# BODIES, SPACES, AND VICARIOUSNESS: RESEARCH ON IMPLICIT KNOWLEDGE IN DISADVANTAGED AND MARGINALIZED CONTEXTS

# CORPI, SPAZI E VICARIANZA: UNA RICERCA SUL SAPERE IMPLICITO IN CONTESTI DI MARGINALITÀ E SVANTAGGIO

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**ABSTRACT**
According to Bioeducational Sciences (Frauenfelder, 2001), which propose a complex view of human development as a dynamic interaction between biological identity and the environment, this contribution aims to investigate the role of Outdoor Education for All (Sravrianos, 2022) as an inclusive practice in marginalised contexts. In this sense, the theory of simplexity (Sibilio, 2017) highlights the role of corporeality as the basis of embodied and situated learning (Maturana, Varela, 1988). In this perspective, the environment becomes potentially vicarious (Berthoz, 2011), particularly for individuals with disabilities who can see their transformative possibilities expand (Sibilio, 2016), promoting the development of intellectual abilities and educational potential. The research questions relate to the possibility of identifying Outdoor Education as a possible approach even in disadvantaged contexts. The research, which adopts a qualitative design (Mortari, 2022), was carried out at Casa Raoul (Sabatano, 2018), a semi-residential community for young people with intellectual disabilities located in an area with a high social vulnerability index (ISTAT, 2023). In the first phase, the research objective presented here aims to investigate the possible relationships between the representations and decision-making processes implemented by individuals to isolate methodological elements that could be transferred to similar contexts.

In linea con la prospettiva delle scienze Bioeducative (Frauenfelder, 2001) che propongono una visione complessa dello sviluppo umano come interazione dinamica tra identità biologica e ambiente, il contributo intende indagare il ruolo dell'Outdoor education for all (Sravrianos, 2022) come pratica inclusiva nei contesti di marginalità. In tal senso, la teoria della semplessità (Sibilio, 2017) evidenzia il ruolo della corporeità come base di un apprendimento incarnato e situato (Maturana, Varela, 1988). In questa prospettiva, l'ambiente diventa potenzialmente vicariante (Berthoz, 2011), in particolare, per soggetti con disabilità che in esso possono vedere allargarsi le proprie possibilità trasformative (Sibilio, 2016), promuovendo lo sviluppo delle capacità intellettive e del potenziale di educabilità.Le domande di ricerca sono relative alla possibilità di identificare nell'Outdoor Education un approccio possibile anche in contesti di svantaggio. La ricerca, che adotta un disegno qualitativo (Mortari, 2022), è stata svolta presso una comunità semiresidenziale Casa Raoul (Sabatano 2020,) per giovani con disabilità intellettiva che si trova in un territorio con un alto indice di vulnerabilità sociale (ISTAT, 2023). Nella prima fase, l'obiettivo di ricerca di cui si presentano in questa sede i risultati sono volti ad indagare le possibili relazioni tra le rappresentazioni e i processi decisionali messi in atto dagli individui al fine di isolare degli elementi metodologici che possano essere trasferiti in contesti similari.

**KEYWORDS**
Outdoor education; marginality; disadvantaged context; disability; vicariousness
Outdoor education; marginalità; svantaggio; disabilità; vicarianza

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## Introduction

The research focuses on the role of Outdoor Education as a tool for promoting learning and social inclusion, according to the Outdoor Education for All model (Stavrianos & Pratt-Adams 2022). The main hypothesis is that limited outdoor experiences, resulting from restricted local opportunities, may negatively influence the processes of self-determination and personal development, especially for young people with intellectual disabilities. The research, using a qualitative phenomenological approach (Mortari 2007), involves interviews with a sample of parents, with the aim of bringing to light implicit knowledge (Bruner, 1996, Abric (1993) that influences educational choices and opportunities offered to boys and girls. The goal is to foster enhanced awareness and agency (Aiello, 2024) in parents, enabling them to become active partners in their children's educational pathways. This research draws upon theoretical frameworks that conceptualize learning as the dynamic interconnection between individuals, contexts, and lived experiences. Bioeducational Sciences frame learning as a reciprocal exchange between biological identity and environmental surroundings, emphasizing connections among body, mind, and contextual settings (Frauenfelder & Santoianni, 2004). Contemporary pedagogy's emerging non-linear perspectives (Rivoltella, Rossi & Sibilio, 2012) integrate neuroscience with education, focusing particularly on neural plasticity processes and the dynamic relationship between individual development and the environment. Within this framework, complexity theory (Sibilio, 2023) positions learning as an embodied and situated process in which action and movement acquire cognitive and educational significance (Berthoz, 2011). From this perspective, environmental context becomes paramount, giving rise to the concept of vicariousness (Sibilio, 2016), which plays a crucial role by describing the brain's capacity to activate alternative strategies that compensate for functional limitations while promoting adaptive potential and educability. This theoretical foundation intersects with David Kolb's Experiential Learning Theory (ELT, 1984), which conceptualizes education as territorially grounded and aligns with Place-Based Education (Sobel, 2004). This approach emphasizes the educational significance of local environments and outdoor experiences (Preston, 2003).

