

Workshop Session 1.6 • A222 • Workshop

Roundtable Session 2.1 • A222 • Roundtable

The experience of the 1st Specialist Seminar on Embodied Education #115

Federico Corni, Miglena Asenova, Michele Cagol, Carla Cardinaletti, Attilio Carraro, Rita Casadei, Elisabeth Dumont, Hans U Fuchs, Jesper Haglund, Angelika Pahl, Monica Parricchi

Free University of Bolzano, Bressanone, Italy

The Round Table proposes a reflective and generative discussion based on the experience of the 1st Specialist Seminar on Embodied Education, held in September 2024 at the Faculty of Education of the Free University of Bozen-Bolzano (Bressanone, Italy). The seminar brought together approximately seventy participants from numerous countries in Europe and America and featured four keynote speakers from international universities, creating a rich interdisciplinary space for dialogue on embodiment in education.

Participants actively contributed through poster sessions and participation in four thematic group works coordinated by members of the scientific committee. The thematic areas were: (1) Conceptual Blending, (2) Emotion and the Body, (3) Motivation and the Body, and (4) The Body and Energy. Each group explored theoretical frameworks, empirical perspectives, and educational implications related to embodied learning and teaching.

From an embodiment perspective, however, the relevance of the seminar extends beyond the outcomes of the thematic groups. Particular attention was given to the process of development of the Specialist Seminar itself: ideation, planning, organization, and enactment were intentionally designed to reflect embodied principles. In this sense, the seminar functioned not only as an occasion for discussion, but also as a concrete application of embodied education, where spatial arrangements, temporal rhythms, interaction formats, and participatory practices were aligned with the seminar's conceptual focus.

The Round Table will present and critically discuss selected outcomes emerging from the thematic group work, as well as offer a reflective contribution on the embodied nature of the seminar's design and implementation, highlighting how organizational and activity choices can themselves become sites of embodiment. This dual focus aims to stimulate discussion on embodiment not only as a theoretical construct but also as a methodological and organizational principle in academic and educational events.

Discussant: Oliver Kauffmann

Chair: Danis Francesconi

Contributions:

Embodiment as a methodological and organizational principle: ideation, planning and organization of the 1st Specialist Seminar on Embodied Education

This paper outlines the development of an initiative on Embodied Education the Free University of Bozen (Italy). The initiative resulted from a transdisciplinary effort to rethink educational practice through a holistic framework which overcomes the traditional academic mind-body dualism and places the human being at the center of the pedagogical action.

To advance this epistemological shift, an international think tank of scholars from diverse disciplines was established, with the aim of fostering dialogue grounded in current literature, embodiment studies, and in neuroscience. Collaboration began in 2023 through virtual and face-to-face meetings, culminating in the organization of a specialist's seminar, designed to bring together scholars focusing on science/nature education, language, expressive arts, mathematics, and physical education.

In addition to academic presentations and thematic working groups, the event included practices such as outdoor walking, Eastern disciplines, and the common preparation of a social dinner, reinforcing the

project commitment to integrating bodily experience into educational processes. Furthermore, organizers provided ample spaces for personal interactions, and for exhibiting posters prepared by many participants to introduce themselves and their research topics and interests.

Overall, the initiative represented a significant example on how it can be possible shaping an international research community, to address embodied approaches in education, for advancing pedagogical paradigms capable of considering contemporary educational challenges through a body-centered, holistic perspectives.

Conceptual blending

We were sixteen participants in the “conceptual blending” workgroup, led by Jesper Haglund and Miglena Asenova, which had a focus on how conceptual blending theory can be used in STEM education.

Fauconnier and Turner’s theory of conceptual blending describes how elements from different input spaces are integrated into a blended space, where novel features emerge. The theory was introduced with the example of how physics students have been found to draw from many different input spaces in their interpretation of an interactive simulation of a solar system. By integrating their experience of throwing physical objects and their understanding of planetary motion, they form a blended space, in which they can “throw” planets into orbit in the simulation. The experience of throwing physical objects can be seen as an embodied, material anchor for the blend.

In the workgroup, participants engaged in teaching activities that were informed by embodiment and conceptual blending theory. By considering several different input spaces in the teaching of plant nutrition, pupils can gradually develop their understanding of differences between plant nutrition and animal nutrition, in particular the central role of carbon dioxide from the air in photosynthesis. As another example, participants enacted the propagation of sound in an embodied way by walking from a sound source to a location where the sound can be heard.

As a conclusion, we found conceptual blending to be a useful starting point for design and analysis of STEM teaching, but that it has to be complemented with other constructs, such as material anchoring or conceptual metaphors, to emphasise embodied aspects of education. Insights from the workgroup were presented in an exploratory seminar at the ESERA conference in Copenhagen 2025.

Emotion and the Body

The topic-based workshop was designed to be experiential in nature, characterized as a space in which to address the theme of well-being through dialogue and refocus on the relational nature of the human being. Emotions find expression in the body, influence the tense state of the body and the quality of movement, breath and thinking. Hence, corporeal awareness represents the accessible resource for self-regulation and self-efficacy, being an irreplaceable asset in the emotional process as a flow of energy and information. Reflections and practices relate to the paradigm of embodiment, with particular regard to the performing arts and body-meditative disciplines, including those of the Far Eastern tradition. Each thematic core proposed has been carefully considered in its theoretical dimension and experiential feasibility. Space has been given to experiment that: (i) clean, careful, correct movements can be an effective way to free oneself from stiffness and discomfort; (ii) calm and mindful attention can help to suspend a state of confusion and disturbance; (iii) harmonious posture can be a way to position oneself with confidence, feel at ease and experience a sense of well-being; (iv)

breathing exercises can foster a sense of belonging and connection.

According to holistic perspective, aim is to develop training programs in order to: a) address the issue of socio-emotional learning, in a comprehensive approach; b) raise awareness around strategies for prevention and promotion of ecosystemic health and wellbeing; c) try out practical ideas for looking after individual, community, environment.

First target has been to promote open context in which everyone feels part of a project-process-experience of a real embodied educational commitment, taking on an active role as an agent of change.

The body and energy

A dozen of people from different fields took part in the “The body and energy” workgroup, led by Hand Fuchs, Elisabeth Dumont and Angelika Pahl.

The introduction started with some questions: What does our embodiment tell us about Energy? Is there a common understanding of the notion of Energy in the natural sciences, technology, sociology, policy, culture, psychology, music? Conversely: what does the concept of Energy tell us about our embodiment?

In our experience, Energy is not a character on its own; it relates to an aspect of actual experiential characters, i.e. the social, psychological, cultural and natural Forces. Force denotes any dynamical phenomenon presenting itself as agentive to our mind. Examples of Forces are Love, Music, Justice, Pain, Storms, Light, Food, Electricity, Heat; they are very different from the narrow formal use of “force” in mechanics.

By analyzing the gestalt of Force, we experience three main characteristics: intensity (and its differences which are felt as tensions), extension (size or amount), and power. Power is experientially and conceptually primary and it can be used for motivating the concept of energy, rather than the other way around.

Our understanding of Forces can be expressed mimetically. Using our body to express a notion does not necessarily mean that the concept is embodied; however, if the concept were embodied, our ability of using mimesis for expressing it would make a lot of sense.

The group was then invited to do some physical exercises to challenge our notion of Energy by experiencing bodily imbalance, tension, broken symmetry, or bodily feelings of music, rhythm and dance. The experiences were very different for each of the participants, but everyone agreed that the “embodied root” of energy is found in our experience of Vitality, life force, the feeling of being awake, powerful, and alive.

Keywords: conceptual-blending, energy, emotion, community-development, transdisciplinarity

Workshop Session 2.2 · A210 · Workshop

Felting Atoms: Embodied Material Practices for Understanding Atomic Structure #154

Sidse Christiansen, Morten Christensen, Linda Ahrenkiel

Pædagoguddannelsen i Odense, UCL Erhvervsakademi, Odense, Denmark

This workshop presents a tactile, material-based, and embodied approach to chemistry education in which participants felt their own atom as a means of exploring scientific models of atomic structure. Through hands-on manipulation of wool fibres, participants work with the materiality, texture, and resistance of the material, gaining sensory access to how scientific models represent the internal organisation of matter. The slow, iterative process of felting makes visible how representations of atomic structure might be constructed, negotiated, and refined through practice rather than through abstraction.

Drawing on embodied perspectives, the workshop emphasises how sense-making may arise in the dynamic encounter between body, material, and phenomenon, consistent with Gallagher's enactive account in which understanding emerges through situated bodily engagement rather than detached internal representation (Gallagher, 2023). Dewey's pragmatist view further suggests that learning grows from inquiry-driven experimentation, where meaning is shaped through active transformation of materials rather than passive reception of information (Dewey, 1938). Research in chemistry education has shown how challenging it is for learners to coordinate macroscopic observations with highly abstract submicroscopic models - an effort that often exceeds their developing conceptual resources (Taber, 2013). In this light, the workshop explores the possibility that embodied, tactile engagement can support learners in navigating such conceptual complexity.

By working materially and sensorially with atomic models, participants will examine how tactile interaction might foster curiosity, connection, and deeper conceptual reflection—particularly in areas where traditional and canonical representational forms risk obscuring the structures they aim to explain.

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Keywords: materiality, chemical modelling, embodied learning, tactile interaction, arts

Keywords: materiality, chemical modelling, embodied learning

Embodied Playful Inquiry in STEAM: Designing Bodily and Sensory Science Investigations #120

Kathrine Møller

Bredagerskolen, Jelling, Denmark

Embodied Playful Inquiry in STEAM: Designing Bodily and Sensory Science Investigations

This workshop explores how embodied and playful approaches can support scientific inquiry in STEAM education. It builds on classroom practice and practice-based research that understands play not as a break from learning, but as a way of doing inquiry. The perspective is grounded in embodied and enactive theories of learning, where understanding develops through bodily action, sensory attention, and interaction with materials, space, and other learners.

In many science classrooms, inquiry is mainly organised through talk, text, and abstract models. In this workshop, we examine how inquiry can also be designed as bodily and sensory activity. Participants will take part in a series of short science investigation tasks where movement, spatial positioning, touch, rhythm, and sound are active elements in the inquiry process. For example, we will work with escape-room-inspired science scenarios in which music and atmosphere are deliberately used to influence attention, engagement, and meaning-making.

A central focus is that embodied inquiry activities are experienced differently by different learners. Therefore, the workshop introduces the idea of designing with different degrees of bodily participation. Participants will explore how the same investigation task can be offered with varied levels of physical and sensory involvement — from low-intensity participation to more physically active exploration — in order to support inclusion, comfort, and meaningful access for all students.

The workshop combines hands-on participation with guided reflection and didactic framing. Participants will leave with concrete design principles and adaptable formats for embodied, playful inquiry in science education that support curiosity, engagement, and deep learning.

Keywords: embodied, playful, steam, participation, practice-based

The Emotional and Embodied Experience of Caring for the World #6

Kamila Szyszka

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The widely discussed phenomenon of consumerism (Bauman, 2008) (also referred to as ‘consumer society’, ‘hyperconsumption’ etc.), is closely related to the discourse on social and environmental sustainability. Since consumerism is often presented as something destructive but inescapable, it seems worth highlighting actions which elude this orientation. Deconsumption, understood as at least a partial rejection of consumerism (Szyszka, 2024), is an umbrella-term encompassing such phenomena as: freeganism, zero waste movement, voluntary simplicity, and others. It might be seen as an event (*l'événement*) (Badiou, 2005) that escapes the dominant discourses of all-encompassing hyperconsumption, making it an important topic for post-critical pedagogy (Hodgson et. al., 2017).

This presentation aims at discussing the emotional and embodied experiences of deconsumers in their everyday actions oriented at caring for (or reducing the harm done to) human and non-human others.

Research into everyday practices of Polish deconsumers revealed an important role of embodied care (Hamington, 2004) in their daily activities. The presentation will consist of three parts. First, the concept of embodied care will be explicated, along with its three aspects: caring knowledge, caring imagination, and caring habits. Second, it will be shown how embodied care is documented in group discussions of Polish deconsumers. Third, the role of embodied care in the process of unlearning consumerism will be discussed. Overall, it is the author's intention to show that emotional and embodied aspects of human experience need to be taken into consideration when calling for social change towards sustainability.

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Keywords: embodied care, deconsumption, ethical consumption

Language learning as an approach for multisensory, embodied experience interconnecting body, breath, voice, and emotion #58

Cristina Polanco

Katholische Schule Liebfrauen, Berlin, Germany

This workshop introduces an embodied approach to teaching a foreign language, using Spanish as example, by integrating yoga-based practices with principles of conscious learning. It highlights the pedagogical and wellbeing potential of the voice, inviting participants to explore language learning through sensory awareness, movement, and emotional expression.

Designed for teachers and researchers interested in embodied pedagogy, mindfulness in education, and innovative methodologies in foreign language instruction, the workshop offers both practical tools and reflective perspectives.

Through a sequence of activities combining posture awareness (asana), breathing techniques (pranayama), movement, and vocal play, participants develop presence, vocal modulation, and communicative confidence. These multisensory practices also support cognitive processes such as attention, memory, and vocabulary retention. A simple proverb serves as accessible linguistic material that encourages experimentation with intonation, rhythm, and emotional nuance, even for beginners.

Participants will experience how small rituals – such as eye-contact greetings – synchronized breathing, and expressive gestures can strengthen group cohesion, enhance learner engagement, and foster

intrinsic motivation. The workshop aims to equip educators with concrete, adaptable strategies for creating joyful, inclusive, and sustainable learning environments.

The approach is inspired by a classroom project with twelve novice learners (ages 12-13) who had studied Spanish and draws on principles from the RYE (Recherche sur le Yoga dans l'Éducation) training program.

Proposed number of participants: 15

Keywords: teaching, mindfulness, yoga-based, vocal, embodied

Embodied Self-Awareness and Mindfulness Practices to Foster Well-Being and Inclusion in Primary Education #105

Chiara Gentilozzi, Paola Pela

Pegaso University, Napoli, Italy

The presentation illustrates the results of research conducted in two primary schools through activities grounded in a Mindfulness approach, aimed at exploring the potential of Self-Awareness Techniques for enhancing students' psychophysical well-being. Findings indicate individual benefits in emotional balance, attentional stability, and self-regulation, together with positive effects on classroom climate and inclusivity. The data suggest that embodied awareness practices may contribute to transforming educational environments, moving beyond students' adaptation to predefined norms and fostering more inclusive and responsive contexts.

Classroom interventions included body-based practices, breath awareness, and mindful movements proposed in playful and creative forms, along with moments of silence and active, deep listening. These activities were complemented by Heart Coherence practice, a breathing technique developed by the HeartMath Institute that modulates heart rate variability (HRV) to support emotional regulation, stress management, and cognitive performance. HRV-based biofeedback technology enabled students to observe shifts between chaotic and coherent heart rhythms, enhancing their metacognitive understanding of the relationship between emotions, bodily states, and learning.

Perceptual, emotional, and sensorimotor processes shape the way individuals relate to themselves and to the world, contributing to meaning-making. The body allows pupils to access significant emotions that become reinforcing inputs for learning. The study therefore aimed to document the individual benefits of the proposed activities while observing emerging effects on learning, group well-being, and the configuration of the educational environment.

This contribution offers theoretical grounding, empirical evidence, and practical indications on how cultivating awareness through embodied techniques can enrich contemporary pedagogical practice.

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Keywords: embodied cognition, mindfulness, inclusion, wellbeing

Teaching with Video Games through the Lens of Embodied Cognition: An Interdisciplinary Classroom Activity #113

Paolo Creati, Antonio Cuccaro

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Video games are embedded in students' cultural, perceptual, and social worlds and could be recontextualised as educational resources when teachers design explicit bridges toward disciplinary reasoning. This workshop proposal presents a planning model supporting teachers in transforming commercial video games into learning activators grounded in the framework of embodied cognition, which conceives knowledge as emerging from interactions between environmental perception, affordances, and goal-oriented action within socially situated contexts. Rather than treating games as texts to be described, the proposed approach conceptualises them as experiential systems that provide feedback, constraints, and situated problems, thereby enabling disciplinary conceptualisation across subject areas. The workshop invites participants to engage with video games as embodied and socially mediated learning environments that support exploration, collaboration, and meaning-making. The activity unfolds in four phases: (1) identification of a video game relevant to a specific classroom context, including its genre, core gameplay mechanics, and social dimension; (2) construction of an explicit disciplinary connection with one curricular subject; (3) design of a concrete student task involving exploration, narrative analysis, in-game construction, or reflective comparison with empirical evidence; and (4) a simplified assessment focused on disciplinary outcomes. Through this shared planning process, participants come to recognise video games as methodological entry points that could activate engagement, collaboration, and critical thinking while remaining aligned with curricular requirements. The workshop illustrates how an embodied perspective legitimises the transition from lived, socially situated game experience to formal academic reflection within interdisciplinary teaching practices.

Keywords: videogames, embodiment, interdisciplinarity, learning, engagement

Reticence [Blufærdighed] #170

Kirsten Hyldgaard

Danish School of Education (DPU), Aarhus University

[Abstract to be added]

Workshop Session 2.3 · A203 · Workshop

Individual Paper Session 2.4 · A200 · Paper

Individual Paper Session 2.5 · A201 · Paper

Two Overlooked Steps in Designing Learning Media #62

Jördis Rasch-Brückmann

CampusLab GmbH, Eberswalde, Germany

Drawing on fifteen years of professional experience in the field of distance learning, this presentation highlights a crucial insight from educational media production practice: two central steps in the design of learning materials are frequently overlooked. First, subject-matter didactics must pre-produce knowledge through text and imagery in a conceptually and pedagogically coherent way. Second, technology enhanced learning must translate this prepared content into suitable media formats that enable learners' bodies to engage with, navigate, and process information.

Successful learning design, therefore, is not merely a matter of selecting the right medium, but of coordinating content preparation and media implementation as two distinct yet interrelated steps: subject-matter knowledge is first structured into coherent, learnable units and then modelled as effective, accessible media elements.

For an effective distance learning, the specific media format should be well chosen. From an embodied learning perspective, the body plays a central role in perception, cognition, and meaning making. We introduce the concept of information spaces and illustrate how the human body navigates different media environments to retrieve and process information.

The presentation concludes by inviting discussion on how different media forms, understood as tools within specific information spaces, afford distinct advantages and limitations. By foregrounding embodied interaction, it argues for a more differentiated and reflective approach to media design in educational practice.

Keywords: learningbody, embodiededucation, educationalmediadesign, informationspaces, technologyenhancedlearning

The Human Orrery – a collective enquiry into the Solar System #124

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Astronomy is usually included in school curricula and generally popular with students. Still, many learners ignore key astronomical facts and hold misconceptions about the solar system. Traditional visual representations, such as those depicting planetary alignment, tend to perpetuate these misconceptions. The Human Orrery (HO) is an educational tool that provides an alternative approach to teaching and learning through embodiment and performative reflexivity. A two-dimensional map of the solar system is printed on a tarp or drawn on the ground at scale. Learners engage together, using their bodies to enact the movements of celestial bodies orbiting Earth. The HO set-up transforms learning into a communal experience where participants physically engage in dynamic acts of observation, performance and meaning-making under the flexible guidance of an instructor.

We examine an introductory session held in a French primary school with a class of 15 pupils aged 8-10. We use video recordings to perform a qualitative analysis of the interactions: how the young learners familiarize themselves with an unfamiliar learning space, how they construct and assign meanings together, while developing a new spirit of enquiry. We also examine how their bodies engage as they co-respond to prompts, interact collaboratively and solve problems together. The analysis is based on joint action theory in didactics. Results show that students first engage in whole-body participation, then gradually refine their movements into increasingly precise and schematized gestures. Both the combination of movements, gestures, and speech, and the semiotic processing of the printed signs, facilitate the conceptualization / schematization of astronomical concepts. At the end of this first session, the HO has clearly been identified as a shared semiotic space where communal forms of learning may take place, where individuals, using gestures, movements, and verbalizations, can work together to enquire about astronomical phenomena. New, embodied strategies for meaning-making can now be used dynamically by the classroom community to “do the planets” together and, as this happens, to further their collective understanding of the Solar System, and eventually facilitate the adoption of a scientific model.

Keywords: astronomy, inquiry, modelling, embodiment, semiotic

The embodied language of empathy: A 5E cognition approach to embodied foreign language teaching #71

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Within embodied education frameworks, learning is understood as emerging from dynamic interactions between body, action, and environment. Research within this framework has also drawn attention to affectivity and emotion as topics of relevance (Agostini & Francesconi, 2020). In this

context, empathy can be approached as an embodied and interactional phenomenon, enacted through language and social interaction (Herlin & Visapää, 2016). Discourse-oriented studies have further shown how empathic processes are interactionally and linguistically accomplished across diverse communicative settings (De La Cruz, 2025).

Building on this work, the present contribution adopts a 5E cognition perspective on foreign language teaching and learning. Extending 4E approaches, 5E cognition conceptualizes cognition as embodied, embedded, enactive, extended, and emotional, treating emotion as a constitutive dimension of meaning-making (Newen et al., 2018; Colombetti, 2014). From a 5E cognition lens, the paper examines empathy as a key emotional process through which embodied and interactional dimensions of foreign language learning can be understood. Empirical work further supports this view, conceptualizing empathy as an embodied and interbodily phenomenon that unfolds in ecologically situated interaction (Troncoso et al., 2023).

From this perspective, empathy-oriented language instruction is framed as an applied instance of 5E cognition, in which embodied participation and affective engagement shape learning processes. The paper explores how empathy can be understood in foreign language education as an embodied, emotional, and interactional phenomenon, bringing embodied education research into dialogue with the affective turn in second language pedagogy (Pavlenko, 2013).

Keywords: 5e cognition, empathy, language teaching

Individual Paper Session 2.6 · A212 · Paper

Music-Based Embodied Training for Teachers' Well-being in Europe: A Multiple Case Study #79

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This study investigates how artistic and somatic learning experiences support teachers' personal and professional development, with broader implications for inclusive and cohesive school communities. Designed on embodied, aesthetic and artistic educational perspectives, the research conceptualises the teacher's body as a central locus and instrument of experience, learning and relational awareness, through which and in which professional competences can be meaningfully developed. Adopting a multiple case study design, this study examines selected music-based embodied training initiatives developed and conducted in four European countries - Italy, Spain, Austria, and Romania - addressing both pre-service and in-service teachers. The cases are analyzed in relation to their educational aims, pedagogical approaches, and perceived effects on teachers' well-being and professional practice.

The findings highlight how embodied musical experiences can enhance teachers' self-awareness, emotional regulation, and sense of professional agency, while also fostering embodied experiences of attunement, attentive listening to others, and the shared pleasure of collective music-making. These dimensions are closely linked to the development of relational, communicative, and inclusive competences, which emerge as significant outcomes across different contexts. In this perspective,

music functions as an embodied mediator that supports reflective practice, fosters connection, and enables teachers to engage more responsively with diversity and complexity in educational settings.

By identifying shared patterns and context-specific features across diverse European contexts, this study contributes to current debates on Embodied Education, suggesting that music-based embodied approaches represent a valuable resource for promoting teachers' well-being, while generating longer-term effects on inclusion and social cohesion within educational communities.

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Keywords: music, experiences, teachers, wellbeing, europe

The musical meaning of bodywork in dementia care #99

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In this study I explore the meaning of the body when performing Person Attuned Musical Interactions (PAMI) in dementia care. Musical interactions, centered on the personal preferences of the person with dementia can support the health care professional in performing care activities in an attuned and meaningful way. The PAMI training manual is developed by music therapists and offers material to support health care professionals in using gestures, musical expressions and non-verbal signals in mutual communication with persons living with severe dementia in nursing homes. To give and receive care is in this context understood as bodily activities in which musical concepts such as tempo, timing and dialog are essential. The PAMI-manual contains exercises and role play involving music and body to create an embodied platform for learning how to apply musical interactions in dementia care. By examining lived-experience descriptions unfolding bodily care work and written by health care professionals, I conclude that the bodily interactions can be described as highly musical and contains communicative prompts that can create experiences of inter-connectedness and reciprocity between the health care professional and the person with dementia. These experiences can have a positive influence on the experience of both giving and receiving care. The findings are discussed in the framework of arts-based research and transformative learning.

Keywords: dementia care, body work, music

Kinesthetic Belonging: Embodied Inclusion in an Argentine Tango Social Dance Community #134

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This presentation examines embodied education as it unfolds within an Argentine tango social dance community in the United States, positioning the practice as a site of enculturated relational exchange. Drawing on ethnographic observation and embodied participation, I argue that belonging emerges as a tactile-kinesthetic achievement generated through shared movement vocabularies and improvisational attunement. In this social setting, dancers integrate bodies and environment to develop a kinetic conversation. Knowledge circulates through subtle shifts of weight, pressure, timing, and breath; dancers come to recognize one another through bodily responsiveness rather than verbal instruction. Expertise is not fixed but negotiated in relation, complicating distinctions between the role of leader and follower in a partnership. Embodied learning here appears as a co-creative process shaped by cultural memory, convention, affectivity, and shared aesthetics. This tango community offers insight into inclusion. While the dance floor can generate powerful experiences of collective “we-ness,” access to belonging is mediated by tacit norms and expectations. Participation requires navigating implicit and explicit codes while remaining responsive to difference. Situating the social dance of Argentine Tango as an adaptive learning site, this presentation invites consideration on how tactile-kinesthetic engagement and collective attunement might inform responsive pedagogical practice.

Keywords: belonging, enactive, relational, embodied

Parallel Session 3 · Tuesday June 9th · 10:45 – 12:15

Individual Paper Session 3.1 · A210 · Paper

Professional Ethos as an Embodied and Pathic Play of Differences #64

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During internship, pedagogy students' education is very much an "embodied education in a social world." Taking as a starting point the phenomenological analysis of the handshake (Brinkmann, 2020) as an expression of the way we are given in the world in relation to others and others are given in relation to us—thus highlighting the expressive and pathic nature of this givenness (Plessner, 2003)—I analyse the eccentric structure of pedagogy students' professional Bildung, understood as an intercorporeal play of differences that reflects the negative and irreducible structure of (the self-other) experience (Brinkmann & Rödel, 2018; Plessner, 1975): How students gain a sense of themselves in relation to others, and a sense of others in relation to themselves.

Since becoming aware of oneself depends on a difference between self and other, this difference cannot itself be eliminated. Consequently, professional Bildung is an open and inconclusive process, which makes it impossible to identify, from a third-person perspective, a single 'right' way of standing. However, it is precisely this openness that grants the possibility of taking an actual existential professional stand (cf. ethos).

