

OUTDOOR EDUCATION: FROM THE PEDAGOGICAL APPROACH TO PHYSIOLOGICAL BENEFITS

OUTDOOR EDUCATION: DALL'APPROCCIO PEDAGOGICO ALLE VALENZE FISILOGICHE

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ABSTRACT

Outdoor education has always been a pedagogical challenge to integrate learning process. Despite Outdoor Learning and Outdoor Adventure being recognized as highly valuable for education; the modern society has confined people's lives, school and sport practice. It is important to remember, therefore, that life in nature is not only an educational opportunity but also a means through which physiological adjustments and cognitive-motor learning occur spontaneously, with high variability and in intense manner.

L'Outdoor education è sempre stata una sfida pedagogica su cui innestare gli apprendimenti. Nonostante, l'Outdoor Learning e l'Outdoor Adventure siano riconosciuti di grande valore formativo la società moderna ha indoorizzato la vita, la scuola e lo sport delle persone. È necessario ricordare, quindi, che la vita in natura non è solo un'opportunità educativa ma, anche, il mezzo per cui regolazioni fisiologiche e gli apprendimenti cognitivo-motori si innescano in modo spontaneo, vario e intenso.

KEYWORDS

Nature, movement, deficits of nature, physiology, attention
Natura, movimento, deficit di natura, fisiologia, attenzione

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Introduction

The theme of Outdoor Education (OE) during and after the Covid-19 health emergency has attracted strong interest, even in Italy, from educators and researchers towards this organized learning as if it were a new pedagogical insight (D'Elia & D'Isanto, 2021). In reality, OE is not a new scenario/opportunity that presents itself to the world of schools and other educational agencies, since its conceptualization (about 100 years ago in its modern sense, Gelter, 2000) has always been a pedagogical challenge or, in other words, a medium on which to modulate thinking, language, and learning. In other words, OE has always valued the body and the physical senses for individuals' psychomotor, emotional, and intellectual maturation (Monti et al., 2019).

OE is an educational opportunity to promote a teaching method that limits the overprotection that school/home room inevitably entail: a way to counteract the indoorization of children's motor and educational activities (Waygood et al., 2017). It is an active possibility to reduce control and regulation of the child's body and mind through disciplinary regimes (Bortolotti, 2019), actually, focused solely on the rapid acquisition of skills. From the educator's perspective, OE is an approach that allows the children to make great achievements: for example, discovering the properties of water, mud, and rocks (Lovecchio, 2023). Talking about nature-education, without evoking images of an abandoned childhood, should not be valued solely as a post-Covid trend, but for its intrinsic pedagogical and didactic values, as well as for the opportunities for physiological, cognitive, and psychological maturation that are often taken for granted or understudied (Bunting et al., 2000).

A historical reflection on the early approaches to OE will clarify this complex approach, which over time has also shown connections/relationships with the psychological and physiological aspects of the children.

1 **Outdoor Education: Early Insights**

As early as 1638, Comenius (1592-1670) presented his educational method in his work "Didactica Magna" as a natural method that best corresponds to the characteristics of human nature (Scaglia, 2019). He advocated for the continuity of educational work between the indoor and outdoor environments (as seen in "Orbis Sensualium Pictus" from 1658), using an image that depicts the student and the teacher (in outdoors environments), with the teacher indicating to the child to observe the world around them (Farné, 2014). This anticipates the concept of the educational triangle between student, teacher and environment. Later, John Locke (1632-1704) also emphasized the importance of early attention to practical and concrete skills. These practices are useful in promoting autonomy in children (in relation to the conditions/possibilities/limits posed by the environment) and where outdoor physical activity plays a fundamental role in fostering this autonomy through free exploration and play (Farné & Agostini, 2014). Shortly after, Jean-Jacques Rousseau (1712-1778) argued that close contact with the natural environment stimulates the child's development, respecting their growth rhythms and needs (Bortolotti, 2019). In his work "Émile" (1762), he narrates the educational adventure of a child who grows up in the countryside under the guidance of a tutor, learning through experiences at a slow pace and acquiring knowledge at the right moment through movement and the senses, without premature anticipation. Rousseau clarifies, in his text, that humans educate themselves through three paths: physical nature, humans, and objects. In this context, exercises, trials, and experiences educate ipso facto. Another fundamental point of OE, according to Rousseau, could be the opponent of the negative education, that is, education that tends to perfect the organs (considered the instruments of our knowledge) before giving us that knowledge (Calvaruso, 2019):

perhaps an early bio-physiological intuition about the values of OE for the embodied cognition (Paloma & Tafuri, 2016).