This research takes Bioeducational Sciences (Frauenfelder & Santoianni 2004) as its fundamental theoretical framework. These sciences have highlighted the need to understand educational action as a space of reciprocity between biological identity and the environment (Frauenfelder & Santoianni 2004). In fact, since the last century, they have opened up an innovative field of research that goes beyond reductive, exclusively biological or cultural views, proposing a complex relationship

between nature and culture, in which biology supports and shapes culture, making it an integral part of the individual's educational process. In this context, bio-education has introduced a perspective that embraces the paradigm of complexity, recognising the uniqueness of each living being as autonomous and capable of self-organisation. Each individual is genetically predisposed but remains open to the environment around them. It is precisely in the latter that the role of experience "becomes decisive in the complex genetic structure of humans, thus defining an adaptive process influenced by contextual factors, inclinations, predispositions, dynamics of iteration and levels of interpretation that determine specific behaviours that reflect the cultural dimension in which the educational intent is embedded" (Frauenfelder 2004). Therefore, bio-educational disciplines, recognising a combination of nature and culture in the individual, have noted the need to guide educational activity in a space of interaction between identity and the environment, where the potential for educability manifests itself and develops (Frauenfelder-Santoianni, 1997, 2002; Frauenfelder-Santoianni-Striano, 2004; Orefice-Sarracino, 2006). Consequently, the resulting concept of learning is that of a process of adaptation. This process is undoubtedly complex, as individuals modify their behaviour in response to external stimuli, thanks to their intrinsic adaptability. This flexibility, which is the basis of human educability, allows the brain to adapt dynamically to changes in the environment, using alternative approaches to deal with the challenges that arise in such a complex reality. It is precisely through the Theory of Simplexity (Sibilio, 2023), which highlights the "principle of meaning" as the basis of "embodied" and "situated" learning (Sibilio, 2017), that we are able to face complexity (Sibilio, 2014, pp. 86); in fact, the latter principle "synthesises all the other principles, restoring the centrality of bodily action, the starting point and destination of conceptualisation, abstraction and cognitive mechanisms" (Sibilio 2014 p.104). According to Berthoz, "Meaning is not applied to life, but is life itself" (Berthoz, 2011, p.21); an example of this line of thinking, which recognises the value of the body-action-meaning link (Sibilio, 2012), can be found in human-environment interactions. In other words, our biological organisation has changed its meaning over the course of its evolution, transforming our body into a "knowledge machine" (Maturana et al., 1992). The sense-motor system, therefore, not only "characterises the semantic content of concepts in accordance with the way we function in the world with our bodies" (Gallese, 2006, p.457), but through our actions, it allows us to understand how our bodies function in the world. Knowledge is therefore in action, in that "every action is knowledge and every knowledge is action" (Maturana et al., 1992, p.43). In this context, it can be said that "the body constitutes the potential action of man, who does not possess a