On this basis, I contribute to the discussion of professional ethos in pedagogy (Barth & Wiehl, 2025), arguing that this existential dimension is grounded in our embodied and pathic way of being (different) in relation to others (Agostini, 2025; Nielsen, 2025). By contrast, an intellectual stand does not always reflect how we actually stand in relation to others—and this is what ultimately matters in pedagogical practice.

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Keywords: professional ethos, embodiment, pathos, eccentricity

From Sensation to Sense-Making: A Micro-Phenomenological Approach of Embodied Learning in Young Adults #70

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While the pedagogical efficacy of embodied learning is increasingly well-documented, the granular, subjective mechanisms of how the moving body constitutes thought remain largely a "black box." This study reports on a qualitative study exploring the lived experience of young adults (ages 18–25) engaging in embodied problem-solving tasks. Adopting the methodological framework of Micro-phenomenology, this research moves beyond participants' beliefs about their learning to access the pre-reflective dimension of the learning moment itself.

Through in-depth elicitation interviews, the study guided participants to enter a state of "evocation," allowing for the retrieval of fine-grained descriptive data regarding their internal attentional and sensory gestures. The analysis reveals the diachronic structure of the learning experience, mapping the precise temporal micro-sequences where kinesthetic tension and physical manipulation transmute into cognitive insight. Specifically, we examine how "felt meaning" often precedes linguistic articulation, and how young adults deploy specific attentional acts to navigate physical constraints.

The findings challenge the Cartesian divide often lingering in educational assessment, demonstrating that for young adults, "figuring it out" is fundamentally a choreographic act of the mind-body. Attendees will gain insight into the specific interview protocols of micro-phenomenology and explore how these micro-findings can inform the macro-design of higher education curricula, ensuring that embodied activities align with the actual phenomenological rhythms of the learner.

Keywords: micro-phenomenology, embodied, learning, elicitation, experience

The Somatic Core of Ideation: Foundations of the "Sensing Space Method" #74

Veronika Mayerboeck

ALLES oder Licht :: Design. Education. Research., Vienna, Austria

This presentation introduces the idea of a “somatic core” of ideation as foundational framework for design pedagogy and education. It positions bodily experience as a central generative source of spatial imagination and ideation, challenging predominantly cognitive approaches to creative processes. Drawing from somaesthetics (Shusterman, 2008), embodied cognition (Varela et al., 1991; Lakoff & Johnson, 1999), and movement pedagogy, I argue for cultivating an “ecology of the senses” to develop an integral understanding of spatial relationships, material qualities, and atmospheric conditions where the body becomes an informative feed during different stages of the design process.

I will introduce the “Sensing Space” method which fosters ideation through perceptive resonance and kinaesthetic awareness. It was successfully tested in multiple design workshops across Europe during the last ten years and combines experiential and movement-based approaches rooted in dance pedagogy, contact improvisation, authentic movement, and somatic awareness work. The method is designed to unravel and integrate the somatic layers of ideation processes and supports multisensorial attunement between body, materials and environment. These body-centred practices are embedded within Kolb’s experiential learning theory (1984) - rooted in Dewey, Piaget, and Lewin - which guides learners through structured cycles of concrete experience, reflective observation, abstract conceptualization, and active experimentation. Relational pedagogy emphasizing respect, empathy, and trust, based on Wenger’s communities of practice (1998), form additional theoretical foundations.

This presentation offers both theoretical grounding and pedagogical implications for educators seeking to activate somatic dimensions of creative thinking not only in spatial design disciplines but across diverse educational contexts.

Keywords: design, embodiment, spatial cognition, somaesthetics

Individual Paper Session 3.2 · A214 · Paper

Learning Through the Body: Inclusive Music Education Practices in Italian Middle School #73

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Embodied education recognizes the body as central to learning and meaning-making, integrating cognitive, emotional, sensory, and social dimensions. Theoretical principles from Dewey (1938), Merleau-Ponty (1945), and Washburn (1916) highlight the interconnection between body, mind, and social context, while contemporary research demonstrates how embodied learning can promote inclusion, equity, and participation for students with disabilities or special educational needs (Sheets-Johnstone, 2011; Gallagher, 2017).

This paper presents two teaching experiences conducted in Italian public second-grade middle school classes (12 y.o.), where students with special educational needs (BES/NES) are integrated into regular

classrooms in accordance with Italian inclusive education policies. Support was provided by classroom teachers, special education teachers, and OEPAC (Educational Operator for Autonomy and Communication) operators to ensure full participation and individualized support.

The first experience involved a class including a student with low vision and a student with Attention Deficit Hyperactivity Disorder (ADHD). The activity was a body percussion project exploring three historical periods and musical genres. Students engaged in reading corporeal scores, creating original rhythmic sequences, and performing in public. This approach fostered inclusion, valuing each student's sensory and creative potentials, and promoting collaboration and shared attention (Lynch, 2020).

The second experience involved a class with two students on the autism spectrum, working on the interpretation of a pop song through body movement and percussion. The activity emphasized co-regulation, rhythmic structuring, and creative expression, allowing students to participate fully, develop social and communicative skills, and experience a supportive and inclusive musical environment (Heaton, 2009; Bresler, 2004).

Both experiences confirm that embodied learning not only enhances musical and bodily skills but also serves as a powerful tool for promoting inclusion, equity, and recognition of diversity. Embodied approaches transform the educational context, engaging multiple bodies, perceptions, and learning modalities, moving beyond mere adaptation of students to contexts toward co-constructing inclusive learning environments through shared experience.

Keywords: education, music, dance, inclusion

Outdoor Multisensory Installations and Musical, Artistic, and Bodily Affordances for Early Childhood Education #118

Lucio Martínez-Álvarez, Alicia Peñalba-Acitores, Pablo Coca-Jiménez

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This study examines the affordances (Gibson, 1979) that multisensory installations in school playgrounds can activate in children's play, with the aim of understanding their potential to address learning processes in Early Childhood Education in a holistic manner. The study draws on the functional taxonomy of play environments proposed by Heft (1988) and on the framework of musical affordances developed by Cheng et al. (2024), which distinguishes five dimensions: cognitive, educational, mental, affective, and social.

The analysis focuses on fourteen installation projects designed, built, and implemented over four academic years by prospective Early Childhood Education teachers, using a Project-Based Learning methodology. The installations were conceived for school playgrounds, integrating musical, artistic, and bodily domains. They were implemented with children, which made it possible to evaluate them, document their use, and develop pedagogical mediation and dissemination tools.

Three key areas have been identified in which the educational potential of multisensory installations becomes evident. The first, associated with types of installation, shows that shelters and symbolic-play spaces are primarily linked to social and affective affordances, whereas others, such as action-oriented

areas and sensory panels, are mainly related to cognitive and mental affordances. The second key area indicates that the affordances of the materials studied can be expanded and enriched through individual experimentation, peer learning, and teacher guidance. The third key area, holistic in nature, examines the extent to which musical, artistic, and bodily dimensions feed back into and reinforce one another during experimentation.

Keywords: affordance, multisensory intalations, earlychildhood education

Embodied Education and Adolescent Identity Development: A Performing Arts-Based Educational Project for Early Secondary School Students #4

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In most Italian schools, students aged 11–14 spend most of their day sitting still, despite being in a developmental phase characterised by profound bodily, social, and identity transformations (Kuzik et al., 2022). During this period, body shaming, sedentary lifestyles, and social media dynamics often reduce the body to an object of evaluation rather than a source of experience and knowledge (Fredrickson & Roberts, 1997; Holland & Tiggemann, 2016).

Within this context, embodied education offers a relevant pedagogical framework for rethinking the role of the body in schooling, grounded in perspectives on embodied cognition and social interaction (Gallese, 2009; Shapiro, 2019). Adolescence represents a particularly sensitive phase for social and identity development (Blakemore & Mills, 2014). Performing arts practices, particularly dance and theatre, can support this process. Dance enables students to engage with the body as an active source of expression, emotion, and relational experience rather than merely an object of observation or evaluation (Sheets-Johnstone, 2011). Theatre fosters empathy, non-verbal communication, and cooperation through improvisational practices, in continuity with Freirean and Boalian pedagogy (Tolomelli, 2011). In both cases, the focus lies on embodied experience rather than performance outcomes.

This framework informs Body and Identity in Growth, an educational project for students aged 11–14 developed through practicum experience with CorpoGiochi ASD. The project is designed to be adaptable to different educational contexts. A central role is assigned to the pedagogist as coordinator and ethical supervisor of the process (Gamelli, 2012; Tramma, 2018).

Embodied education is thus proposed not as an optional methodology, but as a pedagogical approach to support adolescents' identity development and relational wellbeing.

Keywords: embodied education, preadolescence, performing arts

Cortical dynamics of abstract vs embodied arithmetic: EEG signatures of object manipulation and time pressure in Grade 3 #90

Alfonso García-Monge, José María Marbán, Ana Escudero-Montero, Iván Martín-Colomo

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Mathematical thinking is an in-the-world activity that unfolds through perception–action coordination with symbols, tools, and task constraints. We tested whether solving additions with Arabic numerals (“abstract” arithmetic) engages different cortical dynamics than solving the same additions while manipulating small objects (“embodied” arithmetic), and how time pressure modulates these dynamics. Fifteen third-grade children completed a 2×2 within-subject design (Arabic vs. objects; untimed vs. one-minute timed). Thirty-two-channel EEG was preprocessed and power spectral density was estimated with Welch’s method (2-s windows, 50% overlap) for each channel and child. We summarized band-limited power and derived an engagement index ($\beta/(\alpha+\theta)$) as well as Sample and Shannon entropy.

Grand-average spectra were largely overlapping, but condition effects were spatially specific. Delta differences were small and mainly peripheral. Compared with Arabic-only trials, object-based arithmetic showed higher posterior/temporo-occipital theta and higher low/high beta over parieto-occipital and temporo-parietal sites (notably around P7/P8 and T7/T8–TP9/TP10). Engagement was highest over posterior–temporal electrodes and increased in object-based conditions, particularly under time pressure. Timed trials also showed a subtle reduction of posterior alpha with a more lateral/anterior redistribution, most evident when objects were used under time pressure. Sample entropy was higher over posterior and temporal electrodes during object-based trials, whereas Shannon entropy largely overlapped across conditions.

Overall, manipulating materials—especially when speeded—was associated with stronger visuomotor coupling and executive control demands than purely symbolic calculation, underscoring how classroom choices about materials and “speed” can reorganize the neurophysiological dynamics of arithmetic.

The results and publication are part of the action Research Project PID2022-138325OB-I00, financed by MICIU/AEI/10.13039/501100011033 and by FEDER, EU

Keywords: embodied mathematics, symbolic/object-based addition

Why Confidence Matters More Than Enjoyment: Evidence from TIMSS 2023 Using Interpretable Machine Learning #20

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Research in embodied and situated approaches to education emphasizes that learning is shaped by learners’ emotional engagement and by the contexts in which educational experiences unfold. Yet large-scale international assessments are rarely examined through such perspectives, particularly in early science education. This study investigates how selected affective and motivational factors relate to science achievement among Grade 4 students, and how these relationships vary across national

contexts.

Using TIMSS 2023 data from the United Arab Emirates ($n = 34,842$) and Singapore ($n = 6,530$), four affective–motivational variables available in TIMSS—students’ confidence in science, digital self-efficacy, enjoyment of learning science, and environmental values—were examined as predictors of science achievement. Five plausible values were modeled separately in accordance with TIMSS guidelines. A comparative machine learning framework was employed, including linear regression, LASSO, decision trees, random forests, and neural networks. Propensity score matching enhanced cross-national comparability, and explainable machine learning techniques (SHAP) supported interpretation of predictor importance and interaction patterns.

Random forest models showed the strongest predictive performance, though explained variance remained modest ($R^2 \approx 0.14$ – 0.15). Across both countries, confidence in science emerged as the most influential predictor, followed by digital self-efficacy and enjoyment of science, with environmental values playing a smaller role. Despite balancing affective characteristics, substantial achievement differences persisted, suggesting that student motivation operates within broader systemic and institutional conditions. Context-specific patterns were observed, including non-linear associations between enjoyment and achievement among highly motivated students in the UAE.

While TIMSS does not measure embodied learning directly, the findings suggest that affective factors—shaped through learners’ ongoing, situated interactions with educational environments—are meaningfully related to early science achievement. From an embodied education perspective, these results underscore the importance of supporting confidence-building, emotionally engaging learning environments in early science education.

Keywords: science achievement, affective-motivational factors

Becoming the Catalyst: Virtual Embodiment, Interaction, and Gaze in Enactive Learning of Biochemical Mechanisms #97

Prajakt Pande, Biljana Mojsoska, Morten Erik Moeller

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Immersive virtual reality (VR) affords novel sensorimotor experiences that can support embodied learning of complex STEM content requiring spatial and dynamic reasoning. However, our understanding of how to harness VR’s unique affordances to systematically implement embodied learning design principles, and how specific principles and interaction behaviors mediate learning outcomes, is still evolving. We (1) present the design and development of ANONYMIZED, a VR environment conceptualized to foster embodied and enactive learning of complex organic chemistry mechanisms in enzymatic catalysis, (2) advance methodological approaches by integrating embodied interaction data logging and eye-tracking in VR, and (3) study how learners’ interaction behavior, gaze patterns, and sense of embodiment in VR relate to their conceptual understanding of organic chemical reaction mechanisms.

Keywords: vr, embodied learning, science education

The role of the body in educational contexts. Investigate professional gestures in relation to intentionality and underlying knowledge #26

Alessia Tabacchi

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Experience is the result of embodied sensorimotor and cognitive structures (Rizzolati & Sinigaglia, 2008), which generate meaning through interaction with constantly changing living environments (Gibson, 1979).

Educational research has long investigated knowledge and the role of language in education (Pati, 1984; Cadei, 2017). However, the field of corporeality and professional gestures, inextricably linked to embodiment (Gallagher, 2018), has received less attention (Gamelli, 2005; Alin, 2010; Cadei & Ramsamy-Pratt, 2018).

This paper presents a research-action approach, based on Paul's (2004) concept of 'accompagnement', to support professionals in analysing their practices (Paul, 2022; Clot & Béguin, 2004). Starting with the observation of professional gestures (Jorro, 1998, 2016; Postic & De Ketele, 1988; Butson & Thomson, 2011), this approach considers the interplay between embodiment and education.

The study involved an educational team working in a semi-residential service for adolescents, and aimed to foster reflexivity (Dewey, 1933) by exploring the implicit meanings embedded in professional gestures. Through reflecting on their actions and their effects on others and the wider context, the educators developed an awareness of their posture (Mulin, 2014; Lamuel, 2016; Gamelli, 2016) and their practices. Team consultations enabled the community of practice to analyse its shared repertoire (Wenger, 1998), in relation to the children's needs.

This reflective process supports in-service training by examining professional gestures (Tabacchi, 2023) and promotes ongoing reflection on action (Schön, 1983). The ultimate goal is to transform educational practices and foreground the emancipation of those involved (Biesta, 2022).

Keywords: embodiment, education, reflexivity, gestures, posture

Sensing Power – Somatic Approaches to Educational Relations #40

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This workshop explores how power relations in educational contexts are produced, stabilized, and potentially transformed through bodies and spatial arrangements. Drawing on embodied, enactive, and affective approaches, as well as critical pedagogy and visual art, theoretical input is kept deliberately minimal and functions primarily as an impulse for practice.

Rather than approaching power as a predominantly discursive or cognitive phenomenon, the workshop

foregrounds its somatic and spatial dimensions: how normativity, discipline, inclusion, and exclusion are sensed, negotiated, and enacted through posture, movement, spatial configurations, sensory atmospheres, and material arrangements. Attention is directed toward how educational spaces choreograph bodies and affects, and how these choreographies are continuously reproduced, disrupted, or reworked.

The workshop centers on a collective, practice-based exploration. Short somatic and perceptual exercises support participants in attuning to embodied knowledge, memory, and affect. The core of the session is a group-based embodied mapping practice that works with everyday objects to trace how norms, exclusions, and hierarchies circulate across bodies, spaces, and materials—rendering implicit power relations perceptible at a bodily level.

Keywords: embodied-mapping, normativity, power, space, affect

Workshop Session 3.5 · A201 · Workshop

Self-Awareness Workshops at school for wellbeing and inclusion: a Mindfulness approach #106

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Mindfulness-based self-awareness techniques are practices that act simultaneously on all dimensions of the human being (Siegel, 2007), promoting the synergistic interaction of body, mind and emotions with the environment. In this sense, they align with the holistic perspective of Embodied Cognitive Science (ECS), which highlights the basic mechanisms of learning, taking into account the overall functioning of the person in relation to the context and from an inclusive perspective (Damiani & Gomez Paloma, 2020). Used as educational practices, Self-Awareness Techniques can therefore accompany pupils in their emotional maturation and contribute to the construction of knowledge. By reducing work-related stress, they can help teachers to have greater serenity and confidence in promoting a positive classroom atmosphere, an indispensable condition on which all educational activity is based (Bollnow, 1989). Based on these premises, we offer a workshop on self-awareness techniques that combines playful and creative activities with moments of silence and active listening. It includes an introductory circle time, conscious movement and body scan exercises, interactive moments, conscious breathing, and concluding feedback from participants. The choice of practices draws on an experimental design and scientific literature on mindfulness (Kabat-Zinn, 2016; Shapiro et al., 2006). The proposed approach aims to highlight how the psychological and physical well-being of individuals influences the group atmosphere, making it more peaceful, reassuring and inclusive (Jennings, 2015), considering the educational atmosphere fundamental to learning and the quality of life of pupils and teachers.

Keywords: embodiededucation, mindfulness, inclusion, atmosphere, wellbeing

Embodied Complementarity #150

Anja Lyberth Anderskov

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This workshop invites participants into an embodied exploration of complementarity as a movement between emerging experience and relational worlds.

The body is approached as the first place where the world reveals itself – the place where meaning begins to take shape. Inspired by Niels Bohr's principle of complementarity and Carlo Rovelli's relational interpretation of reality, perception is understood not as a representation of the world, but as participation in its ongoing becoming.

Two experiential anchors structure the session.

The *Spinning Dancer* illustrates complementarity at the micro-level of embodied orientation, showing how perception changes as attention shifts. Participants experience how mutually exclusive perspectives can coexist as valid yet incomplete ways of seeing.

The visualization *Microfauna in a Termite Gut* opens a relational macro-perspective and invites participants to sense complexity as something that emerges through interaction rather than something that can be fully controlled or mastered.

Through sensory exercises, movement explorations, and dialogical reflection, participants investigate the double dynamic between experience and judgment – between what Ole Fogh Kirkeby describes as the *event of the moment* and the *moment of the event*.

The workshop explores how the difficulty of experiencing and judging simultaneously may itself be understood as a creative and generative movement, in which perception and knowing continuously shape one another.

Rather than presenting complementarity as an abstract theory, the workshop offers a lived experience of perceptual flexibility as an aesthetic, ethical, and pedagogical possibility.

Participants leave with an embodied and reflective point of departure for working with professional judgment, attention, complexity, and the limitations of knowledge as openings for new forms of educational becoming.

Keywords: embodiment, perception, complementarity, relationality, pedagogy

Parallel Session 4 · Tuesday June 9th · 13:15 – 14:45

Workshop Session 4.1 · A201 · Workshop

Creative thinking and bilingualism through the lens of 4E cognition #89

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Creativity has been extensively explored within the 4P paradigm, with particular attention to the internal creative process and the creative product (Videla, Veloz, & Pino, 2023). Videla et al. (ibid) propose viewing creativity through the more contemporary mind-body-environment framework of 4E cognition. They argue that creativity, from the 4E approach, should be considered a “skilful experience embedded in context and arising from the distributed engagement of perception” (Videla, Veloz, & Pino, 2023, p. 2). In their view, creativity is more about thinking through doing than about the creative process or product. In essence, the 4E cognition framework offers a bridge between the 4- or 6P framework in the field of creativity. This connection could also provide theoretical models better suited to understanding educational creativity in formal and informal settings (Malinin, 2019). In my research, learner poems and scriptwriting are tools used by bilingual students to express their creative thinking processes. Using poetic forms to unpack issues related to identity, emotions, and hidden or repressed perspectives is challenging but a robust way of observing students’ creative thinking in action. Student-participants also performed their creative tasks aloud to heighten their aesthetic experiences, adding various layers of meaning to their pieces where possible and encapsulating their journey of bilingualism. The artefacts produced by the student participants in this study may become significant tools for understanding their experiences with creativity in bilingual settings.

Keywords: creative thinking, 4e cognition, bilingualism

Sensing Space: A Practical Workshop for Cultivating an Ecology of the Senses in Design Education #75

Veronika Mayerboeck

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Drawing from somaesthetics (Shusterman, 2008), embodied cognition (Varela et al., 1991; Gallagher, 2005), and neuroarchitecture (Mallgrave, 2013; Eberhard, 2009), the Sensing Space Methodology challenges predominantly cognitive approaches to creative processes by cultivating an ecology of the senses. It builds on the idea that design education must integrate cognitive, affective, and psychomotor dimensions (Bloom et al., 1956)—not as separate competencies, but as interdependent skills emerging through somatic awareness. A further component is social interaction: mirroring, being seen, and the intersubjective sharing of embodied exploration (Fuchs & De Jaegher, 2009) forms the crucial fabric through which learning unfolds and design sensibilities develop.

The workshop moves through three condensed phases. Opening with kinevisual practice, participants

engage in fluid movement and swarm-like group dynamics that reveal shifting affordances (Gibson, 1979) and deepen attunement to others and the built environment. This transitions into enactive observation (Varela et al., 1991) through body-scale spatial exploration and touch-based communication exercises that cultivate empathy and heightened sensory awareness. The workshop culminates in rapid collaborative design where small groups co-create spatial interventions—from body-conscious design to playful multisensory installations with “somatic surprises”—demonstrating the direct pathway from bodily knowledge to creative output.

Originally designed for coursework across European architecture and lighting design programs, the method consistently produces diverse design outcomes, with students entering states of intrinsic creative engagement throughout co-creational processes.

Participants are invited into practices of enactive observation, heightened somatic awareness, and reflective engagement with spatial parameters. They leave with adaptable exercises for their own contexts, having experienced how the somatic core of ideation transforms spatial practice.

Keywords: ideation-creativity, spatial-attunement, 4e-cognition, multisensory learning

Workshop Session 4.2 · A203 · Workshop

11, 10, 1, go! Learning binary numbers through embodied play #121

Surya Pasupuleti, Amalie Eich-Høy

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The workshop explores how embodied playful learning can facilitate learning abstract computational and mathematical concepts, specifically binary (base-2) numbers in elementary education^{1,2}. Together, we will discover how designing and playing outdoor games transform binary digits from disembodied symbols into engaging, sensorimotor experiences.

The workshop exemplifies the research design of an ongoing research project, where students aged 8–10 worked in small groups to create outdoor playground games. The games focused on converting numbers between binary (base-2) and decimal (base-10), using only readily available materials—chalk, stones, and balls. Student creations ranged from adaptations of familiar playground activities (ex: tag, hopscotch) to entirely novel inventions.

The adapted workshop invites participants into this learning process: after a brief orientation on binary numbers, attendees will collaboratively and iteratively design and play their own physical games that embody binary operations. Following the activity, participants are invited to reflect on and discuss the role of gestures, bodily movement, and physical artifacts as anchors for abstract concepts.

Through inviting active participation from educators and researchers we hope to demonstrate how embodied playful learning fosters engagement and meaningful learning even with low resources and under strict time constraints. In this, we seek to challenge the assumption of play as too time and resource consuming which leads to play becoming disfavored in primary education classrooms³. We

hope this workshop provides an example for integrating embodiment and play into diverse educational settings and leveraging their effects on engaging students as co-creators of knowledge and learning4.

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Keywords: embodied cognition, playful learning, ct

Embodied History Education: A PRISMA-Based Analysis of Classroom Practice #136

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Studies have highlighted how movement can be integrated into teaching (Vazou et al., 2020). Often, these studies employ methods that focus either on observing the intensity and timing of physical activity or on outcomes, such as measures of well-being or academic performance (Jeppesen et al., 2025). However, these studies do not emphasize the significance of the students' bodily interactions. The theory of enactive cognition can contribute to the field by offering insights into how sensorimotor, social, and affective experiences can promote cognitive processes (Madsen et al., 2020). This perspective, however, requires a methodological focus on students' bodily and interactive actions. Through video observation and participant observation (with varying degrees of participation), we follow the history teaching of an upper secondary education (HF) class over the course of one year. We explore how students interact and engage in history teachings, and our empirical analysis have been inspired by the PRISMA method (De Jaegher et al, 2017), which is a systematic method for investigating the embodied dimensions of interacting based on an embodied methodology and concepts.

In this workshop, participants are introduced to the PRISMA method through firsthand experience, exploring how researchers use themselves both as research instruments and as subjects of inquiry within a systematic protocol for investigating interaction. We then present our preliminary PRISMA-based analysis of bodily interactions in history teaching classes which highlights the importance of pedagogical factors such as performative bodily expressions and actions, and changes in temporality and place.

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Keywords: prisma, interaction analysis, embodied education

Workshop Session 4.3 · A210 · Workshop

Embodied Trust and Development: Experiencing Social Presence through Educational Drama #81

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This workshop critically explores embodied approaches as powerful means of fostering trust, collaboration, and personal development within diverse educational and social contexts. Drawing on established conventions of the performing arts, Augusto Boal's Theatre of the Oppressed, and Educational Drama, participants will actively engage in experiential exercises that foreground bodily awareness, social interaction, and collective presence.

Through a sequence of movement-based activities, mirroring, and enactment techniques, participants will examine how embodiment can illuminate implicit social dynamics, cultivate mutual trust, and generate a shared sense of responsibility. A brief, structured reflection phase will link participants' practical experiences with theoretical perspectives, emphasising the transformative potential of embodied pedagogies to support inclusive, participatory, and socially responsive learning environments.

By positioning the body as both instrument and medium of learning, the workshop highlights the centrality of embodiment in promoting self-awareness, empathy, and nuanced interpersonal attunement. Participants will experience firsthand how Educational Drama and Boal-inspired participatory techniques can challenge hierarchical dynamics, amplify voice and agency, and enable participants to safely inhabit and explore alternative perspectives.

The session offers a hands-on, theory-informed space for exploring the intersections of embodiment, relational trust, and collaborative learning. It demonstrates how performative, participatory, and reflective practices cultivate embodied understanding, foster inclusive engagement, and develop both personal and collective capacities for interaction, cooperation, and relational growth.

