FROM EMBODIED EXPERIENCE TO SHARED COMPETENCE: NATURE BASED EDUCATION FOR INCLUSIVE SYNECOLOGICAL LEARNING

DALL'ESPERIENZA CORPOREA ALLA COMPETENZA CONDIVISA: EDUCAZIONE IN NATURA PER UN APPRENDIMENTO INCLUSIVO E SINECOLOGICO

Daniela Maggi
e-Campus University
daniela.maggi@uniecampus.it

Antonio Balestra
Link Campus University
a.balestra@unilink.it

Double Blind Peer Review

Maggi, D., Balestra, A. (2025). From embodied experience to shared competence: nature based education for inclusive synecological learning. Italian Journal of Health Education, Sports and Inclusive Didactics, 9(3).

Doi: https://doi.org/10.32043/gsd.v9i3.1597

gsdjournal.it
ISSN: 2532-3296
ISBN: 978-88-6022-522-1

ABSTRACT

The article reconceptualises nature-based education from a synecological perspective, positing that bodily and multisensory experiences render competence a shared property of the learning ecosystem. Theoretical underpinnings (embodied cognition, enaction, learning ecology) are operationalised in a framework of indoor–outdoor continuity, authentic tasks designed through UbD/GRASPS, and UDL measures. Indicators and documentation guidelines aligned with the 2030 Agenda are provided.

L'articolo ripensa l'educazione in natura in prospettiva sinecologica, assumendo che esperienze corporee e multisensoriali rendano la competenza un bene condiviso dell'ecosistema di apprendimento. I riferimenti teorici (embodied cognition, enaction, learning ecology) sono tradotti in un impianto operativo basato su continuità indoor-outdoor, compiti autentici progettati con UbD/GRASPS e accorgimenti UDL. Si offrono indicatori e linee di documentazione coerenti con l'Agenda 2030.

KEYWORDS
Nature-Based Education; Embodied Education; Synecological Perspective; Indoor - Outdoor Continuity; Shared Competence.

Educazione in natura; Embodied education; Prospettiva sinecologica; Continuità indoor -outdoor; Competenza condivisa.

Received 20/09/2025
Accepted 28/10/2025
Published 07/11/2025

Introduction

The accelerating pace of social and technological change now compels schools to rethink the modes, spaces and criteria of education (Rosa, 2013; Rivoltella, 2023). It is therefore necessary to reconceptualise education as a synecological process in which I–Thou–World denotes situated, interdependent and dynamic learning, capable of reweaving nature and culture and translating into sustainable, transformative practices (Bateson, 1979). Nature-based education can be identified as a sustainable, synecological response, insofar as it integrates emotional, social, bodily and cognitive development (Louv, 2016; Hughes, Rogerson, Barton, & Bragg, 2019; Miklitz, 2011) and promotes ecologically responsible behaviour. Accordingly, we posit that bodily and multisensory experiences in nature activate relational modalities that render competence a property shared by the learning ecosystem. Following Næss, we maintain that education should be rooted in an ontology of co-belonging (oikos), from which practices and criteria follow; this grounds our hypothesis concerning body, nature and shared competence (Naess, 1989; Valera, 2019).

From this perspective, nature is not a mere backdrop but a co-constitutive element of the process. Bodily and multisensory experiences thereby become engines of meaning-making, relation and care. Learning thus appears ever more clearly as a dynamic process arising from relations among people, environments and events, within an indoor–outdoor continuity oriented by the principle of appropriateness. We therefore treat indoor and outdoor settings as complementary spaces: the setting is selected case by case in light of the aims, so that context becomes a genuine resource rather than a mere background. Consequently, activities are designed for task–context coherence, alternating experiences in nature with classroom work to support exploration, re-elaboration and inclusion (Allport, 1963; Paparella, 2023). More precisely, the body is not a mere accessory but a condition of access to knowledge. Practices that engage movement, perception and interaction with space yield meaningful and inclusive learning (Maggi, 2017; Maggi, Balestra, & Zappa, 2025; Bloom, 1956; Harrow, 1972; Sibilio, 2012; Paparella, 1988; Parlebas, 2001; Csíkszentmihályi, 1990).