body but is himself a body, immersed in a space in which action is necessary" (Sibilio 2013). In addition, the concept of "didactic corporeality" (Sibilio, 2011) stands as the possible foundation and strategy for effective simplifying educational action, which allows meaningful experiences to be realised, addressing the complexity of the teaching-learning process through bodily experience (Sibilio, 2011). It follows that educational action is organised based on principles and properties that suggest an "embodied" and "situated" view of the educational process, which identifies the body moving in space as the foundation of cognitive functions. Action, therefore, becomes the starting point and destination of conceptualisation, abstraction and cognitive mechanisms. In this paradigm, there is also a dual vision of the embodiment of cognition; on the one hand, it is perceptual in nature, while on the other, it emphasises motor aspects (Wilson 2002; Caruana-Borghi 2016), which, according to Gibson's ecological approach, provide direct perception, are functional to action and linked to the environment, where the information necessary to orient oneself in action is retrieved. This assumption is the basis of the concept of affordances (Gibson), which is linked to the concept of Umwelt (Cummins, 2009), i.e. the space perceived by every living being according to their needs, which allows the selection of the information necessary to act. From these theoretical links, the consequence on the application side is the re-examination of the entire teaching-learning process, understood as an educational dynamic based on the body and the environment. Therefore, the relationship between educator, student and environment is also being reviewed, as physicality becomes a mediator that influences this relationship and learning contexts are identified as a variable capable of facilitating multiple modes of thinking and social participation. In this regard, Preston (2003) states that the physical environment is not only the place where the mind operates, but also influences its results. This leads to a reconceptualization of the spaces in which teaching takes place, starting from the assumption that individuals are educated and formed through an autopoietic relationship with the context (Orefice 2006) and that physicality is actively involved in and with the world they inhabit (Overton, 2008). In this sense, it is possible to speak of "embodied space" as a place of synthesis in which human experience and awareness of one's own space and external space take on a symbolic and conceptual material form (Low, 2003). According to this perspective, the environment presents itself as a space for action for both the individual and the group, as well as the context in which "being-in-possibility" is realised, i.e. the "spatial foundation, both real and metaphorical, of educational experience" (Gennari, 1997). "Space" therefore takes on a crucial function as a physical, social, cultural and relational dimension, within which the subjects of the teaching-

learning process explore their own ways of functioning and adapting. This conception of space, understood as the basis of action, redefines the educational experience in terms of action, planning and organisation, highlighting the need for a close systemic relationship between educator, student, objects, places, distances, actions and times in teaching activities. According to these studies, teaching spaces, understood as the set of material and immaterial objects and places (Sibilio, 2016), represent a conscious and intentional organisational component of teaching. They give meaning to the educational experience, acting as places of interaction between the subject and the environment, influencing in some way the outcome of the educational action. This experience therefore represents the context in which the adaptive functions fundamental to learning develop, since changes and evolutions in individuals are generated through action and interaction. A significant contribution to the understanding of learning as an experiential process comes from the Experiential Learning Theory (ELA), which believes that the process of acquiring knowledge is more effective when based on the individual's direct experience; this is because the active involvement of the person helps in the consolidation of information and the transfer of skills. This approach has been studied by David Kolb, who formulated a theoretical model based on the Experiential Learning Cycle. The latter is divided into four sequential and interconnected phases: concrete experience, reflective observation, abstract conceptualisation, and active experimentation (Kolb 1984). Another theoretical contribution, closely linked to outdoor education, is represented by Place Based Education, which attaches great importance to the local area, considering it a fundamental element in the educational process. The natural or cultural environment is emphasised as a privileged place for learning and a source of authentic experiences deeply rooted in the everyday reality of students. This perspective also promotes a type of education based on the local area, which encourages contextualised and transferable learning, taking into account critical awareness and individual responsibility with regard to environmental and social dynamics. These theoretical approaches are distinguished by their multidisciplinary nature (Ö. Palavan, V. Cicek, M. Atabay, 2016), which goes beyond the mere transmission of information to focus on the development of critical and reflective skills. Thanks to direct experience and interaction with the surrounding environment, Experiential Learning and Place-Based Education offer tools to address current challenges by encouraging engaging learning aimed at training aware citizens and promoting the inclusion of each and every individual (Aiello 2017).

## 1. Vicarious Learning and Outdoor Education

Through the theoretical framework presented above, it is possible to understand how both the body, through direct experience and action, and nature, understood as the context in which experience develops, take on a "vicarious" role. The term vicarious derives from the Latin vicarius, literally meaning "substitute" or "substitute", and in turn derives from vicis, "change" (Berthoz 2013). According to Sibilio, vicariousness (Sibilio, 2016) is the creative ability of the brain to adopt multiple and often unusual strategies to achieve a goal, replace a sensory function or compensate for a process through an alternative mechanism. This process promotes the development of intellectual abilities and the potential for education in individuals with intellectual disabilities. The body thus becomes the "main device through which, by gaining experience, learning develops and knowledge is produced" (Rivoltella 2012, p. 12). "The solution is to allow the brain to replace, where possible, the deficient part with a different part, or to create a new combination of networks that guarantee the same function: we can, in fact, paint with our mouth if our hand is paralysed, and replace sight with other senses to perceive space". Therefore, instead of "rehabilitation", we now talk about "remedy", a functional vicariousness: in this case, the strategy is not to replace, but to achieve the same result by activating a different process (P.C. Rivoltella p.46), which uses "brain plasticity"; the latter expression indicates the ability to modify the functioning of the brain at multiple levels: that of molecular mechanisms, but also that of functional connections (Berthoz 2013). Therefore, in the case in question, each individual, young people with intellectual disabilities, implements a series of strategies to solve a specific problem, bringing about a change in their learning process through action and experience. Vicarious learning appears to be an essential element for the acquisition of competence, as it implies the ability to observe and interpret the surrounding environment, recognise the constraints of the context and plan action, considering and comparing different possible solutions. 'The body, therefore, in action in an environment that influences thought and incorporates tools that, when used in teaching, offer the possibility of using vicarious learning, leaving everyone free to find the learning strategy that suits them best' (Berthoz, 2013).