Keywords: embodiment, educational drama, performative pedagogy

Gesturing towards Hope: an interactive, embodied, relational journey of growing hope from the living terrain of our suffering hearts #17

Danielle Denichaud

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Aspirations of hope in education face complex individual, social and environmental issues of systemic suffering and 'wicked' problems. At the same time, sophisticated emancipatory insights have been developed in the broad fields of individual wellbeing, relational harmony and environmental ethics. Considering the concomitant presence of informed responsive action alongside a worsening of holistic disease prevalence, one of the barriers to experiences of living (vs naïve) hope and enduring relief must be a methodological gap for integrating salient insights from therapeutic contexts into educational spaces.

Developed from 15 years of clinical health consultation, 10 years of inter-arts community building and 8 years of eco-somatic peace education, Gesturing towards Hope welcomes participants into an embodied conversation of possibility. Accepting that words are limited and often corrupted by diffuse contexts of use, this workshop explores a process of embodying twelve themes common to the domains of individual, social and environmental wellbeing through intuitive and co-created gestures.

Participants will be guided through a subjective journey and collective pondering on how each theme resides within the living terrain of their heart-mind-body-spirit complex. The invitation is to deepen conscious presence with salient concepts from sciences of wellbeing, peace and systems regeneration through an embodied lingering with words long enough to feel them as generative creative places. Together we will learn if intentional intuitive embodiment can meaningfully impact our relationship with words by transforming them from ephemeral concepts to living relational spaces for hope-inspired action.

Keywords: embodied-play, wellbeing, peace, ecosomatics, community-building

Bodily Expression in Educational Contexts: Meaningful Learning Through Body Expression: Perspectives from the Alexander Technique and the Dalcroze Method #51

Federica Felici

I.C. LE CURE, Florence, Italy

Bodily expression involves freedom of movement, breathing, connection, presence, awareness, creativity...

The workshop aims to introduce participants to a basic understanding of the Alexander Technique and the Dalcroze Method and to illustrate its many applications in both education and performance through activities of perception, observation, and careful self-listening, as well as resonance with others through movement.

The Alexander Technique is a process of psychophysical re-education, based on the observation and awareness of one's postural, mental, and emotional habits. The touch of the teacher's hands encourages the student to release unwanted tensions; this process leads to a natural alignment and awareness of a more coordinated and connected use of the self.

In Dalcroze Rhythmics, sound and music are the privileged means that allow us to perceive, internalize, and translate the response to sound stimuli through the body and movement. Balanced among space, time, and energy, the body is a precious means of living and representing expressive and structural aspects of musical language.

Both Methods lead to greater freedom and fluidity of movement and breathing, better organization and awareness of one's being.

This process of change is particularly effective for all those engaged in the area of artistic or educational communication.

Keywords: freedom, movement, awareness, resonance

Workshop Session 4.4 · A212 · Workshop

Individual Paper Session 4.5 · A200 · Paper

Embodied education as routine-based activities or undergoings? #77

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In recent years, Danish teacher education has implemented several embodied educational concepts, including the Playful Learning project funded by LEGO. In this study, we investigate how embodied activities can become more than merely instrumentalised or routine-based practices and instead take the form of undergoings.

To explore these emerging insights, four interventions were conducted in the course Educational Psychology under the theme of empathy, involving 91 student teachers. The interventions followed an action research framework (Lewin, 1946) and aimed to support a shift from a self-oriented to an other-oriented perspective on pupils (Coplan, 2011). A pedagogical design inspired by tableau vivant invited the students to imitate positions and relations from a filmed classroom sequence. The

intervention was documented using the qualitative research method snaplog (Bramming et al., 2009), in which students captured photographs during the activity; these images were later used to expand and nuance the researchers' field notes.

The study is theoretically grounded in Dewey's understanding of experience, in which activity becomes undergoing when the change made by action is reflected back into the change made in us. (Dewey, 2007, p. 104). Additionally, the study draws on Casey's perspective on place as perception, understood as an affair of the whole body sensing and moving (Casey, 2009, p. 321).

The findings indicate plural forms of transactions in which insights into pupils' perspectives emerge from the complex transaction between bodies, place, and event - in this study, the filmed classroom sequence-the tableau vivant activity-the student teachers themselves.

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Keywords: undergoing, transactions, place-as-perception, other-oriented-perspective, tableau-vivant

Embodied learning – a contested concept in education #85

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The concept of embodied learning appears with different meanings in theories and studies based in e.g. phenomenology, enactivism, process philosophy, cognitive studies and neuroscience, for example 'embodied cognition' is sometimes referred to as 'embodied learning' (e.g. Skulmowski & Rey, 2018). This contributes to unclarity in relation to the subject matter of studies and practices, of underlying philosophical values and of how to facilitate 'embodied' processes. This presentation will provide an overview of different terms and concepts found in the literature and discuss where in the landscape of research traditions, the variations are based. It will also provide examples of pedagogies which lean on the concepts of embodiment and embodied learning as well as articulate how these practices are based on different philosophical origins. The presentation thus aims to contribute to a more explicit understanding of the 'what' and the 'how' of embodied learning, including which pedagogies might be used for which purposes. It further seeks to draw up possible steps of further exploring the conceptual

grounds of embodied learning and what potentials embodied approaches can have in the field of education.

Keywords: embodiment, embodied learning, cognition, pedagogy

Embodied Metaphors in Chemistry: How Experts Explain Imperceptible Concepts #94

Charlotte Müller, Martina Rau

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Philosophers of science theorized that metaphors constitute a crucial aspect of theory building (Hesse, 1965; Mahootian, 2015). Therefore, these metaphors remain in expert discourse, such as in nomenclature and terminology, but also gesture (Hesse, 1965; Jäkel, 2003; Mahootian, 2015). For example, the activation “barrier” of a chemical “reaction” denotes the “increase” in energy when chemical “bonds” “break”. Students must learn these domain-inherent metaphors on their way to becoming scientists. However, it is unclear what characterizes these domain-inherent metaphors when teachers use them during instruction (Müller & Rau, 2025).

In this work, we take an embodied, constructivist stance towards cognition and specifically discuss our findings through the lens of conceptual metaphor theory (CMT, Jäkel, 2003; Kövecses, 2020; Lakoff & Johnson, 1980). Specifically, we discuss i) what metaphorical language and gesture chemistry teachers employ when talking about imperceptible chemical concepts and ii) what role teachers attribute to certain metaphors.

To that end, we offer a detailed analysis of the domain-inherent metaphors that a chemistry high school teacher employed during seven of his lessons both in speech and gesture. We coded a total of 557 words as metaphorical, that is an average of 1.8 words per minute of data (Cienki, 2016; Steen et al., 2011). We found 120 different metaphors across speech and gestures corresponding to 37 metaphor concepts (Schmitt, 2015).

In this contribution, we present the wide range of domain-inherent metaphors present in chemistry education discourse and thereby shed light on the inherently embodied nature of chemical discourse.

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Keywords: chemistry, metaphor, metaphorical gestures, experts

Individual Paper Session 4.6 · A214 · Paper

Forest School Education in Israel: How Street-Level Bureaucrats and Entrepreneurs Shape Policy and Its Implementation #3

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Forest School Education (FSE) is a growing global trend centered on regular, long-term engagement in natural settings, promoting holistic development. FSE fosters self-confidence, independence, and critical thinking through experiential outdoor learning. This approach is linked to embodied education, through emphasizing managed risk-taking and physical agency as crucial elements for children's development. While FSE policy is institutionalized in some countries (e.g., Denmark, England), emerging contexts such as Israel often lag in policy formulation, operating in an arena where clear guidelines are absent.

This qualitative study examines, based on interviews, how FS educators categorized as Street-Level Policy Entrepreneurs (seven early-adopters) and Bureaucrats (fifteen implementers), interpret and shape FSE policy, particularly concerning embodied practices. We compared how entrepreneurs, who act as policy designers, differ from implementers, who align practice under existing rules. Findings

reveal that entrepreneurs view the absence of formal policy as an opportunity to embed their holistic vision, actively promoting high-risk actions like making fire, which develop motor skills and frustration tolerance. They demonstrate high self-efficacy and broad discretion, trusting children's capacity to take responsibility and learn from experience. Conversely, implementers often adhere narrowly to existing frameworks, focusing more on low-risk activities and seeing regulatory ambiguity as a barrier.

This contrast highlights a tension in educational policy between standardizing safety and enabling the vital embodied, risk-based learning foundational to FSE. Policy development must integrate the perspectives of entrepreneurs to ensure FSE is implemented holistically, sustaining the necessary discretion for practitioners to offer the rich, embodied learning experiences essential for child development.

Keywords: forest school education, street-level policy bureaucrats, street-level policy entrepreneurs, educational policy

Corporate training as an embodied laboratory: situated learning and organizational affordances #109

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This contribution proposes corporate training as an experiential laboratory for investigating embodied and embedded education in contemporary social contexts. Learning should be understood as a situated process that emerges from the pro- and co-dynamic interaction between the body, professional practices, and organizational environments, understood as socio-material ecologies in continuous transformation. The research focuses on the analysis of organizational affordances, conceived not only as operating conditions but as educational devices capable of orienting bodily postures, decision-making modes, and relational configurations. In this perspective, the training experience is a space for critical experimentation, in which the body acts as a pedagogical sensor capable of making visible tensions, constraints, and possibilities for change in work contexts. In dialogue with Embodied Cognitive Science and the 4E framework, the contribution goes beyond transmissive and instrumental models, proposing an interpretation of corporate education as a transformative, authentically human practice capable of shaping the surrounding environment. The implications for leadership, well-being, and organizational learning are highlighted, opening up new possible directions for research on embodied education in the worlds of work and in the synergistic bridge between school and work, with particular reference to vocational schools.

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Keywords: education, embodiment, learning, affordance, organization

Moving across worlds: Embodied pedagogies in global health humanities and geographies #9

Gemma Lucas, Michael Flexer

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This paper explores how embodied teaching practices can be used across countries, institutions, and disciplines to address urgent questions in health humanities and geographies. We introduce our Global

Classrooms in Health Humanities and Geographies module, delivered through both in-person sessions and online teaching via an immersive, sensorially-rich digital campus in collaboration with universities in the UK, USA, and Canada (including the University of Exeter, Duke University, UNC Chapel Hill, USF Tampa, and UBC). The module brings students together across continents to explore disciplinary and cultural differences around health, care, wellbeing, ableism and disability, gender, sexuality, shame, 'madness', all anchored through the lens of embodiment.

Both the in-person and virtual environments are spaces of pedagogic praxis where embodied practice and felt experience are central. Students not only learn through lectures and seminars but also engage in practical, sensory activities that use their own bodies to think and feel through complex issues. Movement work, body-mapping, and somatic reflection, both in person and in virtual reality, support critical inquiry into questions such as: What does it mean to be a well/sick body? How do social, interpersonal, affective networks shape health and our embodied sense of self? How do spatial configurations contour experiences of disability or (mental) estrangement? What diverse cultural epistemologies constitute global health?

Drawing on reflections from students and scholars, we argue that global embodied classrooms offer vital ways to explore sensitive topics across time zones, cultures, and digital platforms, raising key questions about accessibility, inclusion, and global community today.

Keywords: global, health, pedagogy, virtual reality

Parallel Session 5 · Tuesday June 9th · 15:15 – 16:45

Individual Paper Session 5.1 · A200 · Paper

Emotional Intelligence Beyond Competence: Embodied Pedagogy and the Transformation of Sustainability Learning #135

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Emotional intelligence (EI) in educational research is commonly framed as an individual competence measurable through psychometric instruments and associated with personal regulation and socio-emotional effectiveness. While this competence-based paradigm has generated valuable insights, it often treats emotion as a decontextualized trait and under-theorizes the embodied, relational, and situated dimensions through which emotional processes unfold in educational practice. This study proposes a shift from EI as individual skill to EI as embodied and relational pedagogy.

Grounded in embodied and phenomenological perspectives on learning, the paper presents an ongoing mixed-methods doctoral study conducted with university students in Italian and Spanish institutions, including cohorts of future educators in the Italian context. Across five sessions within an academic trimester, participants engaged in structured educational interventions integrating relational and reflective practices addressing emotional awareness, creativity, and ethical decision-making in sustainability contexts. Learning is approached praxeologically, as embodied knowledge emerging through action, interaction, and situated participation rather than abstract cognitive acquisition.

Empirical inquiry combines pre- and post-intervention measures of sustainability-related knowledge, perceived psychological barriers to pro-environmental action, emotional intelligence (measured through a validated self-report instrument), and wellbeing (assessed through flourishing and subjective happiness), complemented by qualitative reflective materials. Ongoing analysis examines how changes in emotional intelligence and wellbeing relate to sustainability-related knowledge, perceived psychological barriers, and orientations toward pro-environmental engagement.

Beyond contributing to debates in embodied education, the project outlines a pedagogical approach for integrating emotional and sustainability education in teacher training, offering theoretically grounded and empirically informed insights for the design of embodied, socially responsive educational practices.

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Keywords: emotional intelligence, sustainability, education, embodiment

Physical Activity, Academic Performance, and Attention in Higher Education: Effects of Mindful Active Breaks in a Controlled Study #153

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Research indicates that physical activity and mindfulness-based interventions enhance executive functions - particularly attention - crucial for academic performance. Cognitively engaging movement improves inhibitory control, working memory, and cognitive flexibility through increased prefrontal activation, cerebral blood flow, and BDNF release (Diamond & Ling, 2020; Liu et al., 2023; Schmidt et al., 2015; Voss et al., 2011). Interventions lasting over six weeks with sessions of at least 20 minutes produce the strongest effects, suggesting neural adaptation (Mao et al., 2024; Mora-Gonzalez et al., 2024), while specific activities target updating, inhibition, and flexibility (Wang et al., 2024; Lobach et al., 2023). In academic settings, short active breaks improve attention, response speed, and engagement, especially when combining cognitive and motor demands (Treglia, Mariani, 2025; Ferrer & Laughlin, 2017; Zurita-Ortega et al., 2025; Pastor-Vicedo et al., 2024). Higher physical activity correlates with better Stroop performance and dorsolateral prefrontal functioning (Salas-Gomez et al., 2020; Mazzoli et al., 2021), supported by increased cortical oxygenation (Yu et al., 2025). Mindfulness improves sustained attention and reduces mind-wandering through present-moment, non-reactive awareness (Kabat-Zinn, 1990; Bishop et al., 2004; Baer, 2003). This study pursued a twofold aim. First, it sought to examine whether an association exists between students' levels of physical activity and their academic performance and attentional abilities. Second, it aimed to evaluate the effects of introducing mindful active breaks - combining brief physical movement and mindfulness practices - during regular class sessions on university students' attentional functioning, in comparison with a control condition.

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Keywords: mindfulness, active breaks, performance, university

Emotion and Value Experience in Ethical Education #169

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This presentation examines how intentional experienced emotions serve as a form of bodily-anchored value registration, facilitating the formation of higher-order meanings and underscoring their significance in teaching. It outlines a model of pedagogical tact, emphasising that an emotionally grounded understanding of values is a key aspect of teaching and education, particularly in ethics.

Phenomenological analyses of classical phenomenology suggest a fundamental insight: Complex objects of experience have a history of constitution in experience (Husserl & Landgrebe, 1999), and specific forms of understanding require distinct types of experiences. Understanding related to value and normative issues requires emotional experiences (Max Scheler, 2004). In this light, emotions are not merely non-cognitive affective responses; in experience, they are complex Gestalts comprising doxastic belief-related information, axiological value evaluation, and affective responses. They function as intentional presentations of value that help us first-personally recognise what is meaningful in significant ways (Engelsen, 2018). Thus, emotional experiences have not only a motivating nature; they also serve epistemic functional roles (Engelsen, 2022).

At the same time, recent educational research shows that teachers' emotional regulation and emotional presence are crucial to supporting students' motivation, engagement, and experience of meaning (e.g., Immordino-Yang & Damasio, 2007; Pekrun, 2006).

Against this background, the proposal develops a model for emotional pedagogical tact, in which we see the affectively anchored understanding of values as a central dimension of teaching and education. If we take the epistemic functions of emotions seriously, ethics teaching should ideally be organised so that students can address value issues through situated, emotionally charged encounters with the material – not just through cognitive reflection.

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Keywords: values, phenomenology, pedagogical-tact, ethics-education, embodied-cognition

Individual Paper Session 5.2 · A210 · Paper

Creating nothing from something - how cognition remains in the world #95

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5E approaches have forcefully challenged the idea that cognition (only) takes place in the head; albeit in different ways (Kersten, Dewhurst & Deane, 2017). For instance, the enactive approach hypothesises that not only does cognition not take place in the head, it cannot be localized, (Varela, Thompson & Rosch, 1991) i.e. ascribed to a singular discrete entity in time-space, but is an emergent result of dynamic interactions within spatiotemporal contexts. Nonetheless, the idea is alive and well in both lay and scientific theories. The computational theory of mind claims that “thinking can best be understood in terms of representational structures in the mind and computational procedures that operate on those structures” (Thagard, 2023,). This presentation looks at the philosophical preoccupation with placing or locating phenomena as a proxy for a particular type of ontogenesis in a Simondonian sense (Simondon, 2020), i.e. a creative principle of becoming that accounts for how things come to be (are individualized). It is posited that the question of how something comes into being is confused with and answered through the question of where something takes place. The presentation takes its cue from an observation made by Gregory Bateson that “difference is a nonsubstantial phenomenon not located in space or time” (Bateson, 1979, p. 92). Through an interpretation of this claim the notion of boundaries or form is replaced by that of information (Illiadis, 2013; Simondon, 2020) in order to establish a division of labour between ontology, epistemology and communication in terms of their respective ontogenies.

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Keywords: 5e, ontology, epistemology, communication, ontogeny

Practices of educating – or: How does education take place and how can it be described and determined as education? #96

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The starting point is the observation that educational practice is characterised by a distinctive feature that distinguishes it from other social practices such as cooking, consuming, watching television, etc. Nevertheless, defining educational practices conceptually is difficult and complex. It is difficult because the application of concepts is confronted with the ambiguity of everyday practice. Social practices such as communication can also have educational components. It is complex because education is difficult to define as a clear and clearly delineated practice and to conceptualise. Education takes place empirically in many different educational practices, i.e. "on the back of other activities, as it were". The determination of a practice as educational therefore cannot be achieved without theoretical input. Theory in this sense can be defined as "anticipation of practice" (Plessner).

As part of an interdisciplinary research project on education at Humboldt University, an operational-praxeological approach in phenomenological terms was developed that relates educational theory to empirically describable educational practices. The practices of counselling, discussing, narrating, questioning, teaching, caring, playing, sharing, practising, instructing, judging, mediating/acquiring, passing on and demonstrating were examined as practices of education. The lecture presents the results and perspectives. First, it is emphasised that education as a practice is a difficult undertaking. Tensions between the present and the future, tradition and transformation, and freedom and coercion are systematically presented and illustrated with examples from everyday life. The focus is on structures of education as they are represented in the practices of education: intentionality, normativity, sociality and mundanity of education. The approach presented here thus opposes the widespread trend of viewing education with suspicion from a supposedly critical perspective and associating them with oppression or external control.

Keywords: education, phenomenology, practices, practicetheory, theory

Embodying educational situations #141

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Embodied views of education allow a view of education that does not necessarily privilege abstraction and internal cognitive processes. However, many embodied perspectives remain limited as alternative practices to a more orthodox view of education. One of the reasons is that while they rightfully focus on the body, what is not conceptually elucidated is that the body is always situated in an environment. Not only does the pupil learn in certain spaces, all shaped by a wider context, but the pupil in turn also modifies the space as much as they can to enable learning. This can be many things, such as choosing where to sit or arranging their desks. Learning also happens within specific timeframes, such as a specific class or within a course. But the pupil also arranges their time so that all the activities are ordered in a meaningful way to them. An embodied view of education shows how all educational activity is temporally and spatially situated. We can understand these dynamics through John Dewey's notion of situation[1]. A situation is a meaningful qualitative background for action, and examining the classroom as such opens space for additional interventions in learning processes. Educational interventions become interventions in the students' agency. Agency is no longer just an outcome of education, but it's the central driver.

[1] John Dewey. 1986. John Dewey: The Later Works, 1925-1953, Vol. 12: 1938. Edited by Jo Ann Boydston. Carbondale and Edwardsville: Southern Illinois University, 72-73.

Keywords: john dewey, situation, educational spaces

Individual Paper Session 5.3 · A212 · Paper

"They All Speak Different Languages, But With the Donkey's Mediation, It's Like We're All Understanding Each Other. With Our Hearts": An Embodied Social Prescribing Experience in the Italian Alps #22

Damiano Biscossi

APPM ETS, Trento, Italy

When a young man with Dravet Syndrome declared, "Medicines are not enough - you need to be loved," he articulated what clinical protocols often miss. This presentation shares findings from Con-Tatto, a social prescribing project in Trentino's forests (32 Hours trekking in nature with donkeys: 8 Hours sessions, once a week for 4 weeks in November 2025), where 21 participants aged 15-35 - unaccompanied refugee minors, youth with disabilities, families facing medical crises - experienced transformation through donkeyassisted interventions in nature. Grounded in Gallagher's 5E embodied cognition framework (2017, 2020) and drawing on embodied education theory (Francesconi & Tarozzi, 2012), the project integrated animalassisted interventions, mindfulness practices, and outdoor education. Following Francesconi and Tarozzi's insight that "the lived body is strictly connected to the way in which the subject can operate in the world through practical knowledge," our multicultural, multilingual group discovered that authentic communication emerges not through shared language but through embodied presence - what participants described as being "connected by the nature that was cradling us." The project created what Hudak and Fulbrecht (2025) describe as a space of "autos" - a

mode of self-affirmation characterized by being with oneself in the presence of others without defensiveness. Like nature-based education settings where "nature's diversity and abundance promotes cooperation and teamwork," the forest environment with donkeys facilitated minimal contact zones that paradoxically enabled profound connection. Key findings challenge conventional educational assumptions: radical heterogeneity (age, nationality, ability) became pedagogical resource rather than obstacle; donkeys' calm presence enabled emotional regulation impossible in clinical settings; unpredictable weather taught resilience more effectively than curricula; contemplative silence - seemingly "unproductive" - participants identified as most transformative. Building on Hudak and Fulbrecht's observation that children "literally become the experience they are having" when fully engaged, and Francesconi and Tarozzi's concept of "learning consciousness" - the consciousness that learns to be in contact with reality - we witnessed participants developing what Merleau-Ponty termed the capacity to be alone in the presence of others. The most significant transformations - a teenager's recognition that "you need to be loved," refugee youth discovering belonging through silence, tender care for animals - resist quantification because they belong to education's contemplative dimension: lived body wisdom that can only be witnessed, never captured. Keywords: embodied education, social prescribing, animal-assisted interventions, 5E cognition, contemplative pedagogy, refugee youth, disability, autos, nature-based education Presenter: Dr. Damiano Biscossi, Pedagogist, APPM Onlus, Trento, Italy Collaborators: APSS (Provincial Health Services), Umeå University (Sweden)

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Keywords: donkey embodied education pedagogy autos

Toward a Deeper Understanding of Embodiment in Disability and Inclusive Education: Challenges Emerging from Visual Impairment and Blindness #160

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University of Gothenburg, Gothenburg, Sweden

This presentation addresses the challenges associated with conducting empirical research involving individuals with visual impairment or blindness, while also examining the importance of the body in teaching practices that support their navigation of everyday life. It raises critical questions about how researchers and educators can meaningfully understand bodily experiences that may differ from their own, particularly in relation to stereotypes, equality, and the social prejudices often attached to particular bodies within the fields of disability, rehabilitation, and inclusive education.

The methodology draws on both individual and collaborative reflections on prior and ongoing empirical studies, complemented by pedagogical experience from teaching university courses for professionals. Guided by the hermeneutic spiral and abductive reasoning, the analysis integrates empirical insights, research findings, and lifeworld phenomenological theorizing on embodiment and agency.

The first challenge concerns the recognition that individuals with visual impairment inhabit bodies that differ from those of sighted people, raising epistemological questions of how a sighted researcher or teacher may understand embodied experience grounded in a fundamentally different perceptual orientation? The presentation will discuss the use of in-depth reflection as a methodological resource for both interviewer and interviewee, alongside participant observation, and will consider the potential for researcher to draw upon their own bodily experiences as an interpretative tool.

The second challenge involves identifying and critically examining social stereotypes. The researcher's preconceptions and the importance of using narratives to understand embodied experiences will be discussed. Research collaborations with people with visual impairment will also be explored to understand specific embodied experiences.

Keywords: bodily experiences, lifeworld-phenomenology, blindness, methodology

Between bodies and boundaries: consent and care in adult disability services #158

Giulia De Rocco, Sara Marchesani

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The presentation reports findings from an exploratory phase of a broader research project conducted in collaboration with a social cooperative operating in Modena (Italy), which manages day-care and residential services for people with disabilities. Ethnographic data were collected during a training programme on sexual self-determination involving coordinators, educators, and support workers ($n \approx 200$). Situated within the framework of embodied education (Shapiro, Stolz, 2018), the study examines two interconnected questions: (1) what role do professionals' representations of their own corporeality and sexuality play in shaping educational and care relationships? and (2) what forms of consent negotiation are present - if any - within everyday practices in disability services?

Drawing on critical disability studies (McRuer, 2021; Watson, Vehmas, 2020) and feminist theories on consent (Tronto, 1993; Serra, 2024), the project conceptualizes consent as an embodied and relational process rather than a procedural requirement (Demoszi, Ghigi, 2024). The training sessions are analysed as pedagogical settings in which participants reflect on their sexed and gendered bodies,

on boundaries, proximity, and professional positioning. Attention is given to how these representations influence interpretations of the sexual expressions of people with disabilities and the management of intimate situations (Bocci, Straniero, 2020; Hollomotz, Speakup Committee, 2009; Pebdani, 2016).

The presentation discusses preliminary results based on the analysis of ethnographic fieldnotes. Findings suggest that representations of professional corporeality significantly shape the conditions, limits, and modalities through which consent is understood and negotiated in disability services, highlighting bodily awareness as a key pedagogical dimension in socially embedded care contexts.

Keywords: disability, training, sexual-self-determination, non-normative-bodies, consent

Individual Paper Session 5.4 · A214 · Paper

Follow the Movement: How Bodies-in-Motion Constitute Pedagogy in Formal and Non-formal Education - An Ethnographic Study #69

Lior Sharir

The Hebrew University, Jerusalem, Israel

Educational research has largely emphasized the sedentary, disciplined body, often analyzed through Foucauldian frameworks. By contrast, I approach pedagogy phenomenologically, understanding the body not as a passive object but as movement itself (Merleau-Ponty, 2012; Manning, 2014). This research asks: How is bodily mobility organized, synchronized, and negotiated in educational settings, and what kinds of pedagogic encounters does it produce?

This research draws on two years of ethnographic fieldwork with the same student population in a youth movement and a middle school in Israel. Based on scholarship on choreography in education (Taylor, 2018), I develop the concept of pedagogical movement to examine how bodies are directed inward or outward, whether they move separately or collectively, how they approach or distance themselves from one another, and their orientations toward people and objects.