In parallel, the learning ecology approach highlights the need to move beyond "fragmented, decontextualised and disembodied" learning and to integrate ecological frames into processes and contents so as to strengthen ecological awareness and responsibility (Hill et al., 2004). In light of these references, we adopt as our operational frame indoor–outdoor continuity and the design of authentic tasks (Maggi, 2017; Hill et al., 2004).

Consistent with the synecological I–Thou–World perspective and with Embodied Education, the central hypothesis of the article is that, in nature-based contexts that valorise bodily and multisensory experience, situated relational modalities (co-operation, non-verbal communication, negotiation of meaning) make competence emerge as a property shared by the group. Relative to equivalent indoor/traditional settings, this increases inclusive participation, improves the quality of interactions and enhances the collaborative resolution of authentic tasks (Maggi, 2017; Hill et al., 2004). From this hypothesis follow precise operational corollaries. First, the participation of students most exposed to barriers (linguistic, cognitive or cultural) tends to converge towards group levels when activities begin from the body and take place in natural environments. Access through sensorimotor and non-verbal channels reduces participation gaps and renders the distribution of opportunities to act and speak more equitable (H1a) (Maggi, 2017).

Second, we anticipate an improvement in the quality of interactions, observable in indicators such as mutual assistance, non-verbal co-ordinations, negotiation of meaning and care for place. Nature, as a co-agent in the process, facilitates synchronisations and tacit agreements that thicken the relational fabric (H1b) (Maggi, 2017).

Finally, we expect superior outcomes in group-based authentic tasks, because perception–action coupling with the environment, together with reflective phases (briefing/debriefing), strengthens situated problem-solving and the shared management of error (H1c) (Maggi, 2017; Hill et al., 2004).

Within this perspective, educational equity coincides with the right to learn and requires structural conditions (opportunity to learn)—time, resources, professional development and curriculum coherence, alongside assessment—without which differences become system-level rather than individual outcomes (Darling-Hammond, 1997). In this framework, and drawing on motivational psychology, we consider "competence" a social definition of success: when the criterion is mastery of the task rather than superiority over others (ego), participation and inclusion increase—the premises of our hypothesis (Nicholls, 1984, 1989). Moreover, in line with backward design, goals and anticipated evidence guide the choice of contexts and indoor–outdoor continuity, according to the principle of appropriateness (Wiggins & McTighe, 2005).

Given these premises, it is useful and necessary to make explicit the theoretical references that support them.

1. Theoretical foundations: embodied cognition, enaction and a synecological perspective

Embodiment, the I–Thou–World relation and learning ecology constitute the three theoretical axes that guide the argument developed in this article. Research on embodied cognition and enaction indicates that cognitive processes are rooted in bodily activity and interaction with the environment: the mind arises in action through the mutual specification of organism and world and does not represent an already-given reality (Varela et al., 1991). In other words, what we know takes shape as we act and co-ordinate with the constraints and affordances of the context; in real-world rather than "chessboard" tasks, perception and action are co-expressive and the "world" is enacted through situated sensorimotor couplings (Varela et al., 1991). From this standpoint, understanding does not derive from abstract rules alone but draws on situated know-how accumulated through histories of structural coupling with contexts (Varela et al., 1991). On closer inspection, students' "knowing how" is less the application of general rules than a dynamic repertoire of perceptual–motor habits and operative strategies that sediment and are creatively adapted to situations (Varela et al., 1991).

Taken together, these premises support the view that the body is a privileged avenue of access to learning processes interweaving sensorimotor, affective, social and cognitive dimensions. Hence the salience of reflective practices (e.g., briefing/debriefing) and the clear communication of goals and criteria to shape experience, foster self-assessment and enable a non-punitive management of error (Sibilio, 2012; Paparella, 1988). Extending this line of thought, the synecological perspective maintains that learning is a relational, interdependent phenomenon (I–Thou–World) that requires indoor–outdoor continuity and the design of "appropriate" environments to trigger meaningful and inclusive interactions from the outset (Allport, 1963; Paparella, 2023). Within this frame, learning ecology functions as an operational bridge, deploying ecological thinking to design learning processes and contents and to heighten ecological awareness and personal and collective responsibility (Hill et al., 2004). Finally, classic work on basic categories shows that many conceptualisations emerge from shared sensorimotor schemata; against this backdrop, the linkage among action, language and culture in educational contexts appears natural (Varela et al., 1991).