Another supporter of OE was Friedrich Fröbel (1782-1852), who advocated for the creation of spaces for gardening activities, small animal husbandry, and play games. In fact, the care of plants and animals was considered fundamental because the children, by learning to take care of the lives of others, learn to care for and protect themselves... a way to learn moral and civic virtues (Scaglia, 2019).

2 The comparison between Maria Montessori and Robert Baden-Powell

Focusing on the theories of the 20th century, Maria Montessori (1870-1952) and Robert Baden-Powell (1857-1941) approached OE from two different perspectives. Montessori argued that educational activities should be integrated with experiences in nature, providing the individual with a complete education in all aspects: motor, cognitive, and empirical (Montessori, 2022). She associated the figure of the child with that of an explorer, who needs a stimulating environment and objects aimed at learning skills. For example, learn the passage of time observing the changing of seasons and the consequences/influences of climate changes on plants (Montessori, 2023). At the same time, Baden-Powell, through the Scout Movement developed a pedagogical method. The British General, leveraging the spirit of adventure and collaboration, emphasized two fundamental elements: the educational value of teamwork and the essentiality of outdoor living. The interactions that the individual establishes with nature become educational opportunities in which the children, in various physical activities, are called upon to assess their strength, intelligence and problem-solving attitudes/abilities (Farné et al., 2018; Lovecchio, 2023).

3 Towards a definition

Considering the different nuances that have alternated over four hundred years in the pedagogical theory of OE, we can say that it is an umbrella term, as it is applied both in non-formal contexts such as Outdoor Adventure (where the exploratory spirit emerges, Education Expedition) and in formal school contexts (Outdoor Learning), which highlights the acquisition of knowledge and skills (Bortolotti, 2019). In any case, OE plays a significant role in the construction of the self and in cognitive and motor domains. It is clearly based on active pedagogy and experiential learning (Reggio, 2014). The fundamental principle that distinguishes is the opportunity for observation, manipulation and exploration that the children puts into practice to develop knowledge of the environment (Lovecchio, 2023), in line with the pedagogical idea of learning by doing suggested by Dewey (Ceciliani, 2015).

4 **Today: the nature deficit**

Despite substantial pedagogical theories on the value of human action in nature, society has not favored experiences in natural environments in the last century. After the massive urbanization of cities in the post-war years and the strong industrialization of the 1960s-1980s, people's socialization moved into indoor spaces. Schools have enriched their facilities with enclosed and protected rooms, stadiums have turned into arenas and parks have become warm rooms with chairs and sofas. This detachment from the natural world, which has been increasing until recent years, has resulted, especially in children, in what can be defined as nature deficit disorder (Louv, 2005): a condition that affects an increasing number of individuals and is associated with a range of disorders (due to the scarcity or absence of contact with nature), from physical to psychological (see Table 1). Although this expression does not have any clinical significance (as it does not constitute a diagnosis), it is used to facilitate dialogue (especially among educators and parents) and to have a shared cultural background regarding seemingly

unrelated situations/symptoms that, instead, are attributable to the lack of contact with nature (Louv, 2007).

Deficit of nature	
Physical	higher rates of physical illnesses a lower sense of well being diminished use of the senses low motor experience
Physiological	vitamin D deficiency increased rates of obesity low energy expenditure
Psychological	higher levels of aggression increased rates of depression low empathy to others
Social	higher rates of emotional illnesses poor attention spans lower ability to cope with stress
Other	poor academic performance attention difficulties lack knowledge of animals and vegetables

Tab. 1: Symptoms related to the deficit of nature. List not exhaustive and freely defined.

5 Physiological, motor and psycho-cognitive values

In addition to the positive pedagogical aspects, OE has important psychological, physiological and motor implications, as mentioned in the previous paragraph. For example, children living in areas with ample green spaces show fewer signs of stress, anxiety disorders and lower chances of developing depressive disorders compared to their peers living in highly urbanized areas (Guerra, 2017). The overstimulation of the senses typical of urban areas has detrimental effects on individuals: there is fatigue in generating alpha waves (Bagherzadeh et al., 2020), which leads to reduced attention and concentration capacities (especially in children) and, consequently, can contribute to the phenomenon known as excess energy hyperactivity, a possible manifestation of attention deficit disorder (Guerra, 2017). Thus, it triggers a pre-existing pathological condition, as Barbiero reported (Barbiero, 2014), where an environment requires the individual to employ excessive attention, leading to fatigue and resulting in impulsivity, agitation, irritability and poor concentration abilities.