Two distinct axes of pedagogical movement emerge. In formal education, movement tends to organize students as separate bodies moving inward, outward, or against one another (e.g., "leave the classroom only when another student returns"). In non-formal education, movement often gathers participants into a collective body or draws separate bodies toward one another (e.g., a song that gathers participants into a circle). These axes generate different embodied subjects: individual and separate versus collective and shared. Across both arenas, students engage in ongoing kinetic negotiation, resisting and reshaping pedagogical movement. My findings show that pedagogical movement is not merely a dimension of education but central to pedagogy itself: bodies-in-motion and their spatial relations constitute pedagogical encounters, educational subjects, and learning communities.

Keywords: pedagogical-movement ethnography embodiment non-formal-education phenomenology

Sustaining a shared space: embodied learning in the affective atmosphere of the fine art gallery #33

Molly Stock-Duerdoth

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Museums and art galleries are special, shared places with specific pedagogical affordances (Burnham and Kai-Kee, 2011). The affective atmospheres they can create through assemblages of things, spaces, discourses, people, and practices can cultivate forms of being and knowing distinct from other learning-oriented environments.

This presentation considers how the affective atmosphere of a participatory museum project with young adults, conducted as part of a PhD study, was sustained and the apertures for learning it created. It finds that this project fostered ways of thinking and relating that moved beyond the didactic learning that participants had previously associated with fine art galleries. Instead, participants became more confident of their own individual worth and agency within the museum, and strove to create an atmosphere of care for the community that emerged through the project, and for others. Their embodied experience of the museum space and collection were integral to this shift. It was also cultivated by the care-full attention of staff in an institution in many ways committed to didactic knowledge transfer and resistant to participatory ways of learning (Graham, 2025).

This presentation thus argues that paying attention to the affective atmospheres and social worlds of museum participation projects opens up new and unpredictable ways of learning for participants and staff. It advocates for a gallery pedagogy that prioritises felt and emergent experience, and for the role that such museums can thereby play in supporting caring and just societies.

Keywords: museum, participation, atmospheres, affect, practice

Getting to Everyday Pedagogies: Embodied Incidental Learning and the Militarization of Childhood #1

J. Marshall Beier

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Militarization of children's lives progresses iteratively through their being in and from their interaction with social worlds of militarisms' intelligibility and it is in this sense that these experiences are pedagogical. Here, a more nuanced understanding of pedagogies is in order: one that allows us to move beyond familiar and perhaps intuitive subject/object relations of teaching/learning as well as to take seriously ways of knowing and of coming to knowns that may appear more incidental than instrumental. This entails recovering the subjecthood of the learner in learning while recognizing that what is learned might not always be clearly identifiable with some particular pedagogical intent on the part of other subjects. It also means moving beyond linearity to capture the complexity – and, at times, ambivalence – inherent to social webs of meaning wherein things experienced derive intelligibility in relation to other experiences, moving toward or reinforcing knowns in a manner perhaps more piecemeal and fragmented than direct and purposeful tutelage. Everyday pedagogies thus occur in ad hoc encounter and accessing them necessitates tending to other, experiential ways of coming to

knowledge. These may arise in settings that are structured (as in sport or other leisure activities, for example) but without any necessary aim or intent toward instilling ideas, values, or inclinations that underwrite militarism. Distinct from pedagogies that are programmatic (recruitment campaigns, celebrations, and other explicitly pro-militarist practices and performatives), curricular (expressed in formalized educational settings such as schools, museums, and structured experiential learning environments), and critical (contra-recursive, normatively counter-hegemonic, attentive to unequal relations of power; can be expressed programmatically and in curricula), they call us to understand how being in everyday life is also pedagogical.

Keywords: children, embodied encounter, everyday pedagogies, militarism, subjecthood

Individual Paper Session 5.5 · A222 · Paper

Learning Through the Five Senses: The Case of Multisensory Rooms #149

Paolo Lucattini, Francesca Caprino, Marta De Angelis, Filippo Bruni

University of Molise, Campobasso, Italy

The interactionist approach conceives of the human being as an active social actor who develops through continuous symbolic and communicative exchanges (Blumer, 1969). By moving beyond the traditional mind-body dichotomy, this perspective enters dialogue with embodied cognition, interpreting cognitive processes as embodied and situated, emerging from the dynamic interaction between body and environment (Gallagher, 2005; Borghi & Caruana, 2016). Learning is therefore understood as meaningful experience grounded in action and in the subject's direct engagement (Dewey, 1938; Kolb, 1984), with the body recognised as playing a central role (Sibilio, 2011; Paloma, 2013). With attention to the setting as the physical, relational and symbolic context of educational action (Frabboni & Minerva, 2008), this study explores the ways in which multisensory rooms—originally developed as rehabilitative tools and primarily used in contexts of disability involving high levels of support needs (Cameron et al., 2020)—may be configured as immersive learning environments capable of supporting inclusive educational practices (Booth & Ainscow, 2014). Adopting a qualitative methodology based on in-depth interviews (Kvale & Brinkmann, 2015), the study collected the perceptions of a sample of nursery and primary school teachers from different Italian regions who had teaching experience within multisensory rooms. Thematic analysis of the data indicates that, when intentionally designed and grounded in the integration of visual, tactile, auditory, olfactory and gustatory stimuli, such environments can engage the entire class group, including pupils with disabilities. Multisensory rooms thus suggest a potential role as inclusive environments, fostering participation and wellbeing (Lucattini & Caprino, 2024).

Keywords: embodied, multisensory-rooms, school, learning, setting

Embodied design to support frontier engineering learning in K-12 #163

Ravi Sinha, Hillary Swanson, Jessi Lajos, Sanjay Chandrasekharan

Embodied Cognition (EC) is an emerging theoretical perspective that emphasizes the role of interaction between bodily actions and environments in thinking and sense-making (Weisberg & Newcombe, 2017; Glenberg, 2010). Several learning interventions have been conceptualized in K-12 STEM to teach abstract scientific and mathematical concepts using embodied routes (Abrahamson & Sánchez-García, 2016; Danish et al., 2020; Karnam et al., 2021; Nathan & Walkington, 2017; Palatnik et al., 2023). However, existing research has primarily focused on mathematics and science domains in K-12. The literature is still sparse on how EC models can support the design of engineering-rich learning interventions in K-12. In this talk, we present a component of an intervention design aimed at introducing young learners to frontier avian-inspired engineering. We specifically focus on the physical prototyping aspect of the intervention design, which involves designing an automaton that mirrors the flapping movement of a bird wing, leveraging an engineering mechanism (four-bar linkage). We reflect on our current design (pre-implementation) and examine what EC perspectives can offer to explain the design choices intended to facilitate learners' understanding of the mechanism. We contend that engineering-rich K-12 learning interventions are productive contexts for testing EC theoretical and design conjectures. K-12 engineering also opens a generative design space for educators and researchers to reimagine learning design based on the principles of embodiment. However, much work lies ahead to connect EC research with K-12 practices centered on introducing young learners to frontier engineering domains.

Keywords: embodied design, engineering education, prototyping

Enacting Genre, Knowledge, and Relationship: Teacher Voice as Embodied Performative Practice #164

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Research on the role of the body in teaching has extensively examined visible actions such as gestures and spatial positioning, yet the audible dimension of the teaching body remains undertheorized. This study addresses this gap by examining teacher voice as an embodied resource for classroom orchestration.

Drawing on Richard Schechner's performance theory, voice is conceptualized as a practice that simultaneously does and shows doing, foregrounding its performative rather than merely semantic function. The study is grounded in an 18-month multi-sited ethnography conducted across schools in multiple regions of China, encompassing different grade levels and subject areas. Data include classroom video recordings, teacher interviews, and fieldnotes. To illuminate how voice operates in moment-to-moment interaction, a multimodal interaction analysis of a 47-second episode from a Grade 2 Chinese language lesson is presented.

The analysis reveals that teacher voice performatively enacts three intertwined dimensions: genre, as the shift across activity types is accomplished through changing vocal forms rather than words alone; knowledge, as a disruptive word is transformed into a learning object through vocal reframing; and

relationship, as teacher-student positioning is continuously negotiated through vocal dynamics. The study argues that classroom genres, knowledge, and pedagogical relationships are not pre-given structures but are enacted through embodied vocal practice.

Keywords: voice, sound, interaction, embodiment, performativity

Workshop Session 5.6 · A201 · Workshop

Eliciting Tacit Mathematical Know-How as a Pedagogical Practice #122

Julien Putz

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Our own mathematical know-how exceeds what we can readily notice or put into words. When doing or teaching mathematics, we are habitually absorbed in the products of our work, even as their meaning is carried by a pre-reflective background of fleeting imagery, perceptual micro-actions, and other subtle processes that usually remain unnoticed. This workshop explores whether and how bringing some of these tacit dimensions of experience into awareness can have pedagogical value: for how we design and present mathematical inscriptions, for how we notice and probe student thinking, and for how we articulate the aims of mathematics education beyond mastery of formal products.

The workshop begins with a diagrammatic reasoning task, which serves as a shared reference point for subsequent reflection and discussion. Drawing on Petitmengin's micro-phenomenological elicitation, we will practice a brief reflective arc: evocation (returning to a specific moment of experience), reduction (bracketing explanations, justifications, and generalities in order to stay with how the experience unfolded), and description (articulating fine-grained details of the episode). From there, we will explore several routes from reflection to pedagogy. First, we consider how making contact with one's own felt meaning of a mathematical notion can enrich how we instantiate and present it. Second, we examine how this sensitivity can sharpen teachers' probing for implicit aspects of students' work. More broadly, we discuss how educators' sustained reflective work can support a shared experiential vocabulary for recognizing tacit aspects of mathematical know-how, so that these can be foregrounded among teachers and in the classroom.

Keywords: diagrammatic-reasoning, mathematics-education, micro-phenomenology, tacit-knowhow, teacher-professional-learning

Embodied Design in Action: Tangible Mathematics across all Educational Levels #125

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Mathematics is often viewed as abstract, inaccessible, and disconnected from everyday life. This image emerges largely due to the formal and rigorous nature of mathematical practices, which are reflected in the presentation of results through symbolic notation used for the domain-specific formal discourse. This perception contrasts sharply with the exploratory and non-linear nature of mathematical discovery/invention, which are driven by curiosity and rarely follow the structured linear path of definition-theorem-proof as traditionally presented (Freudenthal, 1972).

Consequently, we as educators and researchers, have increasingly centered our focus on developing materials, interventions, and activities that emphasize the process of discovery. Drawing on an embodied design approach (Abrahamson, 2014), we will present embodied activities that present mathematics as sensorimotor problems for tangible exploration. Students form new sensorimotor synergies, and novel perceptual orientations that are further grounded in meaningful mathematical discourse (Shvarts & Abrahamson, 2023).

In our workshop, participants will actively explore and enact various mathematical concepts (Alberto et al., 2022; Oberbuecher & Krause, 2025), driven by empirically validated learning opportunities of action-based embodied designs (Abrahamson, 2014). Traditionally mathematical manipulatives are seen as an attribute of primary school that needs to be later left aside. Yet our research shows how sensory-motor exploration can be productive at all educational levels, spanning from primary education to upper secondary and tertiary levels. Together with participants, who will take on dual roles by adopting the perspectives of both educators/designers and learners, we will collaboratively reflect on overarching fundamental design principles. The workshop aims to show the inherently embodied, dynamic nature of mathematics revealed through the embodied design genre.

Remark

[We kindly ask participants to bring a tablet or a touchscreen laptop with them to engage in multi-touch workshop activities.]

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dynamic systems perspective on mathematics teaching/learning. *Constructivist Foundations*, 18(2), 220–234.

Keywords: mathematics, discovery, action-based, multi-touch, k-16

Workshop Session 5.7 · A203 · Workshop

Physics Education with performing arts: The Physical Clown Workshop #56

Matteo Onate Orozco, Maria Bondani, Maurizio Accattato

University of Insubria, Department of Science and High Technology, Como, Italy

The workshop we propose is part of a Ph.D. project that aims to develop new teaching techniques for Solid State Physics topics using the expressive arts of Contemporary Circus. These techniques are based on the body expression and empathy of artists (clowns, mimes, acrobats, jugglers, dancers). We created the character "The Physical Clown," playing on the double meaning of the word "physical," relating to both the body and physics.

The workshop is a combination of formal physics lessons and theater and circus workshops. Led by "The Physical Clown," the workshop engages the audience in bodily exercises while explaining scientific and historical topics through body expression.

The audience is constantly engaged during the workshop, and their active involvement becomes increasingly necessary as the topics become more technical. For example, in the final part of the workshop, which covers the more abstract and difficult-to-visualize theory of conduction electrons in metals, the "Physical Clown" facilitates understanding by asking the audience to "act" a "gas simulation," employing well-established performing techniques grounded in theater education expertise. Throughout the workshop, students interpret several states of matter through movement and interaction: a gas, a liquid, a solid, a gas of independent electrons, and a gas of Cooper pairs.

These bodily, experiential, and interactive activities were evaluated using questionnaires and proved to be an effective teaching method where "explanations" and "exercises" merged to create an engaging lesson.

Since December 2023, the activity has been tested with more than 400 high school students, and more testing is ongoing.

Keywords: steam physics education clown ensemble

From Body to Screen: The Invisible Competencies of Documentary Filmmakers #67

Mette Nyseter, Tereza Reichová, Jan Bacher Dirchsen

University of Inland Norway, faculty of film, TV and Games, Lillehammer, Norway

Capturing authentic moments in documentary films requires significant experience, quick thinking, and the ability to manage both the story and the people involved.

Although classroom-based embodied learning methods are well established in other professional university-level education programs, they remain underexplored as artistic tools in factual TV and documentary film production.

Recently, three artistic researchers from the national film and TV schools in the Czech Republic, Denmark, and Norway have begun collaborating, sharing insights that have emerged from our respective experiments with translating these methods into our field. Our common focus is on how bodily activation in a workshop setting can strengthen creative processes, collaborative skills, and artistic development relevant to documentary filmmaking.

Drawing on methods such as role-playing, improvisation games, and therapy-informed group work, we have developed practical training approaches that help documentary directors and the creative crew explore and navigate the relational and ethical complexities of filmmaking in a safe space for experimentation and high-volume practice.

We propose a conference contribution that invites workshop participants into our new embodied pedagogical approach, allowing them to physically experience and sense relational perspectives as a documentary director, crew member, or protagonist.

Workshop structure:

Short meeting and initiation exercise. Everyone on the floor.

Brief introductions of the presenters and their research.

Transforming classroom into a filming situation. Exploring embodied training on real-life documentary cases.

Playful reflective practice as a shared space: How can this experience be applied to participants' own professions? Q&A.

Keywords: Role-playing, Documentary training, Relational ethics

Parallel Session 6 · Wednesday June 10th · 11:00 – 12:30

Roundtable Session 6.1 · A201 · Roundtable

Freedom to Make Sense within higher education #140

Guðbjörg R Jóhannesdóttir, Anna Itkonen, Monika Lindner

University of Iceland, Reykjavik, Iceland

The interdisciplinary MakeSense project (<https://makesense.hi.is/>) enacts and experiments with

innovative methods of embodied inquiry at the intersection of philosophical practice, mindfulness, artistic research and cognitive sciences. The aim of the project is to introduce and integrate these methods into research and teaching in higher and secondary education in times of crises of meaning – calling for transformative education that reconnects with the vibrant richness of lived experience, natural environments and embodied sources of thought.

Our conceptualization of embodiment is nurtured by Eugene T. Gendlin's process philosophy which has significantly developed further thinkers such as Dilthey, Dewey, Merleau-Ponty and others. The methods and practices that we have engaged with (Micro-phenomenology, Thinking-at-the-Edge, Focusing, mindful movement, artistic practices) through working with hundreds of students, researchers, and faculty members from European and international universities, can be seen as an enactment of this philosophy. In this roundtable members from our team will introduce our methods and how we are using them in different contexts with the aim of fostering embodied critical thinking and the ability to bear uncertainty. We may also offer a small group exercise to give participants a taste of the embodied methods we teach and practice together.

Individual contributions:

Anna Itkonen is a doctoral researcher and university teacher at the University of Oulu, Finland. In her talk, Anna addresses the question of subjectivity and objectivity, which often arises when moving from disembodied to embodied ways of thinking. She reframes the question within Eugene Gendlin's philosophy, drawing examples from her TAE project in educational philosophy.

Guðbjörg R. Jóhannesdóttir is a professor at the department of arts education at the Iceland University of the Arts. She will present how she has integrated the MakeSense methods of embodied thinking into her teaching at the IUA, and how these practices help shed light on the role and value of artistic practices and arts education in research and learning.

Monika Catarina Lindner, a doctoral researcher at the University of Iceland, is investigating the potential of experiential practices such as Focusing and Thinking at the Edge (TAE) for dealing with situational complexity in educational everyday life. In her presentation, she builds on an understanding of a "pedagogical situation" that starts from the situatedness of the body in Eugene Gendlin's sense, according to which the body "is" the situation.

Keywords: embodied critical thinking, research practice

Workshop Session 6.2 • A222 • Workshop

Beyond Piano Lessons: What Students Have to Gain From a Somatic Approach to the Study of the Piano #111

Adam Cole

The Willow School of Georgia, Atlanta, United States

When students sign up for piano lessons, they expect to improve in goal-setting, coordination, and musical acumen. They rarely suspect they are coming to the lessons to address deeper issues of the self and the interaction with others. When the piano, and especially jazz piano, is taught using a somatic approach, students often gain an understanding of themselves that can be used to address challenges in any part of their lives.

Somatic work such as The Feldenkrais Method prioritizes improvement over achievement, asks students to refine their ability to pay attention to themselves in action, and fosters self-compassion. However, because such approaches are often difficult to describe, they are misrepresented as bodywork or pseudo-science, resulting in skepticism from those who might benefit. When couched in the study of the music performance, all of these avenues for improvement can be focused in a discipline seen as safe and familiar.

Sight-reading, performance ability and the study of scales offer opportunities for a student to examine the impediments to their ability to make a smooth connection between desire and action. Including jazz instruction provides even more powerful opportunities to look at the interplay between fixed schema and improvisation, as well as fine tuning the ability to interact socially in real time with others. These skills are often stunted in ordinary life, and confronting them in piano lessons offers an opportunity for the student to successfully address issues that have always been out of their awareness.

In this workshop, Adam will discuss his approach to the study of piano and jazz in particular. He will demonstrate a storytelling game that makes clear the roles of musicians in a jazz ensemble for those who have never played music, and he will offer a brief somatic exploration.

Adam is a Guild Certified Feldenkrais Practitioner and the Assistant Editor of the Feldenkrais Journal. A professional pianist since 1990 with a Master of Music from Georgia State University, he has taught piano for 20 years and maintains a studio in Atlanta, Georgia. He has presented on topics including embodied mathematics, music and neuroatypicality.

Keywords: feldenkrais, piano, somatic, education, pedagogy

From Gesture to Glitter: Experiencing Multimodal Communication through Art #133

Ilse Marlene Hernández Castellanos

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This workshop is situated within the Art-based approaches to research and educational practices. It aligns with the close interconnectedness between mind, body and art by sensitising pedagogues, teachers, researchers and academics to multimodal communication as a fundamentally embodied, interactive and cooperative process.

The aim is not aesthetic perfection, but multimodal awareness: how gesture, gaze, posture, rhythm, prosody, silence, and later speech shape collaborative meaning-making. It builds on the idea of multimodal communication (e.g., Perniss, 2018) as a space where we can redefine "language" beyond a narrow verbal code and instead understand it as communication distributed across vocal, visual, gestural and spatial resources, therefore not only being spoken, but enacted, perceived, and co-

constructed.

Participants collaboratively recreate iconic paintings such as Pablo Picasso's *Guernica*, Vincent van Gogh's *The Starry Night*, or Gustav Klimt's *The Kiss* on large craft-paper capes, by using paint, glitter and pre-prepared coloured shapes in five stages:

1. Framing (10 min.): Introduction to multimodal communication with emphasis on the role of gesture and prosody. Explanation of the activities, group distribution and the purpose of working through art-based strategies.
2. Non-verbal creation (10 min.): Groups choose the artwork using only gestures, gaze and vocalizations (no words permitted).
3. Verbal sharing (5 min.): Groups use oral language to agree on final details of their creation.
4. Exhibition (10 min.): Presentation of the embodied capes.
5. Reflection and Q&A questions (10 min.): Guided discussion on how different modalities shaped collaboration.

Reference: Perniss, P. (2018). Why We Should Study Multimodal Language. *Frontiers in Psychology*, Volume 9-2018. <https://doi.org/10.3389/fpsyg.2018.01109>.

Keywords: multimodal language, art, gestures, prosody

Individual Paper Session 6.3 · A203 · Paper

Animals have rights too, because they have feelings too; the embodied core of reasoning #25

Menno van Calcar

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The received view has it that reasoning proper (deductive, inductive, by analogy, etc) is a formal affair, as far removed as possible from the vagaries of embodied life (Adler & Rips 2008). Embodied views of cognition have not been able to make much of an impact on this view: it has been argued that the items we reason with are somehow grounded in our sensory-motor system (Barsalou 1999, Lakoff and Johnson 2003), but the operations we perform on them resist an embodied interpretation, so far.

I argue that the way in which we handle the elements of an argument is constituted by the way in which we handle living in a three-dimensional world (Van Calcar 2025). Reasoning is essentially spatial in nature. This has implications for teaching: by understanding arguments as spatial layouts pupils get skilled at reasoning quicker and better than by understanding reasoning as formal processing. The focus in this presentation is on teaching practices. We will, for instance, explore how 10-year olds try to

use having feelings as a sturdy pillar (necessary and sufficient?) to build (substantiate) an argument on animal rights. How shaky or solid is their construction, and how can we guide their application of pre-existing skills?

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Keywords: reasoning, spatial skills, constructing, teaching

Confusion with Consequences: Dual Pathway Effects of Strong Cognitive Dissonance on Embodied Sensemaking and Perceived Learning #27

Markus Becker

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Learning is often accompanied by moments of tension, unease, and disorientation. From an embodied perspective, such experiences are not merely cognitive conflicts but disturbances of ongoing sensemaking that are felt in and through the body. This study examines cognitive dissonance as an embodied phenomenon of learning, focusing on how instructional framings modulate the balance between productive tension and disorienting incoherence.

In a classroom field experiment with students from various disciplines (N=241), four introductory framings preceded the same instructional text. A Control condition offered a coherent introduction. Two didactically common formats induced moderate, constructive ambiguity, with or without personal relevance. A fourth condition introduced extreme dissonance through overtly incoherent contradictions. After reading, participants completed a knowledge test to maintain an authentic learning setting and then reported their experienced coherence and perceived learning. After the experiment, semi-structured discussions in the same classroom explored the students' experience, particularly how it shaped their engagement with the main text.

Results show that experienced coherence strongly predicts felt learning ($b=0.33$, $p<.001$). Only the destructively dissonant condition substantially reduced coherence relative to Control ($a=-2.42$, $p<.001$) and produced a significantly negative indirect effect on felt learning. Remarkably, a positive direct effect remained ($c'=0.85$, $p=.016$), constituting an inconsistent mediation pattern.

The findings suggest a dual pathway: dissonance reduces learning through diminished experiential

coherence while simultaneously exerting a motivating influence by sustaining embodied tension that invites resolution. Practitioners are encouraged to use higher-than-usual levels of dissonance, yet must balance it so its stimulating effects stay below the threshold of disorientation.

Keywords: sensemaking, coherence, dissonance, framing, learning

Perception Before Representation: Embodied Learning in Logographic Systems #32

Martin Benatti

Independent, Cordoba, Argentina

This presentation approaches learning as lived perceptual experience rather than symbolic decoding. Drawing on Merleau-Ponty's phenomenology and embodied education research, it argues that perception comes before representation. Meaning emerges through the body's direct engagement with form, space, and relational structure, not through abstraction.

The work introduces a visual-spatial system for logographic writing, where sound and meaning are not directly legible in symbols. Rather than adding labels or annotations, it reshapes the perceptual field itself. The symbol remains intact while surrounding space is structured using stable cues that support immediate recognition. Meaning emerges through figure-ground relationship, not translation.

The system was developed through classroom observation, professional prototype trials, and Olympic level athletic experience as both athlete and coach. A key insight comes from archery. The sight ring does not magnify the target. It organizes the visual field around it. Accuracy emerges from perceiving alignment within a stable ground, rather than isolating objects. The ring structures perception so alignment and balance register as one visual act. This principle directly shaped the system's design.

From this perspective, recognition is not interpretation but bodily attunement. Learners do not analyze symbols. They orient toward structured perceptual situations. Gaze, posture, and expectation function as a single event. Understanding arises through whole field engagement, not step by step mediation.

Across contexts, learners engage the system as embodied skill development. Recognition relies on eye hand coordination and spatial sensitivity. Competence develops through repeated perceptual exposure. Learners do not translate symbols. They learn to see them.

Keywords: visual-spatial cognition, symbolic embodiment

Embodied Inquiry and embodied generativity: a research methodology for intercepting (dis)abled voices #38

Giovanni Gottardo

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This paper investigates the potential of Embodied Inquiry (Thanem & Knights, 2019; Leigh & Brown, 2021; Ferri, 2022) as a research methodology capable of capturing bodily generativity and valuing

perspectives from the “margins”.

Integrating neuroscience studies (Gallese, 2021) and the embodiment paradigm (Gomez Paloma, 2020; Francesconi & Tarozi, 2019), Embodied Inquiry considers cognition as embodied, embedded, extended, and enactive (Gallagher, 2023). Overcoming Cartesian dualism in favor of a co-dependence between mind, body, and world (Merleau-Ponty, 2003; Perry, 2015), this methodology recognizes the body as a place where knowledge is actively generated in relation to others and the context (Varela et al., 2024). It is a methodology that seeks to value unconscious and embodied knowledge, which cannot always be expressed in words (Gottardo, 2025).

Through the presentation of empirical research involving 10 women with fibromyalgia, carried out within four performing arts workshops, we aim to outline the potential of Embodied Inquiry to empower and enhance the voices of disabled people and bodies (Oliver, 2023). The research activities were shaped by the individual needs and characteristics of the participants, who produced data through artistic performances, artifact productions, and reflective writings.

The results highlight how Embodied Inquiry can represent a research methodology that is attentive to the identity and embodied characteristics of participants and capable of generating knowledge from the ‘margins’ (bell hooks, 1998). This is situated knowledge that is not limited to ‘talking about disability’ but acts to redesign the spaces and trajectories of inclusion starting from the encounter of plural bodily identities (Goodley, 2017).

