



THE BODY IS THE PROOF: EMBODIMENT AND MUSIC IN SPECIAL EDUCATION

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Abstract:

This study explores bodily narratives as a shared learning path to understand human experiences, treating the body as a text that conveys life events, traumas, and social contexts. Drawing on Carlo Ginzburg's "clues paradigm," this approach highlights how small details can yield deep insights into the human condition. The research emphasizes the role of shared bodily sensations and emotional connections, noting that our interactions significantly influence our feelings. Central to this pedagogical inquiry is how shared bodily sensations and emotional connections shape our emotional landscapes. The study underscores the importance of motor activities and sensory experiences in everyday life, a notion particularly relevant in special education settings where listening and empathy play crucial roles. This aligns with Andrea Canevaro's advocacy for non-verbal communication and bodily expression as fundamental components of human interaction. Supporting this framework, research indicates that foundational rhythmic structures in children begin to develop around six months of age and mature by the age of three, revealing a close association with the development of motor skills. By employing observational methodologies informed by Piaget's and Vygotsky's theoretical contributions, the study illustrates the intricate interplay between motor activities and cognitive development. Furthermore, the exploration of rhythmic and melodic synchronization reveals its potential to enhance teamwork and foster community engagement. The findings illustrate the connections between auditory and kinesthetic learning, contributing to a nuanced understanding of educational processes and how auditory experiences influence mental imagery. Finally, the study discusses how lived bodily experiences enrich the dynamics of verbal communication, ultimately suggesting that reflecting on bodily awareness fosters deeper self-understanding and stronger interpersonal relationships.

Keywords: embodied resonance, mediated learning, special education, rhythmic and spatial awareness, mental imagery

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1. Introduction

1. Introduction: Bodily Narratives as a Clue Paradigm

The concept of bodily narratives as a clue paradigm reinterprets the human body as a dynamic text or archive. In this framework, physical manifestations serve as essential markers for understanding an individual's life experiences, traumas, social standing, and health conditions. This interdisciplinary approach integrates perspectives from the humanities, social sciences, and medical fields.

At the core of this methodology is the "clues paradigm" (or evidential paradigm), a concept extensively developed by historian Carlo Ginzburg. This paradigm suggests that profound insights into the human condition often emerge from small, seemingly trivial details rather than from broad theoretical constructs. By emphasizing the importance of these subtle indicators, the approach encourages a deeper exploration of lived experiences, promoting a more nuanced understanding of the relationship between bodily expressions and personal and social narratives (Ginzburg, 1986).

The concept of a shared embodied sensibility and reciprocal resonance emphasizes the fundamental interconnectedness of human beings from the moment of birth. This notion serves as a foundational element in exploring clues that inform our understanding of human relationships and interactions throughout life. By investigating this interconnectedness, we can gain deeper insights into how individuals influence and resonate with one another, shaping their experiences and emotional landscapes.

As embodied agents, our capacity for empathy allows us to perceive analogous resonances between others' expressive behaviors and our own bodily conveyances. This interpersonal connection profoundly impacts our emotional experiences. According to this perspective, our emotional states are not solely generated internally and individually. Still, they are significantly shaped by our interactions with others within a communal context of shared expressive modalities (Fuchs, 2002; Fuchs & Koch, 2014).

Daily life encompasses a diverse array of motor activities that intricately weave together our engagement with space and time, our interactions with the environment, and our connections with others. These activities unfold within various contexts where functional movements and expressive gestures play pivotal roles in accomplishing everyday tasks. Actions such as throwing, catching, grasping, releasing, tightening, loosening, pressing, lifting, striking, pinching, and rubbing are not merely physical maneuvers; they are integral to our daily existence (Ellerani *et al.*, 2023).

Moreover, our sensory experiences serve as a vital framework for understanding life, contributing significantly to our reasoning and emotional awareness. This notion resonates with the concept of "embodiment," which underscores the importance of creativity, sensitivity, and relationality from a comprehensive standpoint. To deepen our grasp of consciousness through educational practices, it is necessary to reassess the insights our senses offer about the world, as O'Loughlin (2006) highlights.

The integration of listening and empathy, alongside an understanding of bodily narratives, is vital in the realm of special education. (Kivijärvi *et al.*, 2016) Over four decades ago, Andrea Canevaro underscored these themes, advocating for a focus on

special educational needs and inclusion processes through continuous research and diverse communication methods (Canevaro, 1979, 1980, 1983).

He maintains that non-verbal behavior, embodiment, and gestural expression are not accessory elements, but rather essential to the educational experience. Canevaro's approach calls for confronting educational challenges with professional expertise that prioritizes the body, emphasizing its gestural, mimetic, and rhythmic forms of expression. This view encourages participants in the educational dialogue to see situations as both challenges and resources, fostering deeper engagement with learners' potential (Carboni, 2013).