The phenomenological tradition reinforces and grounds this edifice. For Merleau-Ponty (1962), the corps propre and "motor intentionality" explain how movement provides an originary access to meaning and how the subject is situated in the world through pre-reflective sensorimotor schemata. In continuity with this view, Sheets-

Johnstone demonstrates the primacy of movement: kinesic dynamics (rhythms, directions, intensities) are matrices of meaning and intersubjectivity, a kinaesthetic ground upon which language and concepts are scaffolded (Sheets-Johnstone, 2011). From the philosophy of mind, Shapiro synthesises the embodied cognition approach, showing that cognitive processes are situated and extended, and constitutively depend on bodily and environmental constraints (Shapiro, 2011).

This theoretical framework overturns the notion of inclusion as an a posteriori add-on: inclusion is designed into contexts that enable participation through sensorimotor, linguistic and non-verbal channels, and thus becomes a constitutive principle of the system. In sum, the literature reviewed shows that the body shapes and structures thought (Varela et al., 1991), that the mind is situated and extended (Shapiro, 2011), and that the quality of bodily experience contributes to wellbeing and motivation (Csíkszentmihályi, 1990). In this perspective, recent contributions frame Embodied Education as an approach which, through Universal Design for Learning (UDL), recognises the body as a motor of access, a pedagogical mediator and a primary compensatory instrument. This invites the design of generative environments—flexible, personalised and well documented—that enable self-regulation (briefing/debriefing) and inclusion from the level of contextual arrangement, shifting attention from the body's and place's mere "influence" on cognition to their constitutivity (Maggi, 2020; Rose & Meyer, 2002; Tosi, Rivoltella, & Casolo, 2021; Maggi, Balestra, & Zappa, 2025).

The conception of ability adopted by students (mastery vs. superiority) orients task selection, attributions and persistence; in this sense, embodied and co-operative contexts foster mastery orientations and a readiness to embrace challenge (Nicholls, 1984). Consistently, the embodied–synecological perspective aligns with the view that competence standards are constructed in context rather than intrinsic to the individual; defining success in terms of improvement and co-operation shapes practices, motivation and belonging (Nicholls, 1984). Moreover, essential questions guide embodied inquiry and the negotiation of meanings that natural contexts render situated and shared. Rather than asking "what do you remember?", essential questions prompt participants to move, perceive and reason together; meaning is built bodily and socially when place provides real constraints and a common ground (Wiggins & McTighe, 2005).

An idea of pedagogy as the orchestration of bodies, places and relations follows from these assumptions; the move from why to how now requires translating these claims into operational devices.

2. Nature-based instructional designs: multisensory experiences that foster relationality

For the purposes of our argument, it is important to stress that, operationally, the principles are enacted through multisensory experiences and situated reflective practices. Perceptual attunements (breath, grounding, listening, tactility) and explorations in natural settings engage perception–action circuits and prime co-operation (Varela et al., 1991; Louv, 2005). These premises are translated into practice by foregrounding the body and designing authentic tasks that reflect real-world complexity. Specifically, sensory attunements—for example, breathing, grounding, attentive listening to sounds and tactile exploration—and active explorations in natural environments engage perception–action coupling and prepare learners for co-operation (Varela et al., 1991). In this vein, the literature on "nature-deficit disorder" provides a motivational basis for co-operative engagement, showing that regular exposure to direct experiences in nature supports attention, wellbeing and creativity (Louv, 2005). Within the Forest School approach, light routines such as "sit spots", active listening and sensory mapping strengthen shared attention, self-regulation and collaboration (Worroll & Houghton, 2018).

In addition to the above, there are situated activities—co-operative orienteering, micro-constructions using natural materials, crossings and mappings of micro-habitats—that require negotiation and shared decision-making. In the same direction, observing gestures and shared practices clarifies how meaning is co-constructed in action; accordingly, these tasks also valorise non-verbal communication (Parlebas, 2001; Maggi, 2017).