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Keywords: embodied inquiry, disability studies, theater

Bodies without school: experiences of diversity, othering and belonging in the Italian upper secondary schools #45

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Contemporary schooling often fails to configure itself as a genuinely lived and embodied space, instead operating through practices that privilege cognitive normativity, defensive individualism, and the exclusion of alterity. These dynamics profoundly shape the embodied, relational, and affective experiences of students and teachers, influencing both learning processes and the possibilities of belonging and recognition (Gomez & Damiani, 2021). Within this framework, the body emerges as a key yet marginalised site where power, norms, and diversity are negotiated in everyday school life. In line with these considerations, this contribution presents findings from a qualitative study with university students, drawing on their recollections of upper secondary school in Italy. The research investigates the relationship between diversity, othering, and belonging (Ilardo et al., 2025), aiming to understand how diversity is perceived, interpreted, and negotiated within the materiality of school micro-contexts, particularly classrooms, peer interactions, and teacher–student relationships. The findings reveal four interrelated critical issues. First, schools struggle to emerge as lived spaces, as school life is largely confined to the classroom. Second, institutional practices show limited capacity to recognise and accommodate forms of diversity that deviate from normative expectations. Third, processes of misrecognition frequently lead to self-exclusion, social withdrawal, and relational fragility. Finally, the bodily dimension of schooling largely disappears from institutional narratives or emerges as problematic and “symptomatic bodies” (Butler, 2004; Marzano, 2011), marked by discomfort, discipline, control, or suffering. Adopting an Embodied Education (Barone et al., 2024) and neo-materialist perspective (Braidotti, 2013) the contribution aims to outline pedagogical trajectories toward more inclusive and transformative schools.

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Keywords: schoolbelonging, diversity, othering, embodied education

Disability Inclusion in Sport Communities: Insights from the European “PlayInc4Kids” Project #46

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Sport provides physical, psychological, and social benefits; however, EU data indicate lower sport participation among people with disabilities (27.6 %) compared with their non-disabled peers (58 %) (2017 data, van Lindert et al., 2023). This gap highlights individual, social, and environmental barriers, including limited coach expertise and inadequate facilities (Martin et al., 2020). The PlayInc4Kids project (ERASMUSSPORT2024SCP; Project No. 101185186) involves sport clubs and associations from Italy, Spain (Catalonia), Croatia, and Austria, aiming to promote more inclusive sport environments through stakeholder engagement. This first phase of the project pursued two main objectives: (1) to map existing inclusive practices, barriers, and training needs in grassroots sport; and (2) to translate these findings into evidence-informed operational guidelines to support the development of inclusive sport environments.

Method:

Coaches (n = 68; Mage = 39.3; 35% female) and parents (n = 81; Mage = 43.7; 79% female) completed a web-based survey collecting quantitative and qualitative data, including demographics, prejudice toward disability, an inclusion index (adapted from Booth & Ainscow, 2002), training needs, and perceived self-efficacy.

Results:

Based on the insights gathered from the survey, four main areas of intervention were identified: training and empowerment for coaches; creating an inclusive team and club culture; fostering a continuous dialogue with parents; raising community awareness

Discussion:

Building on the needs identified through the survey, inclusive practice guidelines for sport

communities were progressively co-constructed through ongoing dialogue with partners across the four national contexts, integrating research evidence with situated knowledge. Subsequent project phases will involve applying the guidelines in sport settings to assess their transferability across sociocultural contexts, sustainability, and impact on clubs' everyday practices.

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<https://doi.org/10.1007/978-3-031-21759-3>

Keywords: inclusive, sport, coach, training, disability, community, approach, children, and, adolescents

Embodied Education and Gendered Embodiment: Rethinking the Pedagogies of the Body in Gender Socialization with “Fighting Self-Awareness” #59

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This paper explores the intersection between Embodied Education and Gendered Embodiment Theory, examining how early gendered conditioning shapes the relationship between body, identity, and power. Drawing on pedagogist Elena Gianini Belotti's seminal work *Dalla parte delle bambine* and Iris Marion Young's *Throwing Like a Girl*, it highlights how girls are socialized from early childhood to perceive their bodies as weak and constrained, internalizing patterns of inhibition and spatial limitation. Cultural prohibitions against physical expression and movement—particularly activities like wrestling or physically demanding play—create self-fulfilling prophecies of female inferiority. These restrictions not only limit neuromuscular and cognitive development but also foster emotional frustration and acceptance of male physical dominance.

The body becomes a site of asymmetrical and binaristic socialization, where “boys” are encouraged to expand and act, while “girls” are taught to contain themselves. This hierarchical embodiment is foundational to gender-based violence. In response, integrated pedagogical models that incorporate experiential and bodily practices are necessary to reconstruct self-perception and relational dynamics. The paper focuses on *Autocoscienza Combattente* (“Fighting Self-Awareness”), a form of Empowering Self-Defense developed within the Gender Studies Master's program at Roma Tre University, the Academic Network UN.I.RE (Italy) and the Universities of Buenos Aires (Argentina) and Puebla (Mexico). Rooted in a psychocorporal and trauma-sensitive approach, it combines martial and healing practices (Taijiquan, Ju-jitsu, Muay Thai, Daoyin), socio-cultural contestualization of gender-based violence, narrative practices (mythopoesis), and psychotherapeutic frameworks for trauma recovery.

By reappropriating corporeal agency, this methodology transforms the body from a passive site of oppression into an active ground of resistance.

Keywords: embodiment, education, gender, body space

Reverse Inclusion in Sport as an Embodied Educational Experience #63

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This paper explores reverse inclusion in sport as an embodied educational experience grounded in lived corporeality, emotion, and social interaction. The study presents a qualitative investigation conducted within a university course on Sport and Disability, centred on a theoretical–practical sitting volleyball session designed as an experience of reverse inclusion, where students without disabilities participate in an adapted sport originally conceived for athletes with disabilities (Hutzler et al., 2016; Ramsden et al., 2023). Drawing on Merleau-Ponty’s phenomenology of the lived body and Dewey’s pragmatist conception of experience as a continuous transaction between organism, environment, and social world (Dewey, 1938; Merleau-Ponty, 1945), the paper conceptualises reverse inclusion as an educational situation in which learning emerges through bodily action, perception, and shared engagement. This perspective is further informed by embodied cognition approaches that recognise the body as a subject of cognition rather than a mere object of instruction (Gómez Paloma, D’Anna, & Zotti, 2015). In addition, insights from affective neuroscience are mobilised to illuminate the role of emotion in learning processes. Damasio’s theory of somatic markers (1994; 1999) and LeDoux’s work on emotional processing (1996; 2000) highlight how bodily and emotional responses precede reflective thought and orient attention, meaning-making, and ethical judgement. Sitting volleyball is interpreted as an embodied learning environment that disrupts habitual motor patterns and normative assumptions, exposing participants to bodily constraint, vulnerability, and interdependence. Qualitative data were collected through open-ended questionnaires administered to 29 university students and analysed using thematic analysis. Findings indicate that embodied participation fostered perceptual shifts, emotional resonance, and reflective awareness, supporting a transformation of students’ representations of disability and inclusion. The paper argues that reverse inclusion constitutes a form of embodied inclusion, in which educational transformation occurs through lived bodily and emotional experience. Inclusive sport practices such as sitting volleyball emerge as powerful pedagogical contexts for rethinking inclusion, professional identity, and ethical responsibility as situated, affective, and relational achievements within embodied education.

Keywords: reverse inclusion, sport, embodiment, experience

Bodies, Space, and Belonging: Educational Drama as a Site of Embodied Inclusion #80

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The university, as an institution of knowledge production and a site of public intellectual engagement, has a responsibility to embody the values of inclusion and equity. Yet, for many students with disabilities, the university environment remains a space of exclusion, invisibility, and bodily marginalisation. This paper examines the spatial and embodied experiences of students with

disabilities who participated in Educational Drama courses within a university study programme.

Employing a qualitative case study methodology, including semi-structured interviews, experiential narratives, and participatory observation, the analysis identifies the multiple ways in which the university environment enacts exclusion. Drawing on Lefebvre's *The Production of Space*, Merleau-Ponty's phenomenology, Bachelard's *The Poetics of Space*, and critical disability studies, the study conceptualises disability not as an individual deficit but as an interpretive lens through which the embodied and spatial assumptions embedded in educational spaces are revealed.

In this context, Educational Drama functions not merely as a pedagogical methodology but as a site of embodied learning, acceptance, and expression. It provides an alternative environment in which bodily difference is neither pathologised nor marginalised; rather, it is granted voice, rhythm, and presence, thereby transforming power relations within the classroom. By foregrounding embodiment, the practice enables students to engage fully with space, social interaction, and self-representation. The paper advocates a spatial and pedagogical re-examination of the university as a social body, attuned to the silences, pauses, and slow temporalities of the 'other' body.

Keywords: embodiment, educational drama, disability, inclusion

Individual Paper Session 6.4 · A210 · Paper

Individual Paper Session 6.5 · A212 · Paper

Individual Paper Session 6.6 · A214 · Paper

Embodied Experimentalism: Neuropragmatism, Cybernetics, and the Inescapable Entanglement of Body-Mind in Education #166

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In his 1929 book, *The Quest for Certainty*, John Dewey introduces "experimental empiricism" to emphasize the embodied and enactive conception of experience in his pragmatism as distinct from the disembodied, atomistic, and sensationalistic conception of experience of modern philosophy. Since its publication, on the heels of what would become the quantum revolution in physics, pragmatic turns have happened in physics and in cognitive science and neuroscience. The consequences of these turns are anticipated in Dewey's philosophy of education. The experimental empiricism, however, has yet to be fleshed out in richer detail in light of the last century of scientific developments. I develop this experimental empiricism through Dewey's conception of body-mind in light of first-generation

cybernetics, neuropragmatism, and more recent work in cybernetic theory.

Dewey's body-mind emphasizes the evolutionary development of consciousness out of mind, mind out of organic body, and organic body out of physical processes. This alternative to mind/body dualism signifies the need to reconstruct education in not only its aims and methods but also in situating human bodies in cultural environments. Neuropragmatism's conception of experience as organism-environment entanglement (symbolized by the diphthong, *Œ*) extends Dewey's work with the aid of contemporary science of life and mind. Like neuropragmatism, Norbert Wiener's cybernetics is influenced by classical pragmatism, notably in its conception of intelligence as distributed through a circuit of brain-in-body-in-world and in its ethical aims of amelioration of human problems.

Where neuropragmatism differs from early cybernetics is in the former's richer conception of regulatory mechanisms as not solely homeostatic (which is the body-based return to a previously set point of equilibrium) but also allostatic (the brain-based anticipatory effort to prepare the body through new set-points to engage with a new environment to navigate). Neuropragmatism also differs from standard enactivist approaches, which emphasize autopoiesis, "self-creating." Neuropragmatism is influenced by contemporary cyborg theorist, Donna Haraway, and her conception of sympoiesis, "creating together."

Embodied experimentalism as a pedagogy requires, first, understanding body-mind as inherently sociocultural and, second, that the human *Œ* is a creating together. The inherently sociocultural nature of body-mind affords, as Dewey foresaw, real possibilities for creative democracy as a way of life for individual and community alike, thereby requiring an educational orientation that takes seriously cultivating bodies and environments through deliberate education for enriching *Œ*. This enculturation is not only culturally embodied in social interactions; its experimentalism must not be solitary. Rather, following both Dewey and the physicist Richard Feynman, learning is a dual process of analysis (breaking wholes into parts) and synthesis (building wholes, old and new, from parts). That is, to understand is to create. Embodied experimentalism for creative democracy is, therefore, inextricably sympoietic. Education reconstructed means thinking of education as *Œ* enculturation promoting creative democracy through understanding through creating together.

Keywords: pragmatism, embodiment, experimentalism, education, sympoiesis

Body Bildung #172

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This paper proposes a conception of Bildung oriented toward bodily existence. While the Bildung tradition, from Humboldt and Kant through Pestalozzi to Klafki, has in various ways engaged with physical and corporeal dimensions, the concept has remained largely bound to the cultivation of mind and soul. To overcome the idealism inherent in the classic humanist conception of Bildung, recent scholarship has stressed the body's important role in educational processes. Extending this, I wish to position bodily existence itself as the aim and end of Bildung. Drawing on Thomas Fuchs' humanism of embodiment, which holds that bodily existence constitutes the very foundation of human being, I will argue that Bildung theory must be expanded to accommodate the formation and cultivation of this

bodily foundation. In my presentation, I will outline and discuss what this expansion might look like by introducing the concept of *Body Bildung*. This will be guided by the claims of Fuchs' humanism of embodiment, as it interrogates the educational implications of the three main principles of embodiment, relationships, and conviviality. I argue that this Bildung theoretical framework offers new educational purposes and legitimacy for sport and movement in schools and society. Rather than justifying movement practices instrumentally, Body Bildung points toward how physical education, sport, and other body cultures can serve as arenas for forming and cultivating both our physical bodies and our existence as embodied beings.

The Guided Dance. Three Imprecise Approaches #171

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[Abstract to be added]

Individual Paper Session 6.7 · A200 · Paper

The Practical and Motor Components of Writing. A Workshop on Learning How to Write #138

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Cursive writing, understood as a graphic bridge between fluid thought and personal expression, represents, for a growing number of primary school children, an impenetrable territory, characterized by slow execution, muscle tension and feelings of frustration. Empirical observation, repeated in the school context, shows that the difficulty often lies not in the communicative intention, but in the execution of the graphic gesture, perceived as a mechanical obstacle rather than a natural extension of thought.

Based on neuroscientific evidence from the last two decades, the close interconnection and simultaneity between cognitive processes and body control systems have been documented (Caruana & Borghi, 2013; Ianì, 2022; Gomez Paloma et al. 2016). In the perspective of embodied cognition, the body is not merely a vehicle for higher functions, but a co-constitutive actor in complex skills such as language and writing. In support of these assumptions, some neuro-evolutionary theories hypothesise a co-evolution of linguistic and motor skills, supported by the functional integration between the visual, motor and linguistic systems (Dehaene, 2020; 2009; Choi et al., 2021; Feng et al., 2022). Starting from these arguments, the present study investigates the possibility of systematically educating the writing gesture by intervening on its neuromotor foundations.

To this end, a structured and continuous curricular workshop (one hour per week) was designed and implemented in the first cycle of primary school, not aimed at the direct teaching of letters, but rather at preparing the graphic gesture through a holistic and multisensory approach. The intervention was structured along two complementary axes: (1) the enhancement of fine motor skills and eye-hand coordination (competence axis) and (2) the reduction of interfering tensions through body awareness and tonic regulation activities (relaxation axis).

The study analyses this integration considering recent discoveries on brain functioning in reading and writing processes. Preliminary results suggest that intentional education in handwriting can promote greater fluidity of execution, a reduction in tension and better alignment between communicative intention and written production, offering relevant implications for pedagogical design in the early years of schooling.

Keywords: writing, gesture, assessment, lab teaching

Embodied Education and TPR: Inclusive Language Teaching in Infant School #145

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Neuroscience and Cognitive Science Research demonstrate that cognition is not merely abstract or symbolic, but deeply rooted in perception, bodily movement, and interaction with the environment (Lavazza et al., 2025). Embodied Cognition Studies (Barsalou, 2008; Varela et al., 1991; Borghi & Caruana 2015) highlight how learning and reasoning are based on sensorimotor experience. Children aged 0–6 benefit from a neurological advantage in foreign language (FL) learning (Hartshorne, Tenenbaum, & Pinker, 2018), making preschool and the first two years of primary school optimal contexts for initiating authentic acquisition processes (Favaro, 2016). A key factor in enhancing early FL learning is the experiential dimension, which enables young learners to internalize knowledge through sensory and motor activities according to Total Physical Response model.

Based on these premises, this study proposes the application of this model to the best use of music for Spanish language teaching in Infant educational context for Italian learners. In line with this, the body is an efficient inclusive mediator, which is able to fulfill students with different cognitive profiles or neurodivergences in the classroom. Inclusive culture provides a theoretical framework whose specific planning abilities are able to fulfill people's need (Pinelli, 2021). This proposal illustrates a workshop lead with 20 children of Infant school of Palermo. The results show a significant improvement during Spanish language learning from the whole class. This progress is linked not only to the correspondence between Italian and Spanish (Di Gesù, 2016) but also to the integration of body activities during the learning process.

Keywords: embodied education, tpr, languages, inclusion

Learning writing skills from an embodied perspective: neurocognitive foundations and educational implications #148

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Recent neuroscientific research suggests that the acquisition of reading and writing cannot be understood as a purely symbolic or linguistic process, but rather as one grounded in the integration of perceptual, motor, and linguistic systems (Olivieri, 2014; Umejima et al., 2021). In this perspective, the

Visual Word Form Area (VWFA), a left occipito-temporal region involved in the recognition of graphic configurations of letters and words, plays a central role in literacy processes (Dehaene, 2005; 2009; 2020). According to the neural recycling hypothesis, the acquisition of culturally recent skills such as writing relies on the functional reorganization of pre-existing neural circuits originally devoted to visual object and natural shape recognition. From a pedagogical perspective, these findings encourage approaches to early writing instruction that connect perceptual experience with bodily action (Coco & Piazza, 2023). Within this framework, a teaching experience was conducted with pre-service teachers enrolled in a Primary Teacher Education program during their curricular internship. Student teachers implemented embodied learning activities aimed at supporting early writing processes in primary school pupils. These activities included motor exploration of geometric and natural shapes, large-scale spatial tracing of pre-letter forms, observation and imitation of patterns found in natural objects, and body-based reproduction of graphic trajectories (e.g., curves, lines, and intersections). During classroom implementation, the student teachers carried out systematic observations using an observation grid based on neuroscientifically informed indicators related to perceptual discrimination, motor coordination, spatial organization, and the recognition and reproduction of graphic forms. Preliminary results indicate improvements in pupils' ability to identify graphic patterns, organize movements in space, and reproduce letter-like shapes with greater control. The observations also suggest a progressive reduction in mirror confusions between visually similar letters (e.g., p-q, b-d), consistent with the neural recycling hypothesis, according to which early writing learning requires inhibiting the visual system's natural tendency toward mirror invariance.

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Keywords: writing processes, neuroeducation, primary school

Parallel Session 7 · Wednesday June 10th · 13:30 – 15:00

Individual Paper Session 7.1 · A200 · Paper

Embodied Education through Donkey-Assisted Interventions: An Experience of Bodily and Relational Transformation with Adolescents #55

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This contribution documents and analyzes an embodied education intervention (2 sessions, 2 hours each), with a group of 11 adolescents with Eating Disorders, utilizing donkeys as pedagogical mediators. The intervention was conducted at ASD Cavalieri della Cittadella in Ancona, a center accredited for Animal-Assisted Interventions (AAI). Cooperativa Sociale COOSS Marche onlus scpa has been implementing donkey-assisted interventions in their services since 2022. The theoretical framework is grounded in Shaun Gallagher's 5E paradigm, which recognizes how learning emerges from bodily experience situated in specific relational contexts, transcending the Cartesian separation between mind and body (Gallagher, 2005; Damasio, 1994; Gallese, 2003; Francesconi & Tarozzi, 2012).

The intervention addresses the necessity, highlighted by Dewey (1938), for an education that begins with concrete experience and the continuity between organism and environment. As Hudak (2020) emphasizes, when working with subjects experiencing profound disconnection from their own bodies, it becomes fundamental to create "spaces of ontological inclusion" where the body can be rehabilitated as a locus of presence and meaning.

The adolescent participants were guided through a pedagogical progression that included: mindful walking exercises with proprioceptive attention, group coordination with free-roaming donkeys, reciprocal bodily containment practices, and embodied mentalization role-play. The donkeys are social and empathetic animals (Mignosi, Vaccarello 2018), and they functioned as "living mirrors" (Hudak, 2020), providing authentic and non-verbal feedback on participants' emotional and bodily states. Data collection employed observation sheets, reflective diaries, and semi-structured focus groups to document the transformative process.

Results show visible transformation: from automatic and disconnected movement to conscious bodily presence, from group fragmentation to an authentic experience of community.

Keywords: embodied education, donkey-assisted interventions

'Seeing through the eyes of the skin': recovering the sense of touch as a practice of embodied inquiry in the school grounds #91

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The past decade has seen a massive growth in community science activities, including formalised initiatives seeking the participation of children in schools. The availability of low-cost, mobile technologies and attention to local places have significantly expanded the reach of scientific knowledge (Hognogi et al., 2023). However, key questions emerge at the critical boundary of how different communities come to know and inhabit highly anthropized places, and re-gain familiarity with more-than-human others.

This paper draws upon findings from a funded project focusing on the sense of touch (haptics) as a practice of embodied inquiry. Against a background of global decline in children's nature experiences, haptic awareness has been foregrounded as the necessary medium to recover human affinity with nature (Stagg & Dillon, 2022); but this calls for the need to expand the scope of embodied inquiries in science education (Kersting et al., 2021) by re-focusing on the sense of touch itself, notably sidelined in visually-dominated urban environments.

Drawing on data collection incorporating field observations and a range of children's digital and physical artefacts across 11 schools, episodes of touch illuminate the generative process of designing for a diversity of tactile inquiries through a patchwork ethnography (Günel et al., 2023). Findings disclose the emergence of affective and imaginative experiences connected to children's own curiosity and disposition to observe, not solely with the eyes but with the sensitivity of the hands, advancing opportunities for schools to advance embodied inquiries fostering children's own sense of place.

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Keywords: haptics, place, curiosity, design, affect

Extended Movements – Spontaneous and Planned Ways of Meeting Diversity and Special Needs in a Compulsory School for Pupils with Intellectual Disabilities #162

Anna Hellqvist, Inger Berndtsson

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This presentation is based on a study (Hellqvist, 2023) conducted at a compulsory school for pupils with intellectual disabilities, neuropsychiatric diagnoses and severe mobility impairments. Five student-assistants supported six pupils aged 16 to 20 in both educational contexts and all aspects of daily care. The aim was to identify how the assistants could support and strengthen the pupils' processes of experiencing agency. The theoretical framework is based on Merleau-Ponty's (2004) theory of the lived body and agency (Baldwin, 2021) and the concept of horizon (van Peursen, 1977).

The methods chosen were participant observations, photos and individual semi-structured interviews with the assistants. The empirical material was collected using a variety of methods with the "ability to do justice to the regional world to be studied" (Bengtsson, 2013).

By investigating salutogenic situations, where the pupils appeared to experience both agency and self-esteem, it was found that the student-assistants:

- * let their own bodies to be used as an extension of the pupils' bodies
- * saw the world through the pupils' eyes and, so to speak, walked in the pupils' shoes
- * immediately switched between I-you-we and subject-object in relation to the pupils
- * acted both spontaneously and in a planned manner

The way in which the student-assistants met the pupils was crucial to the pupil's ability to feel that they were listened to and had the possibility to both decide and act, despite an extensive need of support. This identified embodied education can be a bridge to inclusion, here characterised as lived and experienced.

Keywords: embodiment, school, intellectual disabilities, agency

Individual Paper Session 7.2 · A210 · Paper

Experiential theory: embodying the history of dance #24

Zeynep Gunduz

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This presentation contributes to discussions on reimagining theory pedagogy in the specific context of higher dance education by proposing an experiential and embodied learning approach. While bodily experience is central to dance education, theory courses taught in traditional formats and spaces—where students primarily sit and listen—often remain disconnected from students' lived and physical modes of understanding.

The presentation introduces a newly designed dance history course developed for BA Dance students in the Dance Arts in Context department at Fontys Academy of the Arts in Tilburg, the Netherlands. Grounded in experiential learning theory and embodied pedagogy, the course positions the body as

central to the learning process alongside the mind. Through activities such as movement-based exploration and embodied reflection, theoretical concepts are first encountered through bodily experience and subsequently articulated through critical reflection and academic discourse.

The presentation identifies key characteristics of this pedagogical approach and reflects on its potential to transform how dance history is taught and learned, offering a response to the persistent gap between traditional theory instruction and the embodied ways in which dance students learn.

Keywords: experiential theory, embodying dance history

Embodied Music Cognition Influence on the Conceptions of a Music Teacher-Student. A case study #39

Annamaria Minafra

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From the embodied cognition perspective, the process of acquiring knowledge is inextricably intertwined with the body (Gallese & Morelli, 2024), which is the tool through which individuals experience the world (Merleau-Ponty, 1945/2002). This study aims to explore how self-reflecting on lived experience (Merleau-Ponty, 1945/2002) carried out during academic courses at an Italian Conservatory affected conceptions that a teacher-student had on his professional identity

To explore and describe this issue in detail – specifically the relationship between body and mind – a qualitative study was undertaken. A case study, adopting a phenomenological approach, involved a music teacher-student who was guided to ‘reflect-in and on-action’ (Schön, 1987). This student was chosen for this study to observe whether and how the theoretical and practical activities of the courses he attended during the year had affected his conceptions of teaching and the conduct of his lessons, since he teaches another subject in a public school. The methods to collect data were two semi-structured interviews – one at the beginning and the other at the end of the courses – observation, and audio-visual material.

The findings show how self-reflecting on the practical and theoretical activities led the student-teacher to change his conception of being a teacher. He became aware of the role that the body has in the knowledge and learning process, as it constitutes the tool of interaction not only between himself and the external world, but also between himself and his students and among the students themselves.

Keywords: embodied music cognition, teacher-student's conceptions

Creating Conditions for Shared Concentration in Nonviolent Practice Through Theatre: Teacher's bodily actions #41

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This paper builds on previous collaborative research between the University of Gothenburg and the Municipality of Härryda (Ferm Almqvist & Klockars, 2026) on the (co-)creation of nonviolent spaces in theatre activities. The results highlighted the importance of structure and trust in collaboratively enabled nonviolence spaces. This paper explores further how a theatre teacher can use bodily actions in fostering shared concentration in such spaces. The guiding research question for this paper is:

How can teachers use bodily actions (including voice and gaze), in facilitation of theatre activities to support all pupils in entering a state of concentration as a basis for participation?

The current study examines theater activities, using phenomenologically grounded collaborative action research. To grasp bodily actions, we draw upon Merleau-Ponty's (1962) thinking regarding human beings as bodily subjects, closely intertwined with the world. Hence, teachers' interaction with students, the content and the educational environment, are seen as bodily constituted. The research design involves reciprocal reflective logging: the theater teacher wrote a double log reflected upon by the researcher, while the researcher produced a triple log during field visits, which the teacher then reflected upon. The material was analyzed continuously and holistically. The analyses resulted in the following themes: To catch focus; To be continually attentive and present; To be near and clear; To handle voice intensity; To act as a "wall"; To use one's bodily self as an example.