In this regard, Berthoz refers to de La Garanderie (1991) and his theory of mental gestures, Reuchelin (1981), who focuses on the possibility of finding an adequate solution capable of compensating for a deficit, von Uexküll (1967) and Vygotski (1987), who carry out a careful examination of the effects of the social context, and Bandura (2013), who argues that learning through direct experience often occurs

on a vicarious basis, i.e. by analysing the behaviour of others and the consequences that arise from it. Research in this field, despite its heterogeneity, converges on the concept of nervous system plasticity (Corona & Cozzarelli, 2011). From this perspective, the nervous system is no longer considered a rigid, predetermined structure, but a dynamic entity capable of reorganising itself in response to new functional requirements or needs arising from traumatic or pathological events. It is widely recognised that, when the functioning of a neuron is compromised, another neuron can take over through the formation of new synaptic connections. This process allows the restoration and reintegration of the neural circuit, thanks to a mechanism of functional vicariousness, in which specific neurons take on the role of the damaged ones, compensating for their operational deficit.

Considering the inclusive perspective of Outdoor Education for All and applying vicariousness to special education, it is possible to analyse vicariousness itself as a central element for an epistemological review of special education. This allows us to move beyond the traditional approach, based on compensation in educational practices aimed at students with disabilities, making non-linear trajectories of teaching and educational practices necessary (Aiello 2017, p. 267). In other words, vicariousness facilitates access to elements of the surrounding environment that promote adaptation, thus establishing a dynamic process of interaction between the individual and the context. This mechanism involves not only the subject, but also the different umwelts of the actors participating in the educational process. This interaction helps to consolidate the concept of inclusive pedagogy, which, by promoting these dynamics, allows for the design of personalised development paths tailored to the specific needs of each individual. In this way, a process of co-evolution is activated between the subject and the reference environment, which in turn changes to respond to educational needs (Pavone, 2010, p. 60).

In this context, Outdoor Education is, in detail, a pedagogical approach that promotes educational practices in and outside of school in open environments, which favour cognitive and psychomotor empowerment (Farnè, 2015). Applying this concept to teaching and special education, we consider the international construct of outdoor education for all by Alexandros Stavrianos and Simon Pratt-Adams (2022), Louv, 2005: pp. 203-211, Stavrianos & Spanoudaki, (2015). At an international level, there are several programmes dedicated to young people with disabilities, which promote inclusive education through activities carried out in outdoor spaces. These projects are designed to ensure accessible environments that are conducive to learning and participation for all, regardless of physical, cognitive or sensory abilities. In northern California, the organisation Outdoor

Education for All (OEFA) is a benchmark for outdoor education. Founded in 2013 in Butte County, OEFA has gradually developed a network of over 150 volunteers, including school and outdoor educators, park and cultural institution administrators, museum and historic site directors and operators, university students and community members. OEFA's primary goal is to promote outdoor education that is accessible to people of all ages, abilities and backgrounds. To this end, the organisation is committed to providing quality educational experiences based on shared standards, with a focus on ecological literacy, health and well-being, and the formation of active citizenship in the conservation and management of natural and cultural resources. Through pilot projects, events and collaborative activities, OEFA aims to demonstrate the multiple benefits of outdoor education by integrating existing resources and new initiatives into a network capable of amplifying their impact. The organisation works actively to develop a model of educational partnership between traditional teachers and outdoor educators, with the aim of expanding this practice to all counties in the northern region of the state. OEFA's collaborative approach is based on creating synergies between institutions and individuals involved in place-based education, with the aim of supporting, enhancing and optimising outdoor education provision. This model, in addition to ensuring experiential and inclusive learning, contributes to the formation of a community that is aware and active in protecting its environmental and cultural heritage.