Research on behavioral dynamics conducted in the 1970s and 1980s highlighted the importance of lived bodily experience in verbal communication. This was further validated by studies examining the characteristics of voice, including both prosody and paralinguistic features, as well as the complexities of body language, posture, and interactions related to personal space (Argyle, 1978; Morris, 1983). These elements significantly enhance the architecture of interpersonal and social communication dynamics, facilitating processes such as "role-taking," the capacity to assume another individual's perspective, and "perspective-taking," the ability to understand others' viewpoints (Selman, 1971).

Ultimately, the exploration and utilization of the body signify the commencement of an evolution that fosters the perception and representation of the self as a distinct personality. This journey entails the development of reflective consciousness—the capacity to perceive oneself as an "object" capable of self-assessment and self-direction, as noted by Canevaro (1979).

From this theoretical perspective, the ideas of embodiment, motor action, non-verbal expressiveness, and gestural communication are crucial in shaping our "*sense of a bodily self*".

This sense is developed through processes of retrospective sensory, perceptual, and cognitive awareness, allowing individuals to perceive their bodies not just as a series of functionally linked parts but as a unified, cohesive whole meaningfully located within the dimensions of space and time (Sander, 2008).

The notion of shared embodied sensibility and reciprocal resonance highlights the fundamental interconnectedness of individuals from infancy. This perspective argues that, as embodied beings, our capacity for empathy allows us to discern analogous emotional responses in both others' expressive behaviors and our own physical manifestations. This interpersonal linkage significantly impacts our emotional experiences, as emphasized by Fuchs (2002). The framework posits that our emotional states are not merely internally generated; they are profoundly shaped by our interactions within communal settings characterized by collective modes of expression. Such an understanding calls for a reevaluation of emotional experiences as inherently relational, underlining the importance of the social context in shaping individual emotional landscapes (Fuchs, 2017).

The concept of an educational practice rooted in bodily mediation highlights the necessity of fostering authentic connections to experiences that unfold in real time. Every

participant must engage not only with the overarching activity but also with its individual elements. This engagement occurs through the manipulation of various objects and materials, complemented by playful interactions that carry substantial emotional and affective significance—whether structured or unstructured (Macedonia, 2019).

To cultivate an inclusive environment, it is crucial to activate a perceptual-motor, experiential, and learning framework that is distinctive within a broader context of inclusivity and integration. Such a framework serves to mediate the myriad impressions individuals encounter by honing in on the motivations—be they individual, intersubjective, or collective—that empower all participants to articulate and refine their perceptual-motor skills (Canevaro, 1979; Canevaro, 2014).

Goal setting in education should prioritize the comprehensive development of individuals, specifically targeting their developmental, cognitive, and relational needs. To achieve this, it is essential to adopt a multifaceted planning approach that incorporates a range of methodological tools. These may include play, ludic structures, music, improvisation, and storytelling, which can be effectively implemented through experiential learning and practical activities.

By engaging essential pedagogical elements such as creativity, corporeality, and identity, educators can create a more enriched learning environment. Acknowledging the significance of embodiment allows for an appreciation of each person's complex uniqueness, fostering an integrative approach that considers both interpersonal and intrapersonal dimensions of individual growth within the education framework. This holistic perspective not only enhances personal development but also promotes a deeper understanding of the interconnectedness of the learning experience (Barra, 2025).

Umberto Galimberti (1983) clearly highlights the importance of this topic. Space and time come to life through proximities and distances that defy conventional geometry. This is because we assign meaning to our experiences; there isn't an inherent action of things upon the body, but rather the significance that the body assigns to those things. If words were not gestures and did not carry their own meaning, as gestures do, communication would not be possible.

The interplay of "exploration," "exchange," and "discovery" plays a crucial role in shaping educational frameworks that facilitate a deeper understanding of integration processes. Simultaneously, fostering effective communication dynamics requires recognizing diversity not only as a valuable trait but also as a vital resource that provides "semantic and symbolic nourishment" (Carboni, 2012a).

In this regard, action research emerges as a particularly effective educational and research methodology. It emphasizes the importance of designing projects and educational environments explicitly tailored to the unique variables of a given context. It is imperative to avoid the inclination to adopt interventions that are merely compensatory or centered around re-education. Thus, there is a pressing need to enhance stakeholder participation in experimentation and research to enable the seamless integration of research into practical applications.

2. Theoretical Framework

2.1 Gestural and Musical Communicativeness as Traces of Intersubjectivity

The study of how gestures and sound-musical elements contribute to social communication has gained significant interest since the late 1970s and early 1980s. This research focuses on the complex development of motor skills, sensory abilities, and musical actions. Theories from scholars such as Baroni (1978) and Delalande *et al.* (1982) have notably advanced our understanding of this interplay. Researchers in this field aim to explore how these components work together to enhance effective communication and expressiveness in social interactions.