Bodily actions, non-violence, theater, phenomenology, collaborative research

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Keywords: bodily, non-violence, theatre, phenomenology, collaborative

Self-Making Through Fiction: Manga and Cosplay as Sites of Identity Building and Negotiation #5

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Research on identity development highlights how identity is a complex, evolving process shaped by cultural environments, interpersonal relationships, and the symbolic worlds we engage with. For example, fictional characters, such as those in comic books, can provide meaningful models through which people can understand and interpret themselves. Although Japanese comic books, also known as manga, are now famous worldwide and cosplay is increasingly popular, few educational and psychological studies have analyzed their role in identity development.

This study analyzes how manga, together with the embodied performance of cosplay, influences

identity and character formation among young adult Italian readers. Drawing on a quantitative study that incorporated the Identity Style Inventory, the Mini Questionnaire of Personal Organization, and evaluations of manga categories and archetypal characters, the results demonstrated significant associations between character identification and distinct identity styles. For cosplayers, imitating a character's posture, gestures, and mannerisms adds a bodily dimension to identification. Through costume and performance, they can express themselves freely, build self-confidence, and feel a sense of belonging within their community.

Overall, both reading and cosplay performance serve as models of embodiment through which individuals can experience an alternative self. Consequently, this study argues that identifying with fictional characters can offer valuable insights for education, highlighting how diverse experiences can support inclusive, non-normative paths to developing one's own identity.

Keywords: identity, character, embodiment, manga, cosplay

Pupils' expression of competence in relation to the local risk of flooding through embodied engagement with the serious game Riskville #100

Jesper Haglund, Nina Christenson

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The study focuses on lower-secondary school pupils' embodied engagement with the serious game Riskville, which they took part in during an out-of-school visit to Karlstad University on the theme of the local risk of flooding. In Riskville, pupils are invited to contribute to creating an attractive city to live in and explore the local flood risk and adaptations to flooding in a model of the city on a carpet on the floor, working in small groups. Using a framework of different senses of embodiment in science education, the analysis shows how pupils engage their bodies as a resource in expressing competence in their participation in the game. In a physical sense, pupils engage physically with the model by adding model houses, industries or roads, and experience the consequences of their choices. In a phenomenological sense, pupils express empathy with imagined or real victims during flooding events. In an interactionist sense, pupils experience the complexities of urban planning in negotiating conflicting proposals between different groups. For example, how should they use an attractive unexploited area, for residential buildings or recreation? In this way, the study shows how embodied engagement enables pupils to express different dimensions of competence in relation to the risk of flooding, in the form of content knowledge, skills and dispositions. Participation in the serious game Riskville thereby prepares pupils to take appropriate action in the case of real flooding.

Keywords: flood risk, competence, science education

Common Thread: Remembering, Making, Belonging: Ongoing Practice-Led Research through Feminist Ethnography, Affect, and Craft #102

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Common Thread: Remembering, Making, Belonging

Ongoing Practice-Led Art-Based Research through Feminist Ethnography, Affect, and Craft

This paper discusses COMMON THREAD, an ongoing, practice-led art-based research project developed with women from Phule Nagar, an urban informal settlement in Mumbai. Situated within feminist ethnography, affect theory, material feminism, and feminist craft studies, the project approaches working with textile—natural dyeing, hand embroidery, and collective stitching—as an embodied research method and educational practice. The research is intentionally process-oriented, privileging relational engagement, material encounters, and co-emergent meaning over fixed outcomes.

Method:

The research is ongoing and unfolding over six months through weekly participatory workshops with 20–25 women aged 18–60. Methods include memory-based prompts, story circles, natural dyeing, hand embroidery, and collaborative textile making. Feminist ethnographic principles of care, reflexivity, and attentiveness to power inform facilitation and documentation, while materials—cloth, dye, thread—are treated as active participants shaping narrative, affect, and pace. Knowledge is generated through making, repetition, and shared bodily presence rather than reliance on verbal or textual accounts.

Emerging Insights:

Early stages of the project suggest that craft-based processes enable the surfacing of affective and biographical knowledge that often remains unarticulated in conventional educational or research settings. Emotions such as care, grief, pride, and resilience appear to circulate through colour choices, stitch rhythms, and collective labour. Intergenerational exchange is emerging as a key dynamic, with older women contributing memory and technique, and younger participants negotiating form and experimentation. Collective making is ubiquitous and fosters trust, support, confidence, and a sense of shared authorship.

Reflections-in-Process:

The paper reflects on methodological and ethical questions arising in situ: how to balance expressive and livelihood-oriented goals, how materials co-direct narrative, and how practice-led research can remain accountable, non-extractive, and inclusive. The project proposes craft as a critical feminist method for embodied education and ongoing knowledge-making in contexts shaped by structural inequality.

Keywords: art-based, feminist, ethnography, craft, community

Mindful Attention and Enactive Modelling in Science Education #110

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What might lead a student, at a given moment, to question a way of thinking and acting that “works” and to confront another possible vision of the world? This question emerged from classroom research in astronomy at kindergarten and upper secondary levels, including work with the Human Orrery. In these situations, bodily engagement was present—students moved, measured, manipulated—yet modelling did not always deepen. How might a 5E approach help rethink modelling activities?

From this perspective, modelling does not consist in moving from the concrete to the abstract, but in progressively transforming a loosely differentiated bodily engagement into increasingly schematized and shareable forms. Such an approach challenges the comfort of a stable, pre-given environment or definitively grounded model. If knowledge emerges within interaction, what stabilizes are shared distinctions and provisional invariants rather than a fixed world. In classroom situations, this perspective highlights a recurrent tension in modelling activities: discrepancies are often disregarded to secure familiar models. This may reflect not only didactic difficulties but also a deeper demand for coherence and protection of the self.

To explore how cognition without ultimate ground can remain viable, Varela turned to Buddhist philosophy. Jung described differentiation and integration as processes through which opposites can be held without collapse. Moving between these perspectives has led me to frame “rituals of observation” as a didactic response: practices that train attention, transform what learners become sensitive to, and render enactive modelling meaningful.

Keywords: astronomy, observation, modelling, inquiry, attention

Enacting Learning in Mixed Reality: Educational Purposes and Pragmatic Effects. Pedagogical Insights from a Literature Review #128

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In the contemporary postdigital context (Jandrić et al., 2018), enactive and embodied approaches identify immersive educational technologies as a fertile area of application. Several authors (cf. Gonçalves et al., 2024) have taken up and further developed Francisco Varela’s insights (1999), identifying immersive settings as spaces for designing and observing educational experiences grounded in enactive and embodied principles.

At the same time, theoretical frameworks such as Embodied Immersion (Xu, Kang, & Yan, 2022) offer conceptual tools to deepen the interpretation and design of technology-mediated immersive learning experiences, reframing them as technology-enabled embodied learning environments (TEELEs).

The present study develops an ongoing literature review aimed at identifying and critically examining research that draws on enactive principles to design, observe, and assess learning experiences in immersive, technology-enabled settings.

The review is being conducted using major education databases (ERIC, Scopus, Web of Science, JSTOR, PsycINFO, Education Research Complete, Education Database, and SciELO), as well as search engines providing access to grey literature (e.g., Google Scholar). The work focuses on two main aspects: the educational purposes and pedagogical objectives informing the design of immersive enactive experiences across different educational domains (e.g., outdoor education, biodiversity education, special education, STEM education); and the pragmatic effects reported in the literature.

The contribution will outline the theoretical framework guiding the review and the methodological criteria adopted for materials selection and analysis; a pedagogical reflection on educational

implications and patterns emerging at the intersection between the enactive approach and immersive technologies will be sketched out as tentative result useful for driving the next steps of this exploration.

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Keywords: enaction, immersive technologies, educational purposes

A Framework of Embodied Decisions for Conceptual Change Theory #146

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Processing the fact that the Earth is a sphere requires a shift in one's mental position from a view on Earth to a view from space, while the embodied position remains on the ground. That is, learners must mentally shift their position to acquire a different perspective.

In this theoretical paper we present a framework of embodied cognition that distinguishes a series of decisions learners take when learning a concept such as the shape of the Earth. These decisions concern (a) worlds, (b) positions, (c) perspectives, and (d) foci: Learners locate themselves in worlds, that can be experiential or imagined. In these worlds, learners adopt certain physical and social positions. Each position affords specific perspectives, and within a perspective learners focus their attention on particular elements.

The shape of the Earth is a widely studied example in conceptual change research. In analyzing leading theories (e.g., DiSessa & Sherin, 1998; Vosniadou, 1994; Mortimer, 1995), however, we found that they overlook the embodied decisions learners make regarding worlds, positions, perspectives, and foci. Our analysis reveals that none explicitly address these dimensions, rendering existing frameworks incomplete. This oversight risks misattributing students' challenges to misconceptions rather than limitations in perspective-taking or world-shifting. Instead, targeted interventions should take perspective into account (see Schur & Galili, 2009). We discuss that integrating embodied cognition concepts would thus strengthen conceptual change theory.

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Keywords: embodiment, worlds, position, perspectives, stem

Individual Paper Session 7.3 · A212 · Paper

Individual Paper Session 7.4 · A214 · Paper

Individual Paper Session 7.5 · A222 · Paper

Embodied listening and its forms. Acouological education as viewed from empirical research #173

Dr hab. Małgorzata Przanowska, prof. UBC

The University of Warsaw; The University of British Columbia (af. prof. 2024-2026)

The aim of my presentation is to familiarize the audience of the Embodied Education conference with my empirical research on listening as a phenomenon not reduced to the sense of hearing connected not only to the intellectual capacities of human beings. Listening is a way of being. My research (conducted in Canada) confirmed that acouology, a bodily and interpersonally centered approach to education, is a valid and intersubjectively shared experience. Forms of listening deliver a new vocabulary for human understanding, education, communication, and relationship-building. The listening experience is strictly connected with the feelings and body-mind presence of the listener. These are just to mention a few of the results gathered from my empirical research on acouology (forms of listening). I will briefly introduce the audience to acouology and sketch the idea of my research, from phenomenological method to interviews. I will also show how acouological education, as a carnal and interpersonal experience, motivates a different approach to education.

Together we can discuss a few questions, for example:

How does a listening body ground a human being within a material, physical reality?

What does the relationship between listening, contact (being-in-touch) and experience constitute our educational approach?

What are the limitations of the acouological approach?

From Threat to Communicative Intention: An Embodied Anxiety-Redirection Program for Pre-service Teachers #93

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Public speaking anxiety (PSA) is widespread among pre-service teachers and can undermine participation and professional identity. Rather than trying to suppress anxiety, embodied approaches propose redirecting felt activation through posture, movement qualities, gesture, and imagery in socially situated performance. We report an experimental evaluation of Corp-Oral, a 5-hour embodied training that integrates body awareness, gesture enrichment, embodied message techniques, simulation, and embodied visualization to reframe anxiety sensations as communicative energy.

Thirty-six teacher-education students with moderate–high PSA were randomly assigned to Corp-Oral (n=18) or an active control session (lecture plus breathing exercises; n=18). In pre- and post-tests, participants completed a standardized public-speaking challenge (baseline, preparation, anticipation, speech) while self-perceived anxiety, heart rate, and 32-channel EEG were recorded. During the post-test speech, the Corp-Oral group showed a large reduction in self-reported anxiety (33% decrease) alongside a small decrease in heart rate (4.7%), whereas the control group showed minimal change in self-reports and an increase in heart rate. EEG analyses showed an across-band increase in spectral power after training, most pronounced over right fronto-central and parietal sites, and a significant increase in frontal alpha asymmetry, while the frontal theta/beta ratio did not change reliably.

We interpret this pattern as an embodied shift from threat/avoidance toward intentional, socially expressive engagement supported by heightened action awareness and top-down regulation. We discuss implications for embodied teacher education and for designing pedagogical spaces where voice, gesture, and affect are practiced as relational, learnable skills.

Keywords: public speaking anxiety, eeg

Embodied Learning in the Social Age: Reconfiguring Education Between Digital Environments, Bodies, and Practices #54

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This contribution explores how education is being reconfigured in the Social Age through the growing entanglement of bodies, technologies, and learning environments. From a pedagogical and interdisciplinary perspective, it examines the educational implications of the on-life condition, in which

digital and physical dimensions are no longer separable but mutually constitutive of experience, cognition, and social interaction.

Drawing on Embodied Cognitive Science and theories of distributed cognition, the paper challenges dualistic separations between mind and body, conceptualising learning as a situated, relational, and dynamic process co-constructed through interactions among learners, bodily action, material spaces, and digital infrastructures. Technologies are thus understood not as neutral tools or external supports, but as active components of educational ecologies that participate in shaping attention, meaning-making, and participation.

Empirical insights are drawn from an educational experience grounded in Embodied Cognition and implemented in school settings through an Habilitative Drama Workshop (HDW).

Students' logbooks and cognitive autobiographies reveal a nuanced understanding of their embodied engagement with social media, highlighting both critical awareness of risks, such as self-exposure, cyberbullying, and addictive behaviours, and recognition of the educational potential of digital platforms for participation and relevance. The contribution concludes by framing schools as embodied communities of practice capable of renewing themselves through continuous engagement with cultural and technological change, where digital skills for life become structural dimensions of education.

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Keywords: embodiment, on-life, social, learning, skills

Workshop Session 7.6 · A201 · Workshop

The issue of teachers' stage presence. A training workshop for mathematics teachers inspired by the anthropology of theatre. #92

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The teacher' understanding of his/her being in a room/space with a group of students is often seen as a "performance" in the sense of effectiveness and accomplishment of a task fulfilling its purpose (students' learning). Technological metaphors regarding the assembly line or a control system (feedback) are used to train teachers to adapt to such an understanding (Egan, 1986, p. 31).

The pedagogy and anthropology of the performative arts offer a humanistic and aesthetic understanding of "performance": teachers and students play a living dramaturgy, and their being in the room involves a pre-expressive level of action (Barba, 1995; Barba & Savarese, 2005), a presence.

The theatrical metaphor offers fresh inspiration by conceiving the classroom as a stage and teaching as a canovaccio, thereby reintroducing wonder and pleasure.

A design-based research project developed since 2014 at the Primary Education Mathematics Lab of Roma Tre University takes as its working hypothesis that the mathematics teacher's stage presence and feelingly knowing (van Manen, 2002, 2008), together with "pretending not to know" (Polya, 1945/2004; Enriques, 1921), play a pivotal role in playing a fictional plot with the class.

This role arises from mathematics being a relational, embodied, and imaginative experience, historically and culturally grounded—not at all a droughty mass of numerical procedures. Our lessons and itineraries of expressive maths© (Neri Macchiaverna & Millán Gasca, forthcoming) are coupled with teacher's training workshops on stage presence (Neri Macchiaverna, 2026, Lizasoain Iriso [coord.], 2022) involving also the zibaldoni, brief, non-linear writings produced alongside activities (Neri Macchiaverna, 2014, 2016, Demetrio 1996).

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Keywords: performative pedagogy theatre anthropology teacher education mathematics education reflective writing in teacher education

Relational gesture and emergent form in early childhood: a hands-on embodied workshop #35

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This contribution proposes a hands-on, practice-based workshop for early childhood education (ages 0–6) within the framework of Embodied Education. The session is designed as a participatory experience in which learning and relational meaning emerge through situated bodily action rather than verbal explanation or predefined cognitive tasks. It foregrounds gesture, rhythm, spatial orientation, and intercorporeal presence as primary educational resources.

The workshop is conceived as a 45-minute embodied practice for small groups (6–15 participants). It uses simple sensory materials, sand, tracing tools, and basic geometric forms, as material mediators of movement and meaning-making. The session unfolds through three connected phases. First, participants engage in paired movement with closed eyes to cultivate bodily attunement and relational synchrony. Second, each participant performs a single slow gesture in sand, in silence, allowing rhythm and intentionality to arise from embodied awareness rather than verbal planning. Third, participants continue tracing lines on paper until a form gradually emerges, emphasizing the process through which gesture becomes form.

Rather than aiming at predefined outcomes or assessment, the workshop highlights experiential and qualitative dimensions of learning: pre-verbal sense-making, shared attention, and intercorporeal coordination. The body is treated as an epistemic medium through which structure and symbolic meaning take shape in action.

Positioned as an experiential contribution to the conference, the workshop addresses current debates in Embodied Education concerning learning as situated, affective, and materially mediated. It offers a concrete, transferable pedagogical format for integrating embodied, relational practices into early childhood educational settings.

Keywords: embodiment, relationality, gesture, materiality, emergence

Workshop Session 7.7 · A203 · Workshop

Be Audacious! Experiencing a Kantian Theme Through Lowen's Bodily Approach #78

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The goal of this workshop is to create the conditions for experiencing a Kantian theme - the audacity to learn - engaging not only rationality but the entire body.

To achieve total participant engagement through a bottom-up process, we adopt various methodologies tailored to the context, such as grouping, grounding and awareness exercises, focusing, sharing through speaking and writing, diving into the original philosophical text, and metacognition.

The Padlet platform is used to share each step.

After a warm-up involving self-presentations, participants engage in a short grounding exercise. Activities include paying attention to the body, feelings, and thoughts in the present moment, then

focusing on the best conditions for learning by integrating the external and internal worlds.

Participants are prompted to reflect on the personal meaning of audacity and related feelings, and to explore the relationship between knowledge and audacity in the contemporary world.

These questions attune participants to the heart of the workshop: “Sapere aude” from Kant’s essay *Answering the Question: What is Enlightenment?*

The bodily approach to the philosophical text follows these steps: first, identifying the feelings mentioned in the text; second, examining their role in human agency.

Selecting the most meaningful sentences to address contemporary challenges enhances group engagement.

The experience concludes by sharing process-related feelings, evaluating engagement levels, describing relationships within small groups and among them, and listing individual takeaways.

Keywords: feeling, experience, grounding, awareness, text

Making Sense Together: Participatory Sensemaking and Kolb's Learning Cycle #101

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The Kolb Learning Cycle is a popular model of experiential learning in which agents move through four phases: experimentation, concretization, observation, and conceptualization. This is a dynamic learning model that aligns well with embodied approaches to cognition, centering on student agency, inquiry, and exploration, although Kolb’s theory focuses on behavior and learning in the individual. We here create a 4E account of the Kolb learning cycle by combining it with group role theory, ecological psychology, and participatory sense-making. We argue that, as individual members cycle through various group roles and their associated Kolb phases, they aid the group as a joint cognitive system in transitioning to new modes of engagement at the group level. Moving through group roles often transitions the agent into a new Kolb phase, which, in turn, changes the emergent dynamics of the entire group. Thus, social interaction can drive the learning cycle. Because the behavior of the individual is emergent, we cannot rely on reductivist accounts to explain group learning behaviors as the outcome of individual contributions. Rather, we consider the group as a cognitive system that drives learning. To explore the integration of these frameworks, we will invite participants to take on the roles of researcher and/or dancemaker during the creation of a short collaborative choreography. This will be followed by a reflection on the frameworks’ opportunities and challenges, what it might reveal about learning as a collective, rather than individual endeavor, and the implications for embodied education.

Keywords: choreography, collaboration, affordances, learning, 4e

Parallel Session 8 · Wednesday June 10th · 15:30 – 17:00

Workshop Session 8.1 · A222 · Workshop

Dramatic Enquiry: Philosophy in Motion: a theoretically informed, practice-based exploration of how immersive storytelling, embodied interaction, and collaborative enquiry facilitate embodied learning. #144

Participants examine how entering fictional worlds through drama and philosophical questioning can deepen engagement, stimulate curiosity, and activate whole-body modes of thinking within creative learning environments.

Annie McCourt, Gordon Poad

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This workshop offers an academically grounded yet practice-focused investigation into the pedagogical potential of Dramatic Enquiry as an embodied mode of philosophical learning. It positions immersive storytelling and dramatic framing as mechanisms through which abstract concepts become lived, relational experiences. Rather than approaching philosophical enquiry as a purely discursive activity, participants consider how movement, role, and narrative can function as epistemic tools that enable learners to inhabit ideas, negotiate dilemmas, and encounter multiple perspectives.

Centrally, the session is an examination of how fictional worlds operate as dynamic learning environments. Through selected drama-in-education strategies - such as mantle of the expert, spatial mapping, and embodied reflection - participants analyse how embodied participation can scaffold deeper enquiry, support emotional and cognitive engagement, and democratise access to complex concepts. These techniques illustrate how philosophical questions gain pedagogical force when enacted within a shared dramatic frame, allowing learners to think with and through the body.

The workshop foregrounds the alignment between Dramatic Enquiry and embodied learning, both of which emphasise active participation, sensory awareness, and the co-construction of understanding through interaction. Drawing on research in embodied cognition, drama pedagogy, and dialogic education, the session highlights how embodied approaches can cultivate inclusive, responsive, and intellectually generative learning spaces.

By the end of the workshop, participants will have a nuanced understanding of how integrating embodied drama with philosophical enquiry can create rich, multimodal spaces for learning, connecting ideas to action, self to narrative, and thought to movement in ways that are both meaningful and memorable

Keywords: embodiment, enquiry, story, cognition, creative

Feeling the Mathematics: Embodied Metaphor, CRA, and Inclusive Approaches to Teaching Mathematics #130

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This participatory workshop explores how embodied cognition and the Concrete–Representational–Abstract (CRA) framework can be intentionally integrated into inclusive pedagogical practice to support conceptual understanding of integer addition and subtraction within mathematics classrooms and teacher preparation programs. Drawing on embodied learning design perspectives in STEM education (Abrahamson & Lindgren, 2014) and evidence syntheses demonstrating benefits of embodied approaches for learning (Liu et al., 2025), we introduce a “playground metaphor” for integers that invites learners to physically enact mathematical relationships - such as direction, magnitude, and inverse operations - before transitioning to visual representations and symbolic notation.

Participants will engage in a brief embodied learning sequence that mirrors instructional practice with preservice teachers: movement-based enactment of integer operations, connection to representational models, and reflection on abstract symbols. The session highlights how metaphor and structured bodily activity can serve as pedagogical tools that bridge embodied experience and formal mathematics, supporting sense-making while informing instructional sequencing and teacher decision-making (Abrahamson & Lindgren, 2014). Gesture and movement are framed as resources for explanation, reasoning, and classroom discourse (Seccia, 2024).

The workshop foregrounds inclusive pedagogy by emphasizing learner variability and planning for accessibility from the outset, using the Universal Design for Learning (UDL) Guidelines as a lens for offering flexible supports and multiple pathways for participation and expression (CAST, 2018). We also connect to the CRA evidence base as a well-established instructional progression for supporting conceptual access in mathematics learning (Flores et al., 2024).

Participants will leave with a practical instructional sequence for integers, strategies for integrating embodied learning within CRA, and pedagogical design principles for creating metaphor-rich, inclusive mathematics tasks. The session positions embodiment not as an instructional add-on, but as a foundational approach for advancing conceptual understanding, accessibility, and equitable participation in mathematics.

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Keywords: embodied, cra, inclusive, metaphor-based learning

Roundtable Session 8.2 · A201 · Roundtable

From grammar to Language. The Index for Embodied Education #147

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This proposal originates from the shared reflection of the National School on Embodied Education (a National Network of 10 Italian Universities) concerning the development of the Index for Embodied Education, a self-assessment and continuous improvement tool for educational institutions. In order to design such an important and innovative instrument, the working group began by contextualizing the ten Guiding Principles that characterize the Embodied Education approach (Gomez Paloma et al., 2025). The shared construction of this tool is the result of collaboration between academic scholars and school practitioners and has been shaped by substantial epistemological and methodological pluralism, aimed at integrating diverse perspectives related to the aforementioned guiding principles: 1) educating persons rather than merely transmitting knowledge; 2) recognition of the unity of body and mind; 3) the dynamic relationship between emotion and cognition; 4) the plastic and processual nature of personal identity. These perspectives are further connected to the principles: 5) inclusive transformation; 6) the culture of complexity; 7) the specific weight of values as an ethical and civic foundation; 8) technology understood as an educational resource; 9) narration and sharing as community practices; 10) the extended mind conceived as the interaction between mind, body, and environment. The Index does not merely provide a snapshot of existing conditions; rather, it is conceived as a reflective device designed to stimulate the planning of environments, curricula, and assessment practices within an embodied perspective. These ten orientations, articulated as a rubric for the implementation of the Index for Embodied Education, are structured into three sections (Context / Processes / Outcomes), each organized through indicators, descriptors, and qualifiers. They do not constitute rigid theoretical frameworks but generative semantic axes from which concrete operational constructs may derive, aimed at supporting shared practices of analysis, reflection, planning, and re-planning within an ongoing process of school growth and renewal.

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Authors

FILIPPO GOMEZ PALOMA

My presentation will consist of a brief introduction to the working group and a brief explanation of the process and rationale that led the Italian National School of Embodied Education to draft the Index for Embodied Education.

ANNAMARIA MARIANI

This proposal is situated within the framework of reflection promoted by the National School on Embodied Education, with particular reference to the development of the Index for Embodied

Education, conceived as a tool for self-assessment and continuous improvement for educational institutions. Starting from the ten Guiding Principles of the ECS-based approach (Gomez Paloma et al., 2025), the intervention aims to investigate the role of the Index as a guide for teachers' actions and as a support for continuous professional development within a lifelong learning perspective. Within this framework, the Index is not configured as a merely evaluative device, but as a tool capable of orienting pedagogical thinking and teaching practices, fostering a reflective and design-oriented professional stance. Teachers are thus called to position themselves as reflective practitioners (Schön, 1983), capable of critically examining their own actions and transforming them into professional knowledge. The Index supports this process by making educational practices visible and fostering awareness pathways that enable the identification of emerging training needs and the orientation of instructional design, in line with perspectives on transformative learning (Mezirow, 1991) and continuous professional development (Day, 1999). This perspective is embedded within an ethical vision of educational professionalism (Contini, 2009) and promotes a collaborative dimension of professional development, grounded in communities of practice (Wenger, 1998) and in situated and effective professional learning models (Darling-Hammond et al., 2017). The Index thus functions as a grammar of educational action, guiding teachers toward inclusive, reflective practices consistent with the complexity of educational contexts.