In line with Forest School practices, negotiation, distributed leadership and non-verbal co-ordinations are supported by risk–benefit assessment, the guided use of small tools (e.g., ropes, supervised whittling knives), collective constructions and co-operative games (Worroll & Houghton, 2016).

It follows that the return to the classroom supports briefing/debriefing and documentation. Here, the Universal Design for Learning (UDL) guidelines clearly recommend offering multiple means of representation and of action/expression (e.g., maps, models, photographic portfolios, audio recordings and video diaries) to ensure access and participation for diverse sensory and linguistic profiles. These guidelines enable the transformation of experience into reflective learning (CAST, 2018; Rose & Meyer, 2002; Maggi, 2020).

The bidirectional perception–action relation is central, particularly in an enactive key. To corroborate our hypothesis, it is useful to recall the classic kittens experiment by Held and Hein (1963), which underscores a pivotal point: without self-guided action, sensory information does not translate into functional co-ordination. This reconfigures the role of task and environment in learning (Varela et al., 1991).

The design outlined is coherent with, and in consonance with, learning ecology, which links devices and contents to ecological awareness and citizenship (Hill et al., 2004). Moreover, frequent activity in nature is associated with factors that reinforce outdoor authentic tasks and their transferability to everyday life—namely, sense of belonging, care for place and ecological agency (Louv, 2005).

This methodological framework finds empirical support in a recent field study. Conducted at e-Campus University with 325 teachers attending the fifth cycle of the 30-CFU qualifying courses (art. 13), the study analysed perceptions, practices and criticalities relating to Embodied Education, with the aim of identifying adoption patterns and organisational levers for scaling the approach (Maggi, Balestra, & Zappa, 2025). Administered online via Google Forms, the instrument was structured across eight dimensions (profile; training/knowledge; perceived importance/effectiveness; practices; inclusion; educational sustainability; resources/technologies; collaboration/proposals). The analysis employed five-point Likert scales, closed questions and open-ended items. Notably, for the "Perceived importance and effectiveness" dimension, internal reliability was satisfactory ($\alpha = .846$, 95% CI [.817, .872]) (Maggi et al., 2025).

Findings indicate a gap between beliefs and practice: although 97.25% of teachers consider it important to integrate body and movement into learning, only 25.08% report regular use of embodied activities. Key barriers include lack of training (73.70%) and inadequate spaces (53.52%); demand for training pathways reaches 67.58% (Maggi et al., 2025). Adoption declines from primary to subsequent school levels ($\rho = -.27$, $p < .001$), with less marked yet significant effects of subject area and role, suggesting the need for targeted interventions where the approach is least adopted (Maggi et al., 2025). At a micro-processual level, the positive association between the value attributed to bodily integration and frequency of use ($\rho \approx .23$, $p = .0076$) confirms that training and contextual set-up can act as catalysts for stabilising embodied routines (Maggi et al., 2025).

These evidences dovetail with the outdoor devices outlined here: indoor–outdoor continuity with briefing/debriefing supports multimodal documentation and self-

assessment in line with UDL (Rose & Meyer, 2002; CAST, 2018), while child-led explorations, micro-constructions and sensory mapping operationalise the demand for authentic tasks grounded in perception–action and the negotiation of meaning (Worroll & Houghton, 2016, 2018). In this sense, nature-based contexts offer affordances that facilitate co-operation, non-verbal co-ordinations and distributed leadership, thereby helping to bridge the gap between perceived importance and actual adoption highlighted by the study (Maggi et al., 2025).

3. Assessing shared competence: indicators, instruments and implications for inclusion

Transposing the indicators used in the study (e.g., participation, quality of interactions, inclusive impact, educational sustainability) into lean rubrics and in-situ observations allows outdoor authentic tasks to function as assessment devices. The excursion itself becomes a site of experience production, while the indoor return serves modelling and archiving (maps, digital portfolios, journals), with direct effects on the learning ecosystem's shared competence (Maggi et al., 2025).