Research indicates that the foundational rhythmic structures and musical behaviors in children typically begin to develop around the age of six months. By the end of their third year, these skills are generally fully developed. This developmental path is intricately linked to the growth of exploratory and manipulative motor skills. As children refine these motor abilities, they begin to express fundamental forms of alternation—such as recognizing and creating patterns—and multiplicity, which allows them to play with different sounds and rhythms. These early musical capabilities are crucial for fostering a child's cognitive and physical development (Carboni, 2012b; Phillips-Silver & Keller, 2012).

The methodologies used in these investigations are often based on observational frameworks derived from Piagetian theories. However, they also inadvertently support Vygotsky's ideas about the connection between motor activities and cognitive development. Specifically, Vygotsky's original concepts on primary cognitive behaviors emphasize that these behaviors emerge through sensorimotor experiences, which are not only assimilated and internalized but also undergo remodulation and transfer (Vygotsky & Luria, 1930/1997; Vygotsky, 1931/1974). This highlights the crucial interdependence between physical actions and cognitive development during early childhood.

The interplay between imaginative capacities, motor skills, and musical-auditory abilities is a crucial indicator of neurobiological growth and cognitive development throughout life. Gestural-motor functions, such as coordination and fine motor skills, are closely linked to musical experiences involving rhythm and sound perception. This connection highlights that these skills are interrelated and play a vital role in shaping personal and cultural identities. Engaging in musical activities can enhance motor skills, while physical movement can deepen musical understanding, fostering a comprehensive sense of self shaped by individual achievements and cultural interactions. These developments significantly affect one's conception of identity and relational dynamics, echoing Stern's observations (1985) on the importance of sensory and motor experiences. The proposition that motor cognition significantly influences the development of social communication has gained substantial traction among scholars, particularly within the frameworks of evolutionary development (phylogeny) and individual maturation (ontogeny). This viewpoint is substantiated by comprehensive studies conducted by Gallese *et al.* (2009), which elucidate the profound impact of physical interactions and experiential learning on the mechanisms of social communication.

Furthermore, a compelling facet of early human development unfolds within the prenatal environment, where the fetus is situated in a complex acoustic landscape. During this critical period, the developing organism is subjected to a diverse array of auditory stimuli, encompassing the maternal voice, heartbeat, and ambient sounds. These auditory experiences are vital to shaping sensory processing. Empirical research indicates that these auditory and tactile stimuli—particularly proprioceptive inputs that delineate body position and movement—alongside less prominent kinesthetic sensations, are instrumental in the genesis of foundational cognitive processes and may even play a role in the emergence of prenatal dreams.

In this extraordinary context, the fetus's awareness of self and its nascent interactions with external stimuli are predominantly mediated through auditory experiences. Such interactions contribute to the establishment of a fundamental sense of existence, which profoundly influences how the individual will engage in social interactions and relational dynamics postnatally (Abrams *et al.*, 1998; Ullal-Gupta *et al.*, 2013). This underscores the critical role of auditory and sensory experiences in the prenatal milieu, as they fundamentally shape communication and social cognition from the earliest stages of human development.

The intricate relationship between adults and auditory experiences reveals a substantial dependence on synesthetic descriptors when articulating these encounters. Individuals often employ vivid, evocative language to characterize timbre, using terms such as "acidic" or "sweet," thereby indicating an inherent connection between auditory perception and emotional resonance. Furthermore, sounds are frequently described with adjectives such as "rough" or "smooth," which reflect subjective interpretations of their qualities. This synesthetic approach extends to soundscapes, with comparisons drawn to tactile experiences, such as "soft carpets" or "harsh melodic phrasing." Additionally, rhythms may be conveyed as "hard and obsessive" or "sinuously hypnotic," demonstrating the multifaceted nature of sonic experiences. This choice of terminology underscores the profound emotional and conceptual significance of sound, suggesting that auditory phenomena extend beyond mere physical characteristics to encompass deeper symbolic meanings (Carboni, 2005; Caclin *et al.*, 2005).

Between the early 1980s and the early 1990s, significant scholarly inquiries emerged exploring the intersection of sound and experiential understanding. This period was characterized by research themes, including *amodal qualities of experience* and *affective attunement*, as discussed by Stern in 1985.

The concept of multiple intelligences was notably advanced by Gardner in 1983, while Calvin's 1996 work delved into the plasticity of learning processes. Additionally, this era witnessed the rise of constructivist approaches in both pedagogy and psychology, articulated by thinkers such as von Glasersfeld (1990; 1995) and Johnson & Johnson (1994).

Stern's investigations, in particular, were pivotal in examining the communicative dimensions of sound and movement, mapping developmental trajectories from infancy to the eventual mastery of verbal communication. These findings underscore the crucial

role of expressive mediation in socialization and self-expression, thereby shedding light on the essence of human sociability.