VIVIAN DE LA CRUZ

The Index for Embodied Education, developed by the Italian national inter-university working group on Embodied Education (a network of ten universities), is conceived as a self-evaluation and continuous improvement tool for educational institutions. This framework provides a shared grammar of embodied education for translating embodied education principles into pedagogical design (Damiani et al. 2025). Within this framework, I focus on two of its ten guiding principles: CorporeaMente and Emotion and Cognition, currently under development within the national inter-university working group, with contributions from the University of Enna Kore (Sicily), using them as illustrative examples of how the model conceptualises embodied approaches to teaching and learning. Within the Index, CorporeaMente is grounded in the idea that transformative education must recognise and cultivate the intrinsic interconnection between body and mind, expressed not only through discourse but through behaviour, language(s), and educational practices (Gomez Paloma & Damiani, 2021). Pedagogically, this involves, among other possibilities, designing learning experiences that incorporate bodily experimentation or simulation to support conceptual understanding, alongside emotional education activities linked to body language (e.g. facial expression, posture, gesture). A second Index principle, Emotion and Cognition, reframes teaching through an emotion–cognition lens that moves beyond traditional separations between knowing and feeling. Drawing on neuropsychological evidence positioning emotion as structurally foundational to cognition (Damasio, 1995; Kandel, 2012), this perspective views emotions as mediating learning transfer and supporting flexible knowledge application across contexts (Blandino, 1996, 2012). Integrating emotion and cognition is also associated with more empathic, motivating, and inclusive learning environments (Damiani, 2022). The presentation concludes by briefly discussing selected examples of how these principles are articulated within the framework through experience-based learning design, highlighting its potential as an embodied education framework.

ANNA RE

My contribution focuses on the epistemological and pedagogical architecture of the Index for Embodied Education, highlighting how the construct of the Synaptic Self provides its scientific and theoretical

foundation (LeDoux, 2002; 2003). Starting from Joseph LeDoux's neuroscientific perspective, the Synaptic Self describes personal identity as the dynamic outcome of neural plasticity and of the continuous interaction between learning and lived experience, mind and body (Kandel, 2010). Identity, therefore, is not fixed or predetermined, but constantly reshaped through experience. If we adopt this perspective, school can no longer be understood as a system for the mere transmission of knowledge. Instead, it becomes a context in which students continuously reorganize their cognitive, emotional, and relational architectures. Education is thus interpreted as a process of reorganization of the self, grounded in the integration of cognitive, affective, and embodied dimensions (Siegel, 2001; Dewey, 2014). The Index translates this theoretical construct into observable and assessable elements through a system of indicators and descriptors, structured across three key dimensions: contexts and cultures; processes and policies; practices and outcomes. In doing so, it serves as a tool for reflection and monitoring, enabling schools to evaluate the coherence between organizational choices and neuroeducational principles (Albanese & Compagno, 2022). In my presentation, I will focus particularly on formative assessment as a driver of growth, supported by research on feedback and classroom assessment (Hattie & Timperley, 2007), on the pedagogical value of error as an opportunity for reflection and cognitive restructuring (Bruner, 1966), and on the integration of declarative knowledge with lived experience through experiential and cooperative methodologies (Johnson & Johnson, 2009). The purpose is to show how the Index mediates between theory and practice, supporting schools in strengthening their alignment with the principles of the Synaptic Self.

PAOLO LUCATTINI

The contribution focuses on three interconnected and inspiring principles (Gomez Paloma et al., 2025): the person as the center and ultimate aim of educational action, understood as a unique and relational subject (Nussbaum, 2016); the culture of complexity as the form of thought and organization necessary for caring for real persons in real contexts (Morin, 2005); and technology as an embodied and critical opportunity—an environment in which care, thought, and relationships are extended and transformed (Floridi, 2014). The Index for Embodied Education, structured along these dimensions within a single embodied educational ecology, calls upon schools to engage in recursive and transformative reflective processes (Schön, 1984). The school is conceived as a complex adaptive system, in which learning emerges from dynamic interdependencies among bodies, relationships, spaces, and socio-territorial contexts (Morin, 2005). In dialogue with the ecological approach to human development (Bronfenbrenner, 1979) and theories of embodiment (Varela, Thompson, & Rosch, 1991), Embodied Education (Gomez Paloma & Damiani, 2021) is framed as a systemic paradigm, not reducible to isolated teaching techniques. This perspective integrates epistemic, organizational, and spatial dimensions, redefining the school as a living organism capable of co-evolving with the community and fostering sustainable transformations (Capra & Luisi, 2014). Shared responsibility among principals, teachers, students, families, and territorial stakeholders assumes structural significance for transformative learning (Mezirow, 2000). Educational design is thus configured as a distributed and participatory process, supported by inter-institutional alliances and research networks (Wenger, 1998). School environments, understood as active pedagogical spaces, through adaptive configurations and material affordances, promote embodied and collaborative practices (Gibson, 1979). In this way, innovation becomes systemic, with implications for student engagement and agency, as well as for territorial cohesion (Fullan, 2016).

Keywords: embodied-education, grammar, self-assessment, principles, language

The importance of arts-based approaches for social interaction #44

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The Horizon Europe project Exploring and Educating Cultural Literacy Through Art explores the use of arts-based approaches to elicit the cultural literacy of marginalized youth. This presentation argues that the use of arts-based approaches in education is essential for making one's embedded social and cultural understanding present as well as for forming one's relation to the social environment. Instead of legitimating the use of arts-based approaches through demonstrating different effects (e.g. Kadastik et al. 2025; Winner 2013), a phenomenological approach will argue that social interaction is enabled by the kinetics and intensity of another's presence that we experience through our own bodily kinaesthesia and sensation, i.e. the bodily resonance of mutual affectivity which constantly modifies the interacting bodies and is experienced as a bodily connection with the other (Fuchs 2016). The use of art that affects the body is thus not an add-on to intellectual skills that could (one-sidedly) be considered the primary goal of learning, but it is about forming capacities that enable us to engage in interacting with others and express an embedded cultural literacy. When, for example, children can silently form an order of play they execute within a different activity of a classroom (Sand et al. 2023) they demonstrate social interaction based on a bodily sensitivity acquired through bodily practices which, importantly, does not come through instruction and demonstration, but through practice, becoming an educational keyword (Brinkmann forth.).

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Keywords: arts-based, bodily resonance, phenomenology, interaction

Performing body in education #50

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Performing body can be considered in two ways. On the one hand, as a performing the body and, on the other, as the performance of the body. The paper presents educational activities related to these two dimensions. On the one hand, it refers to education in which students move, are physically active, learn by engaging their bodies, and on the other hand, to education in which one of the priorities is for students to create their bodies, create themselves, build their physical image, become themselves, and feel good about themselves. In this sense, the performing body becomes an important element in students' discovery, deconstruction, and construction of their identity. It also teaches respect for others through discovering differences, giving others a voice, and empowerment. During the presentation, the concept of the performing body will be discussed in the context of Henry Giroux's critical pedagogy and Judith Butler's critical theory.

Keywords: performing body, empowerment, agency

Practice-based filmmaking education: Embodied, experiential, and scaffolded #83

Fredrik Graver

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Practice-based filmmaking education is, at its core, experiential. Prospective filmmakers learn through practice, testing approaches and ideas "on the floor" using the tools they will later encounter in professional practice. More than that, filmmaking is also an exercise in navigating social relationships, where artists from related but distinct disciplines work together to achieve a common artistic vision. As an art form with shifting collaborations throughout a complex process, filmmaking represents one of the most challenging artistic processes there is.

Practice-based filmmaking educators often come from professional practice themselves, with little or no academic background. Film schools tend to provide practical advice on how to teach in higher education, and in some cases offer attendance at general pedagogy courses, but seldom are there offerings that specifically introduce instructors to the educational philosophies that are relevant to their specific practice. There is no tradition for articulating the place of filmmaking education within the traditions of pedagogic or cognitive philosophy.

Like any artistic process, filmmaking is a fully embodied cognitive process in all 5E meanings of embodiment. My research over the past few years in various senior roles at the Norwegian Film School has been to examine the teaching practices used at our institution and our closest international collaborators and to place them in a broader philosophical-pedagogical discourse.

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Keywords: practice-based filmmaking 5e dewey vygotsky

Individual Paper Session 8.4 · A210 · Paper

Moved To Be Moving - Exploring sustainable movement practice by regarding the notion of momentary movement #155

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The purpose of the PhD project Moved To Be Moving is to explore possible sustainable movement practice in a school context, by understanding the way micro-movements adjust and adapt. Sustainability is here understood as the human organism's process to maintain its potentialities in the sense of long-term viability, where movement has intrinsic value, always present through participation with the environment.

The study explores momentary movement, especially the notion of micro-movements where ongoing responses are mostly unnoticed and ignored, influencing e.g. pupils and teachers kinesthetics and balance in individual and normative ways. Theoretically the study is based within embodied movement practice combining among others Gumbrecht's account of presence as the production of space with Sheets-Johnstone's recognition of movement as a generative source of spatial concepts. Methodologically the exploration builds on a hermeneutic approach, collecting data in a rural school in Sweden through a classroom ethnography.

Preliminary results of the classroom ethnography indicate that environmental constitutes steer movement in a fundamental one-way direction. However, in cases where individual pupils are emplacing themselves during class, they seem not to be shifting as irregularly and quickly between disengaging and intense movement as other pupils. Traces of a sustainable movement education can be seen in teachers' embodied movement practice when movement is included in a larger 'body'.

The study appraises movements' intrinsic value to offer a foundational account of a sustainable micro-movement practice in school. The account will hopefully allow teachers to understand of the role of micro-movement in supporting learning and improve future education.

Keywords: micro-movement, embodied movement practice, sensory-awareness

Mapping feelings: embodied education, mindfulness and wellbeing through photography #151

Alessia Sozio, Alfonso Amendola

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“The body is our general medium for having a world”

(Maurice Merleau-Ponty, 1962, p. 169)

Starting from this phenomenological premise – and from the pragmatist line of thought according to which experience is a transactional event (“We do not have an experience; we are in an experience” John Dewey, 1934) – the paper proposes an in situ study relating to a visit designed according to the principles of Embodied Education. The intervention consists of a standardised protocol of embodied-guided visiting (audio track or facilitation) applied to a photographic exhibition on socially and existentially compelling themes. In a quasi-experimental design, visitors are assigned to: (a) an embodied guided visit; (b) a free visit of equivalent duration. The embodied visit integrates micro-practices (postural grounding, rhythmic breathing, intentional variation of distance/angle of observation) and reflective prompts oriented towards body-image-meaning resonance, consistent with enactive and ecological perspectives (Francisco Varela et al., 1991; Ezequiel Di Paolo et al., 2017) and with contributions on education between corporeality, technologies and inclusion (Di Tore et al., 2023, De Giuseppe & Corona, 2020). The proposed protocol does not merely aim to “measure” an effect, but to question a more radical hypothesis: that embodied education can operate as the art of contact—with the work, with one's own feelings, with the social world. In this sense, the exhibition becomes a laboratory of world-making: not a place of aesthetic consumption, but a space in which perception is educated as a situated practice, capable of transforming exposure to complex content into a form of presence, responsibility and care.

Keywords: embodied, art education, inclusion, photography

The Neuroscience of Pleasure in Embodied Learning: From Control to Conscious Flow #15

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Contemporary educational practices often privilege control, discipline, and performance, overlooking the embodied and emotional dimensions of learning. This paper proposes an embodied perspective on learning grounded in neuroscience, exploring how guilt, self-control, and fear-based motivation shape cognitive engagement through the nervous system.

Drawing on predictive processing models, the brain is understood as a system that plans and learns in order to reduce uncertainty. When learning environments are driven by guilt, self-exigence, or comparison, the nervous system shifts into defensive regulation, narrowing attention, reducing curiosity, and inhibiting creativity. In contrast, pleasure and desire activate dopaminergic pathways associated with motivation, learning, and neuroplasticity, supporting sustained engagement and adaptive flexibility.

From an embodied education perspective, pleasure is reframed not as distraction or reward, but as regulatory information. Enjoyment stabilizes attention, reinforces positive emotional memory, and

supports homeostatic balance in learning processes. Consistency, therefore, is not repetition or rigidity, but rhythmic regulation aligned with bodily cycles and emotional states.

The paper integrates neuroscientific insights with embodied and symbolic frameworks to propose learning as a process of coherence between body, emotion, and cognition. Short reflective and somatic examples are discussed to illustrate how educators and learners can move from control-based planning toward conscious flow.

This contribution aims to expand embodied education by positioning pleasure as a legitimate pedagogical signal and ethical resource, capable of transforming learning environments into spaces of regulation, creativity, and relational presence.

Keywords: pleasure, guilt and self-regulation, neurocognitive

Individual Paper Session 8.5 · A212 · Paper

Embodied Sense-Making of Personal Data in Early Years Educational Contexts #127

Ayca Atabey, Andrew Manches, Susan Lechelt

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Personal data increasingly mediates children's participation in early years education, as routine activities, behaviours, and interactions are recorded, quantified, and inferred into profiles. While research and policy typically frame children's data through legal or risk-based frameworks, there is limited empirical understanding of how young children themselves experience and interpret personal data in their learning environments. This study examines how sense-making is shaped through children's physical and social interaction with representations of personal data.

We report a qualitative study with 13 children aged 6–7 in a UK primary school. Using a teddy-bear proxy ("Teddy"), a 'magic box' prompt, and illustrated data cards, children physically sorted and moved information types across spatial scales (very-less personal; very-less interesting) and discussed their choices in small groups. This format reduced pressure for self-disclosure while making peer disagreement and negotiation visible.

Children's judgements were relational and value-driven. Thoughts and feelings were treated as most personal because they expose vulnerability; sharing was evaluated through role-based, need-to-know reasoning (teacher/hospital vs. company); and anticipated consequences such as teasing, stigma, or theft shaped boundaries—an emergent contextual integrity logic about appropriate information flows. Importantly, "personal" and "interesting" operated as distinct dimensions: some information was private but not socially useful to know, while drawings and preferences could be both personal and socially meaningful.

We argue that through the development of embodied representations and activities concerning personal data, it is possible to engage young children in meaningful conversations about their personal data while foregrounding institutional responsibility for ethical data practice.

Keywords: early years, personal data, ethics

Embodied Welcoming: Rethinking Inclusion for Erasmus Students #84

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The contribution explores embodied education as a pedagogical framework for rethinking welcoming and inclusion practices for international students in higher education, drawing on phenomenological perspectives on embodiment. Learning is understood as emerging from the interaction between body, environment, affectivity, and social relations. In academic contexts, inclusion cannot be reduced to cognitive adaptation or administrative support, but is conceived as a lived, bodily, and socio-spatial process through which students inhabit educational settings. Research on student mobility highlights the transformative potential of international experiences in terms of personal growth and identity development. However, limited attention has been paid to how host institutions sustain these transformations through embodied practices. International students often experience disorientation and marginalisation that restrict participation, despite formal inclusion measures, indicating a lack of experiential and relational anchoring within the host context. Drawing on embodied education scholarship and art-based pedagogies, the paper proposes a conceptual framework for embodied practices in higher education for Erasmus students. These include multisensory orientation activities, tools fostering bodily familiarity with university and urban spaces, and peer-based reflective practices recognising bodily experience as a source of meaning and belonging. The aim is to transform welcoming from a procedural phase into an ongoing pedagogical process supporting participation and mutual recognition. Within debates on inclusion in higher education, the paper focuses on urban sketching as an example of embodied welcoming. Drawing and painting the city engage students in shared sensory encounters, inviting them to pause, observe, inhabit, and reinterpret the environment relationally, fostering experiential engagement and a situated sense of belonging.

Keywords: embodied education, erasmus, inclusion, art

Diversifying Embodiment in Education: Overcoming Inequity in Embodied Learning in Danish Vocational Education and Beyond #108

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In this presentation, I explore how bodily diversity is addressed in embodied learning within educational settings, focusing on Danish vocational education and training (VET). Due to the dual structure of the Danish VET system, students divide their time between classrooms and workshops at vocational schools and apprenticeships, making psychomotor and physical skills central to their learning. Embodied learning is thus especially pronounced and important in Danish VET-programs. Despite this emphasis on the body in practice, research on VET has often prioritized cognitive or social dimensions of learning and, as in the broader field of education studies, the intersection of embodied learning with bodily difference remains underexplored. In this presentation, I will present a future

research project that aims to investigate how different bodies and sensoria (i.e. culturally shaped ways of sensing the world) are shaped and valued in the multiple corporeal, social, and material interactions that constitute embodied learning in VET. I further examine how these dynamics contribute to the (re) production of inequities in educational practice. Methodologically, the project will combine document analysis with ethnographic and sensorial methods. Theoretically, it draws on analytical perspectives from critical disability studies that allows us to move beyond broad and universal descriptions of embodiment, which tend to be applied in scholarship on embodied learning, to inquire about the material, sensorial, and symbolic conditions through which multiple bodies and sensoria are produced, recognized, and resisted in education.

Keywords: embodied learning, vocational education, diversity

Individual Paper Session 8.6 · A214 · Paper

The Art of Creating Movement Freedom in the After-School Club #123

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In this article, we explore children's and adults' movement freedom through participation in informal learning environments in three different clubs in Zealand for after-school activities. We focus on how movement dynamics, materials, and artistic approaches can create an appealing 'common third' that invites participants to direct attention to the world and gain new experiences within an inclusive community.

The empirical material of the article consists of observations and interviews conducted during the Klub Skabertrang project in the fall of 2024 and spring of 2025, in which educators and artists specializing in various art forms collaborate to develop an art-educational approach and vision for working with children.

In the analysis, we especially delve into one exemplary episode, in which several of the project's characteristics are expressed. Drawing on embodied phenomenological and enactive approaches, we seek to anchor Gert Biesta's concepts of world-centred education and subjectification in bodily actions and movement. The results indicate that movement freedom must be understood relationally, as the cross-aesthetic elements draw new and enriching kinesthetic melodies from both children and adults. At the same time, the study highlights the balancing act educators must perform in their work on how children can thrive, individually and collectively, in and with the world.

Keywords: world-centred, intercorporeality, kinesthesia, dance, children

Improvisation as Embodied Pedagogical Praxis: Play, Performance and Sense-Making in Learning Without Instruction #161

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This presentation explores improvisation as a structured space for embodied learning. Improvisation does not replace teaching: participants need theoretical grounding to recognise the problem-space before the teacher can step back from guidance.

Drawing on two positions, leading an improvisation theatre group and learning within clinical hierarchies as a medical student, I ask what becomes visible when authority withdraws guidance and right/wrong closure.

I argue that improvisational practice - where the next move is not given - shifts learning from conforming to expected moves to building a workable shared scene. The sequence often moves from tension (hesitation, scanning) to implicit “scripts” of action and, if the group stays with the situation, to small coordinations that stabilise the scene. Micro-events (shared attention, turn-taking, gaze, timing) serve as indicators of how groups manage not-knowing and enact meaning through action.

What I contribute is a practice-based way of identifying group readiness: whether participants can remain with not-knowing long enough for coordination to emerge, rather than slipping into avoidance or domination.

I also outline workable practice options: simple formats, leader roles (silent observer vs participant without leading), and interpretive lenses for reading group dynamics, without presenting them as a new pedagogy. Minimal safety conditions (consent, time-boxing, the right to stop) are treated as variables shaping these dynamics.

The talk is deliberately modest in scope: it offers vocabulary for how theoretical knowledge begins to live as embodied, relational sense-making, with implications for performative arts education and immersive clinical training.

Keywords: improvisation, group coordination, performative, leadership

Embodied Prompts for Connecting Concepts with Bodily Experiences #129

Ipek Paksoy, Christoph Hoyer, Stefan Küchemann, Jochen Kuhn, Tanja Käser, Martina Rau

ETH Zurich, Zurich, Switzerland

Embodied learning theory proposes that bodily actions and sensory experiences support conceptual understanding, especially when students' bodily actions align with the target concept (Nathan, 2021; Nathan & Walkington, 2017). However, it is still unclear whether instruction should explicitly draw learners' attention to the link between bodily activity and conceptual content.

Building on conceptual salience theory (Rau, 2020; Rau & Herder, 2021), we tested how instructional design that aligns embodied experiences with concepts affects learning. Further, we tested whether making this explicit through prompting affects physics learning. All participants conducted the same

physics experiments about force and motion concepts under three conditions: A control condition conducted experiments with one hand, impeding their ability to feel balanced forces; implicitly-aligned and explicitly-aligned conditions conducted experiments with two hands, allowing for congruent bodily experiences by feeling balanced forces. The explicitly-aligned condition additionally received verbal prompts for attending to the connection between their embodied experiences and the concepts. We used two types of scales, assessing both reproduction and transfer of knowledge for two concepts, and we also analyzed student-drawn force diagrams.

Our study involved 165 university students. Results showed an interaction between condition and scale: the explicitly-aligned condition scored significantly better on the transfer scale. In addition, the analysis of student drawings revealed that after the intervention, students demonstrated fewer misconceptions related to everyday bodily experiences that conflict with scientific concepts. Overall, the findings suggest that instruction that explicitly connects relevant bodily actions to concepts can enhance learning of transferable knowledge.

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Keywords: science, physics, prompts, misconceptions, force

Parallel Session 9 · Thursday June 11th · 9:30 – 11:00

Roundtable Session 9.1 · A222 · Roundtable

Embodied Education in China: Theory and Practice #103

Zeng Wang, Feng-Hong Wang, Pan Zhang, Xu Zhang, Yu-Xin Hu, Chao Feng, Xiao-Dong Yue, Hai-lian Wang, Jing Li, Shijie Shang

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Embodied Education in China: Theory and Practice

The Chair of the roundtables: Professor Zeng Wang¹, Professor Feng-Hong Wang²

The discussant the roundtables: Professor Xiao-Dong Yue³

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Professor Zeng Wang, Dr. Pan Zhang, and Professor Xiao-Dong Yue's team have systematically summarized their research on embodied education since 2009 and published academic works, including *Child Cognitive Development and Embodied Education* (Tsinghua University Press, 2022) which is China's first embodied education academic work and *Foster children's enthusiasm for learning: Child Cognitive Development and Embodied Learning* (China Population and Health Press, 2025). the team established China's first all region and all stage experimental zone of embodied education for basic education (Xinji City, Hebei Province), and implemented A series of scientific research projects such as embodied moral education, embodied mental health education, embodied language education, and embodied mathematics education. Professor Zeng Wang developed the professional Competency Standards for Embodied Education Instructors (Levels 1–3). In addition, Professor Zeng Wang is initiating the China Embodied Education School Alliance to promote research, promotion, and application of embodied education. The study won the 12th Chinese Psychologist Young Scientist Award. This work was supported by the Humanities and Social Sciences Innovation Talent Support Program of Hebei Medical University (ydskrjhc202402) and the Student Education&Management Research Project of Hebei Medical University (202608).

Keywords: embodied education, theory and application of embodied education, chinese practice of embodied education, children's cognitive development, basic education

Abstract 1

Embodied Education in China: Theory and Practice of Xinji City

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Since 2009, Professor Zeng Wang, Dr. Pan Zhang, and Professor Xiao-Dong Yue's team have carried out a series of researches on embodied cognition and embodied education, involving embodied cognition of morality, embodied cognition of emotion, the influence of body on visual perception, the theory and application of embodied education. The research team published academic works, including *Child Cognitive Development and Embodied Education* (Tsinghua University Press, 2022) which is China's first embodied education academic work and *Foster children's enthusiasm for learning: Child Cognitive Development and Embodied Learning* (China Population and Health Press, 2025). In 2024, The research team established an Embodied Education Experimental Zone for Student Development in Xinji City, Hebei Province. This zone is China's first all region and all stage experimental zone of embodied education for basic education. Professor Zeng Wang developed the professional Competency Standards for Embodied Education Instructors (level I, level II and level III). Through the formulation of educational policies and the implementation of research projects, the application of embodied moral education, embodied mental health education, and embodied education of subject courses has been carried out. Research achievements such as experiential moral education, participatory peer psychological counseling, and the Museum of Professor Jih Chang Tsao have been formed. This study explores the Chinese model of embodied education. In addition, Professor Zeng Wang is initiating the China Embodied Education School Alliance to promote research, promotion, and application of embodied education. The study won the 12th Chinese Psychologist Young Scientist Award. This work was supported by the Humanities and Social Sciences Innovation Talent Support Program of Hebei Medical University (ydskrjhc202402) and the Student Education&Management Research Project of Hebei Medical University (202608).

Keywords: embodied education, theory and application of embodied education, basic education, chinese practice of embodied education, children's cognitive development

Abstract 2

Embodied Mental Health Education: Theory and Practice at Gu'an No.7 Primary School of Langfang City

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Gu'an No.7 Primary School, Langfang, China

Embodied mental health education is guided by the principles of embodiment, experience, situatedness, generativity, and interactivity. At Gu'an No. 7 Primary School, it serves as a signature component to enhance the mental health of teachers and students and to foster a positive, confident, and resilient school community. The purpose of this study is to promote students' mental health. This study presents the school-based practice of embodied mental health education in four domains: (1) prevention of campus psychological crisis events, (2) peer psychological support, (3) home-school collaboration, and (4) integration of moral, intellectual, physical, artistic, and labor education to promote the development of students. Emphasizing students' active bodily participation, we implemented activities such as Mental Health Month, campus psychodrama, and student mental-health-themed creative works. These initiatives have supported students' well-being, enriched instructional approaches, and contributed to a healthier and more harmonious school environment. The implementation of the embodied mental health education project has reduced the campus psychological crisis, improved the students' mental health. Furthermore, we have initially constructed a Chinese model of embodied mental health education in primary schools.

Keywords: embodied education, embodied mental health education, primary school

Abstract 3

Gravity-Reoriented Posture as an Embodied State: Simulated Microgravity Selectively Disrupts Visual Noise Exclusion and Facial Emotion Processing

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Gravity-reoriented posture can be treated as an embodied state shift that perturbs vestibular-visual-interoceptive coupling, potentially narrowing perceptual access to task-relevant information in everyday clutter. Using a head-down tilt (HDT) ground-based analog of microgravity, we examined whether a brief inversion-like posture selectively impairs (a) contrast sensitivity under external noise and (b) higher-level face processing that supports classroom communication and socio-emotional learning. Head-down tilt is widely used to simulate microgravity-related fluid shifts and operational constraints in spaceflight analog research. Seventeen adults completed two counterbalanced sessions: 1 h of -30° HDT and a matched $+30^\circ$ head-up tilt (HUT). Visual function was measured with a Bayesian quick contrast sensitivity function procedure (qCSF) across 10 spatial frequencies under three external-noise levels (none/low/high). Mechanisms were decomposed using the external-noise paradigm and the perceptual template model (PTM) to distinguish internal noise from noise-exclusion

(template) efficiency. Relative to HUT, -30° HDT selectively reduced contrast sensitivity at intermediate spatial frequencies under low external noise, with no reliable loss in zero- or high-noise conditions, PTM fits implicated degraded template efficiency rather than a global increase in internal noise. Converging with this embodied-state account, participants reported lower valence, higher arousal, reduced ocular comfort (blur/strain/burning), and dizziness after HDT. In a second task battery, HDT elevated thresholds for happy-face discrimination and increased anxiety relative to HUT, suggesting posture-related vulnerability in socio-affective decoding. We argue that gravity-reoriented embodied states may act as hidden moderators of educational performance—especially in screen-based instruction and high-demand VR/simulation training—by degrading noise filtering and emotion recognition, motivating state-aware, inclusive instructional design.