In brief, organisation pivots on the task–context–body axis across an indoor–outdoor continuum. In practice, activities open with sensory attunements (breath, grounding, sounds, tactility) and outdoor explorations requiring co-operation, non-verbal communication and shared decision-making; the classroom return supports reflection and documentation.

From this perspective, the relationship with natural space—particularly through movement—becomes a cognitive and social engine of learning, while UDL secures accessibility and participation for all.

A lens rooted in rural contexts further enriches the framework, offering an operational lexicon that strengthens appropriateness and inside/outside continuity. Spaces are not opposed; rather, one selects the setting most congruent with aims, group and content. Practices of wonder, symbolic play and care for place re-centre childhood. Sensory attunements, child-led explorations and micro-constructions translate wonder into meaning and relational weaving, with non-verbal co-ordinations and distributed leadership made explicit through briefing/debriefing and multimodal documentation, in line with Universal Design for Learning (Paparella & Del Gottardo, 2023; Nicholls, 1989; Wiggins & McTighe, 2005).

Experiential reference to rural contexts also foregrounds a genuine politics of place: task, space and relations are mutually sustaining, the environment acts as a co-agent of learning, and nature-based education becomes an infrastructure for shared competence and for the development of ecological agency and belonging (Paparella & Del Gottardo, 2023).

Operationally, outdoor authentic tasks and reflective routines (briefing/debriefing, UDL) foster a task-involving climate—informational feedback, criteria for personal progress, absence of normative comparison—that supports effort, persistence and collaboration (Nicholls, 1989). To render this framework actionable, frame outdoor authentic tasks through GRASPS (goal, role, audience, situation, product and standards) to clarify purpose and expectations from the outset. Indeed, within an UbD perspective, backward design aligns outdoor contexts, tasks and assessments with enduring, transferable understandings, making criteria and feedback transparent from the start (Wiggins & McTighe, 2005).

Accordingly, the overall design shows how task, context and body jointly contribute to shared competence.

Conclusion

In conclusion, the principle of appropriateness guides the move from spaces to practices and from practices to citizenship. Curricularly, a brunerian perspective orients transitions from enactive to iconic and symbolic representation along a spiral of increasing complexity (Bruner, 1966; Bruner, 1977). If embodiment and enaction clarify the how—the integration of perception, action and reflection—learning ecology provides the why: ecological awareness and responsibility (Varela et al., 1991; Hill et al., 2004). Finally, the free-choice learning framework shows how schools and informal contexts can productively interact by leveraging students' interests and choices (Falk & Dierking, 2002).

Nature-based education is not an alternative to "indoors" schooling; rather, it constitutes an appropriate continuum in which the body-in-relation serves as the cognitive and social interface of learning (Paparella et al., 2025). What is done and perceived outdoors becomes material for "going beyond the information given", reorganising experience into concepts and tools that are transferable within the spiral curriculum (Bruner, 1966; Bruner, 1977).

Against the backdrop of learning ecology, the framework proposed here consolidates continuity, responsibility and ecological citizenship (Hill et al., 2004). Learning "from outside to inside" entails designing returns that validate what was explored outdoors, transforming it into formalised and shareable knowledge (Falk & Dierking, 2002, ch. 5). The practices described show competence to be less an individual attribute than a shared property arising from dense relations among people, environments and events (Varela et al., 1991; Hill et al., 2004). In this direction, place- and community-based education highlights how ties with places and communities activate belonging, stewardship and citizenship, strengthening the transformative purpose envisaged by learning ecology (Smith & Sobel, 2010).

Only through routines of authentic assessment, professional development and settings capable of sustaining indoor–outdoor continuity can competence be consolidated. Inclusion thereby becomes the structure of the process rather than a remedial intervention (Maggi, 2017; Maggi et al., 2025). To render transfer visible and consolidate school–community relations, authentic projects anchored to real local problems (ecological mapping, care of shared spaces, small-scale participatory inquiries) are required; rubrics may include indicators of ecological citizenship and community engagement alongside cognitive and relational ones (Smith & Sobel, 2010; Falk & Dierking, 2002). Taken together, enabling conditions, a mastery climate and backward design—our principal levers—make an inclusive, synecological learning grounded in shared competence practicable through authentic performance tasks (Darling-Hammond, 1997; Nicholls, 1984; Wiggins & McTighe, 2005).