Another neuromotor aspect is the body-sense maturation (Lovecchio, 2021) or sensorimotor development, which bridges our interiority with the surrounding reality (Montessori, 1957). For example, activities involving pouring elements provided by nature (gravel, sand...) or manipulating stones/mud (Lovecchio, 2021) exponentially increase the perception of various sensory stimuli and thus contribute to the maturation of proprioception (the maturation of the homunculus) compared to the limited stimuli provided by plastic objects in a classroom. Furthermore, OE, being a place rich in elements and movements, promotes (through errors) the predictive capacity of events, which depends on the stimuli received by the basal ganglia: that is the results of a series of stimuli that synchronize the interaction between the mirror circuit, the cerebellum, and the hypothalamus (Sherwood & Lee, 2003). This, in turn, leads to efficient recognition of environmental variations (sometimes dangers) and, in the context of sports, motor anticipation (Giunta, 2020).

Additionally, the use of natural niches or shelters, such as wooden huts or more hidden areas of the garden, allows for a strong structuring of laterality, lateralization, and Euclidean dominance of oneself and space (i.e., stimulation of hippocampal cells)... a phenomenon that can occur in a classroom or a room, but with limited cases and experiences (Lovecchio, 2021).

OE is also a natural action to prevent metabolic syndrome, a general term used to indicate a series of effects (obesity, type 2 diabetes, increased systolic/diastolic blood pressure, increased circulating lipids and glucose; Alberti et al., 2005) resulting from a sedentary lifestyle, which affects 5% of children and adolescents (Al-Hamad & Raman, 2017).

The thermoregulatory process (thermos-genesis and thermos-dissipation) is another physiological aspect not to be overlooked. It helps maintain a constant core body temperature in response to changes in external environmental conditions. OE creates a plethora of situations in which the hypothalamus activates or deactivates the release of adrenaline and noradrenaline, leading to an increase (adrenergic action; Gomes et al., 2013) or a cessation of metabolism and, consequently, heat production by the body.

Conclusions

Therefore, OE is not simply an opportunity for teachers, educators, or babysitters due to a vague naturalistic preference (increased in the post-Covid period), but it is the original (in terms of origin) place of education and learning. It can be defined as the original school of the world because nature is the home of all humanity: in fact, through the relationship with nature, humans have learned everything that we, now, investigate with computers in anonymous rooms. Examples of these, include the discovery of matter (earth and water), physical phenomena (winds and tides), the passage of time (day and night, seasons), and the construction of the first tools, which required observation, reasoning, and application. It is more than just an

opportunity for socialization (Fägerstam, 2012) and all spaces (gym, stair, park, courtyards, paths, sidewalks) should be interpreted by individuals, educators and administrations as a possibility of movement: not only as a means to go from one point to another but as an opportunity to increase the pleasure of being active (both children and elderly; (Borgogni, 2020) both as infinite possibilities of sensory-motor maturation.

In addition to the well-known dimensions¹ of OE (Jensen & Ouis, 2008 ; Bortolotti, 2019), it also has physiological and cognitive-motor values that are not secondary and guarantee a healthy personal growth from the perspective of the musculoskeletal system and the maturation of the central and peripheral nervous systems (Kellert, 2002). In this context, the physiological control and the enrichment of perceptions improve the individual's interaction with a constantly changing reality that second-by-second demands reasoning and decision-making (Invernizzi et al., 2018).

¹ Utilitarian (involves hobbies such as mushroom picking, gathering berries and aromatic herbs), romantic (moving without motorized means to reach picturesque and fascinating landscapes), scientific (bird watching or fossil hunting), social (engaging in group activities during free time), and sporty (challenging oneself).

References

- Alberti, K. G. M., Zimmet, P., & Shaw, J. (2005). The metabolic syndrome—A new worldwide definition. *The Lancet*, 366(9491), 1059–1062.
- Al-Hamad, D., & Raman, V. (2017). Metabolic syndrome in children and adolescents. *Translational pediatrics*, 6(4), 397.
- Bagherzadeh, Y., Baldauf, D., Pantazis, D., & Desimone, R. (2020). Alpha synchrony and the neurofeedback control of spatial attention. *Neuron*, 105(3), 577–587.
- Barbiero, G. (2014). *Affective ecology for sustainability*.
- Borgogni, A. (2020). L'intenzionalità educativa degli spazi pubblici: Luoghi e tempi delle didattiche del movimento. *L'intenzionalità educativa degli spazi pubblici*, 1–199.
- Bortolotti, A. (2019). *Outdoor education: Storia, ambiti, metodi*. Guerini scientifica.
- Bunting, C. J., Tolson, H., Kuhn, C., Suarez, E., & Williams, R. B. (2000). Physiological stress response of the neuroendocrine system during outdoor adventure tasks. *Journal of Leisure Research*, 32(2), 191–207.
- Calvaruso, F. P. (2019). *Aria di campagna. Tracce rousseauiane per un'educazione ambientale*. CQIA Rivista, 6.
- Cecilian, A. (2015). *Corpo e movimento nella scuola dell'infanzia*. Parma: Edizioni Junior Spaggiari.
- D'Elia, F., & D'Isanto, T. (2021). Outdoor movement education in primary school during COVID-19 pandemic in the synthetic perceptions of primary school university training student. In *Journal of Human Sport and Exercise* (Vol. 16). <https://doi.org/10.14198/jhse.2021.16.Proc3.68>
- Fägerstam, E. (2012). *Space and Place: Perspectives on outdoor teaching and learning*.
- Farné, R. (2014). *Per non morire di sicurezza: L'intenzionalità pedagogica del rischio in educazione*. R. Farné, F. Agostini, A. Cecilian, A. Bortolotti, M. Schenetti, M. D'Ascenzo, M. Terrusi, F. Monti, *Outdoor education. L'educazione si-cura all'aperto*, Parma, Edizioni Junior Spaggiari, 15–23.
- FARNE, R., & AGOSTINI, F. (2014). *Outdoor education. L'educazione si-cura*