In line with the principles outlined above, the objectives of the research are:

- To investigate the social representations of disability present in multi-problem families.
- To investigate the possible relationships between these representations and the decision-making processes implemented by individuals.
- To isolate methodological elements of Outdoor Education for All that can be transferred to similar contexts.

## 2. Methodology

The research therefore aims to explore the implicit knowledge of families caring for people with disabilities; this form of knowledge develops and spreads through daily interactions and becomes an integral part of lived experience. ‘In the course of social relations, each individual is guided by this type of knowledge, which shapes their perception of reality and directs their expectations of the surrounding world’ (Bruner, 1996). The interesting point is that even implicit learning can lead to

abstract knowledge (Reber 1993), even if it is acquired unconsciously. This form of knowledge, which develops through personal experience, helps to give meaning and direction to life choices. Furthermore, in the context of families with a disabled member, it has an impact on both daily dynamics and the educational and social prospects of children, influencing the way they perceive and deal with disability.

In this context, it is hypothesised that disability is influenced by adverse contextual variables, which amplify difficulties and limit opportunities for self-determination and personal growth. In particular, we intend to verify whether the absence of outdoor educational and recreational experiences, determined both by the socio-cultural background of families and by the scarcity of opportunities offered by the local area, such as the absence of accessible and safe public spaces, has a negative impact on the processes of autonomy, identity development and personal transformation of people with disabilities. The study of these interactions should help to shed light on the link between outdoor education, personal well-being and social inclusion and place further emphasis on the usefulness of outdoor learning as a potential means of reducing the obstacles imposed by circumstances and thus facilitating the path towards self-determination.

The research context in which the educational action takes place is in the municipality of Quarto. The latter has a high vulnerability index, considering the following conditions (Istat 2019-2023):

- risks and contexts of marginalisation, linked to the geomorphological and infrastructural specificities of a territorial area.
- Vulnerability of environmental and natural resources due to pressure from human activities, with consequent repercussions on the health of the ecosystem.
- Fragility of human capital, which reduces the community's capacity to respond and adapt in critical situations or adverse events.
- Critical issues related to the structure of the production system, which influence the economic development and resilience of the territory.

Specifically, in this municipality, the context in which the research is taking place is Casa Raul, a community founded in 2019, dedicated to young people and young adults with moderate and high-functioning disabilities. The main purpose of this organisation is to promote the personal autonomy of its guests through the exploration of their limits and potential within an inclusive and well-organised environment. In addition, Casa Raul offers solid support to families by helping them define the life path of their family members, including with a view to the future “after us”, so as to ensure continuity and independence. Casa Raoul is also part of

the Cittadella dell'Inclusione (Sabatano, 2011), an educational and social centre that opened in 2013 and has welcomed the Integra Project since its inception. Initially dedicated to children from immigrant families, in 2005 it became a reference point for families affected by deviance, social marginalisation and organised crime. The project is seen as a chance for redemption for minors, offering real alternatives to life on the streets (Sabatano, 2011). The sample under investigation consists of 20 young men and women aged between 20 and 30, together with their parents. The methodology used is qualitative, involving the creation and administration of interviews, questionnaires, thematic analysis, the use of MAXQDA 2024 software for processing, focus groups and analysis of evidence. A qualitative analysis based on a phenomenological approach is preferred, examining the details and particularities of the context. The ideographic nature of the study is therefore central to this type of analysis (Mortari, pp. 35,36), which considers the experience of the subjects within a well-defined context. In this way, knowledge is constructed through a study of reality and phenomena.

**Conclusions**

This study aims to examine how educational environments and societal opportunities shape the development and self-determination of young people with disabilities. The central hypothesis is that limited access to outdoor educational experiences—constrained by socio-economic and cultural factors—impedes personal growth and identity formation among disabled youth, ultimately affecting their learning outcomes. Direct environmental engagement and physical involvement are crucial for developing cognitive and relational skills in children with intellectual disabilities. However, family perceptions of disability significantly influence the educational opportunities available to these children. Parents' implicit knowledge, shaped by entrenched beliefs and limited resources, often restricts their children's autonomy development. Outdoor education may effectively overcome these physical and cultural barriers by providing dynamic, accessible learning experiences. This approach requires more flexible, adaptive educational strategies that recognize how individuals construct knowledge through environmental and social interactions. Such methods could promote both skill development and social inclusion by dissolving artificial boundaries between formal and informal education while fostering a more equitable and inclusive society.

**Author contributions**

Cristina Promentino wrote Introduction and paragraphs 1 & 2; Fausta Sabatano wrote Conclusions.

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