Within this frame, the horizon of sustainability lends further coherence: the design aligns with the 2030 Agenda, particularly SDG 4.7, connecting inclusion, equity and ecological awareness, so that indoor–outdoor continuity becomes a concrete device for educating towards responsible citizenship and care for place.

What was hypothesised at the outset here finds an operational synthesis. We anticipate an increase in the participation of students most exposed to barriers, with a more equitable distribution of opportunities to act and speak (H1a); a likely improvement in the quality of interactions—mutual assistance, non-verbal co-ordination, negotiation and care for place—fostered by the environment as co-agent (H1b); and superior outcomes in authentic tasks, owing to perception–action coupling and reflective briefing/debriefing (H1c). These expectations orient curricular and organisational choices and offer teachers practical design criteria.

For concreteness, a light and continuous documentation strategy is advisable: monitoring participation (rates and distribution of turns), interaction quality (mutual assistance, distributed leadership, care for place), and the products/processes of authentic tasks (criterion-referenced rubrics, self/peer assessment, portfolios and journals) enables the longitudinal reading of pedagogical impacts and the steering of improvement.

Within this delicate equilibrium, technologies are used judiciously. Essential tools for photo-diaries, mapping, geolocation and digital portfolios support documentation and reflection as multiple means (UDL), without substituting for direct interaction with the environment—thus keeping the body and contact with place at the centre of learning and authentic assessment (Rose & Meyer, 2002; CAST, 2018; Rivoltella, 2023; Maggi, 2020). Further avenues for inquiry remain open and may strengthen the transferability and generalisability of the model: systematic indoor–outdoor comparisons; longitudinal follow-ups on ecological citizenship and shared competence; validity and reliability checks of rubrics across contexts; and studies on scalability and equity (opportunity to learn) across school levels. Intertwined with practice, these trajectories can, over time, consolidate the effectiveness of a nature-based education capable of holding together body, knowledge and community.

Author contributions

The Authors collaboratively conceived the contribution. Regarding the drafting of the sections, Daniela Maggi was responsible for the first, third and fourth while Antonio Balestra authored the second and fifth.

References

Allport, G. W. (1963). *Pattern and growth in personality*. Holt, Rinehart and Winston.

Bateson, G. (1979). *Mind and nature: A necessary unity*. Dutton.

Bloom, B. S. (1956). *Taxonomy of educational objectives: The classification of educational goals. Handbook 1: Cognitive domain*. Longman.

Bruner, J. S. (1966). *Toward a theory of instruction*. Harvard University Press.

Bruner, J. S. (1977). *The process of education* (Rev. ed.). Harvard University Press.

CAST. (2018a). *Universal Design for Learning Guidelines version 2.2* [graphic organizer]. CAST. https://udlguidelines.cast.org

CAST. (2018b). *Universal Design for Learning Guidelines version 2.2*. CAST. https://udlguidelines.cast.org

Csíkszentmihályi, M. (1990). *Flow: The psychology of optimal experience*. Harper & Row.

Darling-Hammond, L. (1997). *The right to learn: A blueprint for creating schools that work*. Jossey-Bass.

Falk, J. H., & Dierking, L. D. (2002). *Lessons without limit: How free-choice learning is transforming education*. AltaMira Press.

Harrow, A. J. (1972). *A taxonomy of the psychomotor domain: A guide for developing behavioral objectives*. David McKay.

Held, R., & Hein, A. (1963). Movement-produced stimulation in the development of visually guided behavior. *Journal of Comparative and Physiological Psychology, 56*(5), 872–876. https://doi.org/10.1037/h0040546

Hill, S. B., Wilson, S., & Watson, K. (2004). Learning ecology: A new approach to learning and transforming ecological consciousness. In E. V. O'Sullivan & M. M. Taylor (Eds.), *Learning toward an ecological consciousness: Selected transformative practices* (pp. 47–64). Palgrave Macmillan.