all'aperto. *INFANZIA: STUDI E RICERCHE*, 1, 1–111.

Farné, R., Bortolotti, A., & Terrusi, M. (2018). *Outdoor Education: Prospettive teoriche e buone pratiche*. Roma: Carocci.

Gelter, H. (2000). Friluftsliv: The Scandinavian philosophy of outdoor life. *Canadian Journal of Environmental Education (CJEE)*, 77–92.

Giunta, I. (2020). L'anticipazione: Tra poetica e pragmatica dell'azione. *Formazione & insegnamento*, 18(1 Tome I), 92–106.

Gomes, L. H. L., Carneiro-Júnior, M. A., & Marins, J. C. B. (2013). Thermoregulatory responses of children exercising in a hot environment. *Revista Paulista de Pediatria*, 31, 104–110.

Guerra, M. (2017). *Fuori: Suggestioni nell'incontro tra educazione e natura*. FrancoAngeli.

Invernizzi, P. L., Matteo, C., Andrea, B., Scurati, R., & Lovecchio, N. (2018). Correlation between cognitive functions and motor coordination in children with different cognitive levels. *Advances in Physical Education*, 8(1), 98–115.

Jensen, E. L., & Ouis, P. (2008). Contested construction of nature for city fringe outdoor recreation in southern Sweden: The Arrie case. *Urban Forestry & Urban Greening*, 7(3), 171–182.

Kellert, S. R. (2002). Experiencing nature: Affective, cognitive, and evaluative development in children. *Children and nature: Psychological, sociocultural, and evolutionary investigations*, 117151.

Louv, R. (2007). Leave no child inside. *Orion Magazine*, 57(11), 1–6.

Louv, R. (2008). *Last child in the woods: Saving our children from nature-deficit disorder*. Algonquin books.

Lovecchio, N. (2021). *Apprendere giocando: Educazione motoria nella scuola primaria*.

Lovecchio, N. (2023). *Il gioco dell'allenamento. Verso una modalità ludica dell'allenamento*. IL CROGIOLO.

Montessori, M. (1957). *Il bambino in famiglia*. Garzanti.

Montessori, M. (2022). *La scoperta del bambino*. BoD-Books on Demand.

Montessori, M. (2023). *La mente del bambino: Mente assorbente*. Feltrinelli Editore.

Monti, F., Farné, R., Crudeli, F., Agostini, F., Minelli, M., & Cecilian, A. (2019). The role of Outdoor Education in child development in Italian nursery schools. *Early Child Development and Care*, 189(6), 867–882.

<https://doi.org/10.1080/03004430.2017.1345896>

Paloma, F. G., & Tafuri, D. (2016). Embodied Cognition. Body, movement and sport for didactics. *Italian Journal of Educational Research*, 17, 41–52.

Reggio, P. (2014). *Apprendimento esperienziale. Fondamenti e didattiche*. EDUCatt-Ente per il diritto allo studio universitario dell'Università Cattolica.

Scaglia, E. (2019). *Istituzioni di storia della pedagogia della prima infanzia*. Edizioni Studium Srl.

Sherwood, D. E., & Lee, T. D. (2003). Schema theory: Critical review and implications for the role of cognition in a new theory of motor learning. *Research quarterly for exercise and sport*, 74(4), 376–382.

Waygood, E. O. D., Friman, M., Olsson, L. E., & Taniguchi, A. (2017). Transport and child well-being: An integrative review. *Travel Behaviour and Society*, 9, 32–49.

<https://doi.org/10.1016/j.tbs.2017.04.005>