Keywords: head-down tilt, simulated microgravity, qCSF, perceptual template model, embodied cognition

Keywords: embodied education, practice in china

Individual Paper Session 9.2 · A201 · Paper

Embodied Pedagogy and Mathematics Teacher Preparation: presenting and discussing a conceptual framework #34

Shabari Rao

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This presentation will examine the links between bodies as culturally coded, teaching as culturally situated, and mathematics as embodied. I will present a conceptual framework that emerged from my doctoral research to help situate embodied pedagogy within teacher preparation. The conceptual framework for embodied pedagogy in mathematics teacher education draws on three areas of literature: embodied pedagogy, embodied pedagogy in teacher education, and mathematics teacher preparation. Three themes, each with a set of sub-themes, were adopted for the framework, which is depicted diagrammatically as three nested concentric circles. Representing these ideas as a set of nested circles indicates how they are located within each other, with the largest circle representing an ontological position about the nature of teaching, the next circle representing an epistemological position about the role of the body in learning, and the third circle representing a pedagogical position on how to leverage the body in learning specific content. Findings from the research, in the form of participant reflections and observations, will help situate the conceptual framework within the context of Indian mathematics education. Finally, the discussion will examine how the conceptual framework can be extended and elaborated based on the analysis of the findings within the discourse of mathematics teacher preparation in India.

Keywords: embodied pedagogy, mathematics teacher education

Secondary Science Teachers' Embodied Approaches for Students' Conceptual Understanding: An Exploratory Study #48

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Research on embodied cognition shows considerable potential for science education, where students must make sense of abstract and dynamic processes (Hayes & Kraemer, 2017; Kersting et al., 2021). Despite growing interest in embodied learning interventions, relatively little is known about how embodiment is enacted in classrooms and how teachers make practical decisions about their use (Macrine & Fugate, 2021; Skulmowski & Rey, 2018). This study addresses this gap by examining how secondary science teachers who already use embodied approaches design, implement, and evaluate these practices in their classrooms.

This presentation reports on ongoing PhD research into the practices and perspectives of Dutch secondary science teachers who intentionally incorporate embodied learning in physics, chemistry, and biology lessons. Drawing on classroom observations and semi-structured interviews with twelve teachers, the study investigates how teachers 1) design embodied lessons, 2) implement embodied activities, and 3) evaluate their use for students' conceptual understanding of scientific concepts and processes. In addition, we investigate the motivations, pedagogical considerations, and contextual constraints that shape teachers' decisions to implement these approaches.

The results will highlight the diversity of instructional approaches to embodiment across subjects and contexts, differences in how teachers conceptualise and operationalise embodiment in practice, and the ways teachers interpret and evaluate students' learning during embodied activities. By focusing on teachers' perspectives, this study contributes to the field by clarifying the pedagogical potential and practical complexities of embodied learning in secondary science education. Also, it provides empirically grounded guidance for translating embodied cognition research into feasible classroom approaches.

Keywords: embodiment, instruction, science, teachers, understanding

Embodied mathematics across artificial and human systems: insights from Cognitive Robotics and Mathematics Education #87

Eugenia Taranto, Vivian M. De La Cruz

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Recent work in embodied cognition has reframed mathematical learning by questioning the treatment of mathematical concepts as purely abstract and amodal. From this perspective, the body and material artifacts are understood as constitutive elements of meaning-making. Building on this view, the present contribution brings into dialogue a cognitive robotics model addressing the bootstrapping of number concepts through finger counting and number words, and a didactic perspective on embodied and artifact-mediated practices in mathematics education.

The robotic model, developed within the Cognitive Developmental Robotics paradigm and implemented through artificial neural networks, has shown how learning structured finger-counting sequences together with verbal number labels can lead to the emergence of stable internal numerical representations and enable basic arithmetic operations such as addition. These results have provided

computational evidence for embodied and grounded theories of numerical cognition, according to which abstract numerical knowledge may emerge from sensorimotor experience.

In parallel, the didactic perspective highlights how bodily actions, gestures, and the use of artifacts—including the hand as a readily available cognitive tool—play a crucial role in fostering conceptual understanding, mathematical communication, and student engagement. Embodied classroom practices, such as gesture-based reasoning and movement-integrated activities, are shown to align with the same foundational principles observed in the robotic model.

By integrating insights from cognitive robotics and mathematics education, this contribution conceptualizes the body as an epistemic mediator in mathematical cognition and outlines new directions for research in embodied mathematics learning.

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Keywords: mathematics education, cognitive robotics, artifacts

Individual Paper Session 9.3 · A200 · Paper

Inclusion and democracy-related dimensions of the pedagogical ethos of teacher training students: empirical approach in the context of teacher education and embodied education #37

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This submission aims to provide an empirical description of the propaedeutic pedagogical ethos of teacher education students in their introductory phase in the context of aesthetic teaching and learning. The starting point is the assumption that basic attitudes related to inclusion and democracy are part of a pedagogical ethos (Brinkmann & Rödel, 2021) and are reflected in embodied and bodily practices.

Inclusion and democracy are understood in a broad sense (e.g. Ratzmann et al., 2026; Braksiek et al., 2022; Himmelmann 2004). Empirically, the research contribution is based on an improvisation-oriented teaching-learning situation in which students were asked at the beginning of the lecture 'Basics of Aesthetic Education in Primary Schools' to lead an aesthetic learning situation using a cloth as an object. The setting was documented with audio recordings and written reflections. The data analysis is based on a phenomenological and descriptive approach (Brinkmann, 2019). It focuses on embodied and bodily practices of aesthetic teaching and learning, especially in the context of verbalisation as a central mode of embodiment. Initial results show that embodied practices reveal a propaedeutic pedagogical ethos that is nourished by personal experiences of aesthetic learning and reveals the first contours of a professional attitude. The submission thus makes an empirical contribution to the discussion on embodied inclusion and embodied democracy by attempting to describe how aesthetic teaching and learning settings can help to make differences aesthetically tangible and open up spaces for reflection on inclusion and democracy in teacher education.

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Keywords: inclusion, democracy, ethos, teacher-education, embodied-education

Navigating accessibility and personal boundaries of the pedagogue body #11

Julia Wester

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Cutbacks in recent decades have led to a doubling of the number of children per unit in school-age educare in Sweden. At the same time, there are high ideals of care for pedagogues to meet the individual needs of children. This presentation explores how ideals of being available for children's needs, both emotional and physical, are maintained and challenged in the school-age educare. Drawing on ethnographic fieldwork, the presentation examines how pedagogues navigate moments when

children seek closeness from them, highlighting the tension between fulfilling caregiving ideals and managing personal boundaries in a constrained work environment. One finding is that pedagogues employed strategies in line with contemporary pedagogical ideals when they perceived the children's closeness as too demanding, such as educating the children on consent. In particular, this was legitimized by pedagogues when boys sought closeness from them. This topic addresses the complex nature of educational caregiving relationships and how these relationships are influenced by ideals, norms and working conditions.

The presentation is based on a research project that examines how norms are constructed through bodily interactions between pedagogues and children in the Swedish school-age educare. The study's empirical material consists of observations of these interactions and interviews with pedagogues. The material is primarily analyzed from Sara Ahmed's (2000) perspective on the body in relation to norms and integrity, and from Hochschild's (2012) perspective on emotions and labor. This approach highlights the intercorporeal and emotional aspects of educational work.

Keywords: closeness, boundaries, ideals, emotional work

Inclusive Didactic Spatiality – Teaching as an intentional embodied practice aiming for Bildung #12

Lotta Björkman

Södertörn University, Stockholm, Sweden

This presentation draws on a phenomenological doctoral study (Björkman, 2025) exploring how inclusive education is experienced and enacted in teaching from the perspective of upper secondary school students ($N \approx 600$). The presentation introduces the concept of inclusive didactic spatiality, referring to a shifting, immaterial pedagogical space guided by a clear general didactic intention (Uljen, 1997). Building on continental Didaktik and Bildung theory (Klafki, 1997), the concept understands inclusion as an embodied, emotional, relational, and intentional pedagogical practice emerging in lived teaching situations (Korsgaard & Mortensen 2017; Meyer-Drawe, 1986). The concept further draws on Merleau-Ponty's notion of chiasm, as teaching is understood as an intertwining of bodies, content, intentions, and relationships in which subject and object are mutually constituted (Merleau-Ponty, 1962). When a clear didactic purpose guides this deeply corporeal and spatial teaching process, it can create a "world within the world" (Masschelein & Simons, 2013), in which students encounter knowledge and one another in ways not readily available outside the pedagogical situation. Inclusion, therefore, cannot be reduced to policy or abstract ideals; it is a dynamic, situated process negotiated in the lived space of teaching. By foregrounding corporeality and spatiality, this perspective expands inclusive education through general didactics towards a holistic understanding of teaching as Didaktik that is both intellectual and embodied. It offers a framework for developing educational practices that create pedagogical spaces where all students can engage in the unpredictable process of learning what is not yet known.

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Keywords: inclusive education, didaktik, bildung, spatiality

Individual Paper Session 9.4 · A203 · Paper

Embodied Reading as Cultural Practice: Collective Making in Architectural Research Seminars #86

Malinde Valee, Koenraad Van Cleempoel

UHasselt, Hasselt, Belgium

This contribution situates architectural model-making and sensory mapping as embodied cultural reading within a research seminar in architectural education. Focusing on the joint production of solid wood models and wool tapestries, it frames making as an arts-based research methodology through which existing architecture is interpreted as a layered cultural artefact rather than a static object.

Developed at UHasselt, the seminar foregrounds collective, hands-on engagement with material as a form of situated knowledge production. Wood and wool are deliberately chosen for their resistance, tactility, and temporal depth, demanding attentiveness, care, and shared judgment. Through abstraction, omission, and material negotiation, students construct partial readings of historical interiors understood as palimpsests shaped by use, transformation, and repair. The resulting artefacts operate as embodied maps of spatial, material, and atmospheric relations.

The seminar has evolved from a reading-based format into a pedagogical approach drawing on theories of mimesis, embodied knowledge, and craftsmanship, positioning making as cultural attunement rather than technical skill acquisition. Reading architecture becomes a bodily practice: sensing proportion through touch, understanding transformation through joint fabrication, and negotiating meaning through collective decision-making. Across two years of study, the seminar progresses from individual

material explorations to collaborative investigations of architectural attitudes toward the existing.

The presentation argues that embodied reading through collective craft fosters critical, situated forms of knowing, particularly relevant to arts-based research and embodied cultural studies. By foregrounding shared making over individual authorship, the seminar demonstrates how pedagogical structures can support interpretive depth, cultural sensitivity, and ethical engagement with the built environment.

Keywords: embodied reading, collective making, practice-based

The Embodied Nature of a Flute-Tabla Jugalbandi (Duet) #104

Kumar Gandharv Mishra

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Embodiment refers to the unison of body and mind while performing a task. The embodied nature is also seen in musical performances where artists play in unison. At the level of two musicians (say two bodies), a special duet form of this phenomenon is popularly known as Jugalbandi in Indian classical music. During this act, one artist also chases the second one with similar sounding notes, but both reach the sam together, which is an impactful terminal of their rhythm cycle, and then restart the chase. My presentation is based on the enactivism of two global musicians (Flute and Tabla), where they improvise and chase (follow) each other. But, how do they do it? Is it only their immense practice or the mind unison: where the two bodies act within the same mind. The presentation covers their performance in three phases: first, when they chase each other and meet at the sam (based on sensory experiences); second, when one musically imitates the other musician as a fun banter (echoic memory), and then again meet at the sam; and the third where they demonstrate their brilliance while skipping a note against the flow. The third aspect seems to be the most interesting one where the Tabla player (percussionist) acts against the conditioning of the previous musical immersion, which potentially demonstrates their highest level of mind unison. It emerges as a critical phase during the performance which needs to be attributed as 'two bodies-one mind' in action.

Keywords: duet, embodiment, flute-tabla, jugalbandi, music

Embodied Vocal Learning: Gesture and Self-Regulation in Contemporary Singing Pedagogy #131

Gabriella Sciortino

Conservatorio di Musica "G. Verdi", Como, Italy

Within contemporary 5E approaches to cognition—encompassing embodied, embedded, enactive, extended, and emotional dimensions—learning is understood as emerging from dynamic body–environment interaction rather than from abstract symbolic processing alone. In music education, embodied music cognition has highlighted the sensorimotor grounding of musical meaning; however, the pedagogical and affective implications of embodied vocal practice remain underexplored.

This paper presents a qualitative study conducted with eleven contemporary singing students, investigating how gesture-based work, used alongside vocal exercises and verbal instruction, mediates the acquisition of technique and expressive control. Through semi-structured interviews and thematic analysis, the research examines learners' lived experiences of embodied instruction.

Findings indicate that gestures transform abstract concepts such as resonance, projection, and placement into structured sensorimotor patterns. Rather than serving as illustrative additions to explanation, gestures organize vocal action, support anticipation, and facilitate both technical and affective self-regulation, including during performance.

The data also reveal differentiated experiences: while many students describe gesture as a powerful resource for increasing autonomy and vocal stability, others initially experience embodied work as demanding. In several accounts, gesture functions as a regulatory strategy that reduces excessive mental control and performance anxiety, enabling greater technical stability through embodied action.

These results support a view of vocal education as an enactive and affectively mediated practice in which technique, regulation, and agency co-emerge through embodied engagement. By integrating 5E theoretical perspectives with empirical insights from contemporary vocal pedagogy, this study contributes to discussions on embodied education in the arts.

Keywords: gesture, vocality, pedagogy, self-regulation, agency

Individual Paper Session 9.5 · A210 · Paper

Inclusion Meets Embodiment: The Case of Science Experimentation #112

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Recently, embodied science learning and embodied interaction research have been criticized for introducing bodily movement in studies without much consideration for inclusion (Spiel, 2021; Vickery et al., 2024). In this review, we bring together the fields of embodied learning and inclusive science education to learn from each other and to provide preliminary insights to integrate physical movement in practice, acknowledging learners' needs and differences. In the first step, we focus on science experimentation and outline the current research landscape with a rapid review (Khangura et al., 2012). We identified studies that conceptualize the role of the body and senses in experimentation and studies that propose inclusive design strategies for diverse bodily and sensory abilities. Preliminary findings indicate that, on the one hand, embodied learning research often emphasizes manipulation, sensory experience, and technology-supported interaction (e.g. Hardahl et al., 2019; Sakr et al., 2014; Johnson-Glenberg, 2023), but rarely tackles systematic barriers for disabled or otherwise marginalized learners. On the other hand, inclusive science education offers only a few digitally supported solutions (Abels & Stinken-Rösner, 2022). We argue for integrating both fields to derive design principles for inclusive embodied experimentation.

This review initiates a discussion on the overlap between embodied education and inclusive instruction

in science education. We aim to develop recommendations for researchers and practitioners to create inclusive embodied learning activities, including scientific experimentation.

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Keywords: inclusion, science, embodied interaction, review

Bridging the Silence: Investigating Embodied Learning Techniques in Mathematics Education for Students with Hearing Impairments #68

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This research investigates the integration and efficacy of embodied learning techniques within mathematics education for students with hearing impairments. Utilizing a holistic single-case study design, the study triangulates data from direct classroom observations, semi-structured teacher interviews, researcher journals, and institutional documents to provide a comprehensive analysis of

pedagogical practices. The research specifically examines how teachers implement these techniques, the challenges they encounter, and the perceived benefits for student learning across various educational levels—from kindergarten to high school.

Findings reveal a significant "pedagogical drop-off" across grade levels. In kindergarten, embodied learning is the foundational approach, where physical movement is systematically integrated with cognitive tasks. However, in primary and high school settings, instruction often reverts to traditional, sedentary methods where movement is frequently misinterpreted as a disciplinary issue or "problem behavior". A critical finding is the discrepancy between teachers' theoretical claims and their actual classroom practices; for instance, high school teachers noted the use of manipulatives in interviews that were not observed in practice until after a targeted intervention.

The study highlights that targeted informational interventions (post-briefing sessions) fostered radical shifts in practice, particularly at the high school level, where teachers began successfully utilizing drama and role-playing to teach complex arithmetic. Despite challenges such as spatial constraints and communication barriers, the results indicate that effectively implemented embodied learning enhances student motivation, improves the retention of abstract concepts, and transforms mathematical tasks into meaningful experiences.

Keywords: embodied, learning, deafness, mathematics, qualitative

Doing gender and mathematics simultaneously: Exploring embodied learning potential for gender-inclusive education #137

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The problem of limited non-male presence in STEM professions is a long-lasting educational challenge (United..., 2016). Moreover, mathematics is stereotypically seen as the most masculine among STEM disciplines (Makarova et al., 2019). In this research, we explore the theoretical interconnections between the performative approach to gender (e.g., Butler, 1988) and a functional dynamic systems perspective on mathematics learning (e.g., Shvarts & Abrahamson, 2023). Both theoretical perspectives focus on embodied interactions as transforming individuals' styles and capacities. Those embodied activities gradually sediment in culture as gendered and mathematical artifacts. When revoked by a new generation of learners, both gender and mathematics are re-inhabited and transformed. We hypothesize that embodied forms of learning mathematics create spaces where non-masculine performances are welcomed and recognized. Exploring such potential of embodied learning, we conduct a micro-ethnological analysis of eight secondary school students' multimodal performances while learning trigonometry with action-based embodied design (Abrahamson, 2014; Shvarts & van Helden, 2023). We distinguish four engendered dimensions along which the students with diverse gender performances differ: Confidence in talking about mathematics and its relation to embodied expressions, Multimodal expression of learning experiences, Collaboration with the teacher, and Willingness to enter collaborative embodied space. Regardless of their gendered style of expressing mathematics, embodied learning left all students feeling successful. We call for further exploration of whether and how embodied learning practices may foster recognition of mathematics as dynamic and embodied rather than rigorous and abstract, and transform cultural expectations for any gender as

welcoming mathematical success.

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Keywords: embodied design, gender performance, mathematics

Individual Paper Session 9.6 · A212 · Paper

Coi Corpi Docenti. An experiment and a model for developing processes and tools for embodiment education in professional teachers #13

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Over the past six years, Teatro Testoni has been running a free, open theatre workshop involving 30 to 50 teachers from schools in the metropolitan city of Bologna in each edition.

The workshop immerses participants in body awareness and learning practices, helping them to understand how these dimensions affect their role as educators. This process enables participants to observe the embodied acts of teaching (Gomez Paloma) and to understand how the body influences cognitive processes (Carlomagno).

Coi Corpi Docenti is a practical training course designed to explore and experiment with embodiment and Schechner's Performance Workshop Technique, with a focus on the teacher's body-self (DiGennaro) and the auto-transformative capacity of teaching tools.

The course has proven to be a rich field of observation, not only for the practical experience of embodiment processes, but also for understanding how teachers have reworked and applied the skills they acquired across the various editions. The presentation will describe the emerging evidence and the training structure of the course as a practical application of embodiment education for professional teachers.

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Keywords: embodiment, teachers, performing arts, training

Integrating Embodied Learning into Architectural Education #19

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In architectural education, space is often described not just as a physical structure, but a constantly evolving phenomenon resulting from the body's emotions, thoughts and movements, in other words; its interaction with the environment. To design and conceptualize an architectural space, one must first understand the body. Bodily practices can play an active role in this process, positioning the body as an active entity that generates and transmits information. The motivation behind this study is to incorporate the development of body awareness, building of empathy, and learning through bodily experience into the architectural education scene. In this context, the Department of Architecture at the Faculty of Architecture and Design of Eskişehir Technical University in Turkey has launched a course titled 'Body Space Experience'. The course incorporates body-focused activities, such as breathing exercises, body scan meditations, viewpoint exercises, proprioceptive movements, mindfulness practices, creative dancing, contact improvisation and yin yoga, into a 14-week programme. The research question is: "How do non-disciplinary body-based practices affect architecture students' levels of body awareness and spatial perception?" The research will involve conducting a survey to 35 students who have experienced the course and its exercises throughout the semester. The survey includes both scaling and open-ended questions about the extent to which particular exercises influence bodily awareness and spatial perception. Positive and negative feedback from students will reveal which exercises had an impact, and to what extent. It will also reveal if exercises had no impact and what was lacking.

Keywords: embodied learning, body, architectural education

Embodied Learning Pathways in Adult and Continuing Education #28

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Adult and continuing education is increasingly taking place within context of complexity, rapid change and social uncertainty. Adult learners navigate education alongside work, family, migration, and evolving professional identities. Traditional pedagogies, which privilege abstract cognition and standardized pathways, often fail to address the embodied, emotional, and relational dimensions of adult learning. This is a literature-based article in which the author explores embodied learning as a transformative framework for the adult and continuing learning. As rooted in interdisciplinary scholarship in education, cognitive science, vocational learning, and global policy, the paper presents a synthesis of all the information available on how embodied learning pathways provide support for persistence, motivation, professional formation, and social engagement. The review combines empirical and conceptual inputs from higher education and vocational training and adult literacy research such as those through the global frameworks of the United Nations Educational, Scientific and Cultural Organization (UNESCO). It contends that embodied learning is not an ancillary pedagogical way of working but a pedagogical orientation that helps to reconnect learning with lived experience. By centering body, emotion and relationship engagement, embodied pathways can allow adult education to become more inclusive, more resilient and more transformative. The study concludes that the rethinking of adult education via embodied learning is necessary to maintain sustaining meaningful participation and social change in educational spaces today.

Keywords: embodied-learning-experiential pedagogy, lifelong-learning-pathways, transformative-education, vocational-professional-learning

Individual Paper Session 9.7 · A214 · Paper

Teachers' professional gestures. Reflecting on action through autoethnography #119

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In studies investigating professional gestures in teaching (Jorro, 1998, 2005, 2016; Alin, 2010), the notions of 'didactic gesture' (Bucheton & Dezutter, 2008; Bucheton, 2009; Bucheton et al., 2005) and 'pedagogical gesture' (Buriticá et al., 2021; Buriticá & Saldarriaga, 2020) are introduced. The latter is defined as a gesture performed with an educational purpose to initiate relational processes.

Drawing attention to the meanings underlying human communication (verbal and non-verbal), the research examines how words and gestures structure educational action, convey messages, and initiate learning processes (Cadei & Ramsamy-Pratt, 2018). This develops a dialogical and circular relationship between teacher and students (Pati, 1984). Particular attention is paid to how teachers promote

student participation, recognition and inclusion as subject who intervene, negotiate, teach and learn (Giglio, 2016; Giglio et al., 2017; Boosmans, 2022).

From this perspective, the paper proposes a case study using autoethnography (Anderson, 2006; Ellis & Bochner, 2000) to investigate the circularity of the teacher–student relationship in daily practice. Analysing professional experience enables us to reflect on professional gestures, highlighting the underlying intentionality and its impact on learning and the educational process. Systematic observation of one's own educational activity thus becomes a research and training tool, enabling the teacher to understand the student's response to their intervention. In this dynamic space of negotiating meanings, the teacher's actions and the students' responses are considered mutually constitutive.

Keywords: gesture, teacher, students, autoethnography, observation

Theater as a Performative Pedagogical Device: An Embodied Response to the Challenges of Teacher Training #142

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Pegaso, Napoli, Italy Current educational emergencies necessitate a move beyond transmissive teaching models, shifting toward pedagogical perspectives that recognize and enhance the experiential, deeply embodied, and relational dimensions of learning processes (Dewey, 1938; Sibilio, 2011; Maturana & Varela, 1985). Today's society is witnessing a proliferation of new addictions and youth vulnerabilities due to the dramatic increase in technological interactions (Turkle, 2012), which tend to disembody the educational relationship. In this scenario, teachers are called to develop not only cognitive skills but an empathetic professional posture, understood as a capacity for embodied and intentional resonance toward the other (Stein, 1917; Merleau-Ponty, 1945; Sibilio, 2020). The current pedagogical challenge lies in rethinking teaching practices through embodied, embedded, enactive, extended, and emotional approaches, fostering a teaching-learning process that is strongly distributed across the brain, body, environment, and social-affective dimensions (Caruana & Borghi, 2016; Gallese & Morelli, 2024; Varela, Thompson, & Rosch, 1991; Gallagher, 2025). The 8th edition of the 1st-level Master's program in Teatro, Pedagogia e Didattica and the 2nd-level Master's program in Arti performative at Suor Orsola Benincasa University, positions itself as a response to these educational urgencies. They offer training that values theatrical practices in education as embodied, experiential, and inclusive. Designed within the international research group Bio-Educational Embodied Research on Performing Activities (B-ErPa), the program bridges theatrical performing arts and innovative didactics. Through permanent laboratories, Masterclasses, and workshops, explores how a performative (Carlomagno, 2020) and emotionally charged pedagogy, centered on the body in action and in relationship, can generate a resonance (Rosa, 2020) that fosters an embodied and empathetic educational relationship, safeguarding the "human" in the current era of onlife (Floridi, 2015).

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Keywords: embodied learning, performative didactics, theater, theatrical practices

Theatre as a Third Space. Embodied Education and Practices in the "ABLATIVO" Workshop #159

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The proposal is situated within the paradigm of Embodied Education, conceiving learning as an emergent process arising from the intertwining of body, environment, and relationship, in continuity with the phenomenological tradition (Dewey 1934, 1949; Merleau-Ponty 1945, 2003) and situated approaches (Varela et alii 2017; Thompson 2007). Here, the body functions as an epistemic medium: children construct meanings through pre-reflective, affective, and sensorimotor dimensions prior to conceptual formalization. On these grounds, the contribution analyses the “ABLATIVO” workshop, promoted by the Associazione Ablativo within the diVento project, interpreting theatre as an educational practice and aesthetic-playful space.

The workshop adopts a non-judgemental setting oriented towards relational safety and emergent processes, integrating bodily-spatial awareness, improvisation, embodied narration, and cooperative work. Central is the “body on stage”: gesture and presence (Costa 2004), creative physicality (Lecoq 2000, 2020), and participatory, transformative practices (Boal 2019, 2020), alongside creative theatre in educational and social contexts (Pitruzzella 2016). The rhythmic-musical dimension is equally central: musical skill development (Gordon 1997) guides activities on rhythm, listening, and coordination; laboratory-based pedagogy (Spaccazzocchi 2012) and “sound dramaturgy” (Giacometti 2024) support exploration of voice and sound as extensions of body and relationality. The pedagogical stance draws on creativity as situated practice (Munari 2017) and narrative invention as collective competence (Rodari 1973, 2010), valuing error, play, and imagination.

The aim is to show how “ABLATIVO” operates as a dispositif of embodied inclusion, where diversity becomes a resource and learning takes form as the co-construction of meaning in shared experience.

Keywords: theatre, phenomenology, play, body, music