Hughes, J., Rogerson, M., Barton, J., & Bragg, R. (2019). Age and connection to nature: When is engagement critical? *Frontiers in Ecology and the Environment, 17*(5), 265–269. https://doi.org/10.1002/fee.2035

Louv, R. (2005). *Last child in the woods: Saving our children from nature-deficit disorder*. Algonquin Books.

Louv, R. (2016). *Vitamin N: The essential guide to a nature-rich life*. Algonquin Books.

Maggi, D. (2017). *L'allenamento oltre la gara: La costruzione dell'uomo*. Libellula Edizioni.

Maggi, D. (2020). The body in action: Mediate, understand, learn. *Italian Journal of Health Education, Sports and Inclusive Didactics, 4*(4, Suppl.), Article 264. https://doi.org/10.32043/gsd.v4i4_sup.264

Maggi, D., Balestra, A., & Zappa, C. (2025). Embodied education per un ambiente inclusivo: Un'analisi quanti-qualitativa delle percezioni e delle pratiche dei docenti nella progettazione didattica. *Ligh: Journal of Inclusive Methodology and Technology in Learning and Teaching, 5*(2), n.p.

Merleau-Ponty, M. (1962). *Phenomenology of perception*. Routledge.

Miklitz, I. (2011). *Der Waldkindergarten: Dimensionen eines pädagogischen Ansatzes* (4ª ed. aggiornata e ampliata). Cornelsen.

Næss, A. (1989). From ecology to ecosophy, from science to wisdom. *World Futures, 27*(2–4), 185–190.

Nicholls, J. G. (1984). Achievement motivation: Conceptions of ability, subjective experience, task choice, and performance. *Psychological Review, 91*(3), 328–346. https://doi.org/10.1037/0033-295X.91.3.328

Nicholls, J. G. (1989). *The Competitive Ethos and Democratic Education*. Harvard University Press.

Pace, M. (2013). *I Love Forest School: Transforming Early Years Practice through Woodland Experiences*. London: Featherstone/Bloomsbury.

Paparella, N. (1988). *Pedagogia dell'apprendimento*. La Scuola.

Paparella, N., & Del Gottardo, E. (2023). *Bambini intraprendenti. La scuola in campagna* (A. Tarantino, Ed.). Franco Angeli.

Parlebas, P. (2001). *Giochi e sport: Corpo, comunicazione e creatività ludica*. Il Capitello.

Rivoltella, P. C. (2023). Dalla cultura del libro alla cultura digitale? In Italiadecide, *Rapporto 2023. Le conoscenze nel tempo della complessità. Educazione e formazione nelle democrazie del XXI secolo* (pp. 137–151). Il Mulino.

Rosa, H. (2013). *Accelerazione e alienazione*. Einaudi.

Rose, D. H., & Meyer, A. (2002). *Teaching every student in the digital age: Universal Design for Learning*. ASCD.

Sheets-Johnstone, M. (2011). *The primacy of movement* (2nd ed.). John Benjamins.

Shapiro, L. (2011). *Embodied cognition*. Routledge.

Sibilio, M. (2012). Elementi di complessità della valutazione motoria in ambiente educativo. Giornale Italiano della Ricerca Educativa, 8, 163–174.Smith, G. A., & Sobel, D. (2010). *Place- and community-based education in schools*. Routledge.

Valera, L. (2019). L'idea di natura in Arne Næss. *Filosofia, 64*, 15–26. https://doi.org/10.13135/2704-8195/4056

Varela, F. J., Thompson, E., & Rosch, E. (1991). *The embodied mind: Cognitive science and human experience*. MIT Press.

Wiggins, G., & McTighe, J. (2005). *Understanding by design* (Expanded 2nd ed.). ASCD.

Worroll, J. (2021). *Forest School wild play*. Watkins Publishing.

Worroll, J., & Houghton, P. (2016). *Play the Forest School way: Woodland games and crafts for adventurous kids*. Watkins Publishing.

Worroll, J., & Houghton, P. (2018). *A year of Forest School: Outdoor play and skill-building fun for every season*. Watkins Publishing.