2.2 Attunements and Mirroring: the Roots of Shared Learning

Observing arm movements allows us to infer perceptual qualities associated with rapid acceleration, including speed and amplitude. However, this experience is not typically processed through the lens of time, intensity, or form; instead, it manifests as a gesture imbued with "force," perceived as a *vital affect* (Stern, 1985). Stern argues that the development of attunement processes between mother and child fundamentally relies on recognizing and exploring the affective qualities embedded in bodily, gestural, and sensory interactions. This process underscores the broader phenomenon of individuals sharing analogous inner experiences. The notion of "being with the other" within an "atmosphere of continuity" provides valuable insights, corroborated by subsequent research that elucidates the neural mechanisms underlying gestural and motor mirroring. Initially, these processes manifest relationally but progressively evolve into richer emotional and affective experiences.

In this context, Gallese asserts that the roots of human intentionality lie within the relational nature of action. He states, *"Under normal conditions, we are not alienated from the meaning of the actions, emotions, or sensations experienced by our fellow human beings, as we enjoy what I term an 'intentional consonance' with the world of others. (...) When we encounter another person, we directly experience their humanity. (...) Thanks to mechanisms of mirroring and simulation, the other is experienced as an 'other self.'"* (Gallese, 2007). This emphasizes the fundamental interconnectedness of human interactions and the role of shared experiences in shaping our understanding of the self and others.

The concept of "amodal" dimensions in perceptual data processing is based on structured observations of mother-child interactions, particularly in the early stages of life, as suggested by Stern (1985). This phenomenon represents a cognitive process that occurs during the initial stages of a child's development and tends to diminish as language acquisition becomes more important. Recent advancements in neuroscience have clarified the mechanisms behind emotional and communicative attunement, moving away from abstract ideas. Instead, they highlight the role of neuronal mirroring functions, suggesting that interpersonal interactions are not merely abstract representations but are deeply rooted in experiential data processed across various sensory modalities (Ammaniti & Ferrari, 2013).

Stern's insights reveal a vital component of communication: that beneath linguistic constructs and metaphors lies an amodal dimension that shapes our information processing. Our self-perception is significantly influenced by our relationships and expressive interactions, which encompass vocal qualities, gestures, and conversational rhythms. This awareness underscores our existence within lived, embodied sonic cognition. (Carboni, 2005).

Furthermore, contemporary neuroscience posits that social intelligence transcends mere "social metacognition," defined as the ability to contemplate another individual's mental state through symbols or propositional representations. Instead, it suggests that

a substantial part of social intelligence is gained through direct engagement with another person's experiences, fostering enhanced mutual understanding and connection (Gallese, 2007).

2.3 Experiencing the Body through Sound

The communicative dimension of sound and music, particularly in relation to bodily mediation, operates within a framework that is both nuanced and intricately complex. In contrast to conventional musical languages, which typically depend on specific syntactic and lexical structures to establish redundancy and reinforce meaning, this dimension derives its potency from the dynamic interaction of metaphor and metonymy (Henry, 1971; Mittelberg, 2019).

This interplay fosters a spectrum of potential experiences, enabling individuals to articulate their "desire to imagine" through diverse gestural and sonic modalities. It underscores the importance of engaging with reality in ways that transcend mere perceptual assimilation, enabling individuals to reinterpret emotional and affective significance creatively. This perspective suggests that sound and music transcend mere aesthetic phenomena; instead, they are profoundly intertwined with the intricate complexities of human expression and emotional cognition.

Moreover, the distinctive nature of processes associated with growth and change is fundamentally grounded in the interplay among sensory, perceptual, and cognitive experiences. These experiences are deeply connected to individuals' unique methodologies for exploration and knowledge acquisition, highlighting the subjective nature of understanding and interaction with the world.

The emergence of research focused on mirror neurons in the early 1990s has significantly advanced our understanding of empathic interactions and their role in knowledge development across varied experiences (Gallese, 1996; 2007). This field underscores the vital importance of empathy in learning processes, highlighting an inherent aesthetic dimension fundamental to discrimination, information processing, and knowledge acquisition (Jeannerod, 1994; Freedberg & Gallese, 2006; Gallese *et al.*, 2007).

Acknowledging the aesthetic elements of learning underscores their essential role in enhancing educational experiences and fostering profound connections in social interactions and experiential learning. By integrating a playful (ludic) dimension into educational frameworks, we can cultivate an environment where diverse modalities of being and learning can be thoroughly examined. Thoughtfully designed pedagogical spaces can facilitate meaningful interactions that accommodate various learning styles. This methodology not only enriches personal and interpersonal dynamics but also enhances group interactions, advocating for a comprehensive approach to education.

Understanding the essence of life through the exploration of sound and vibration offers a profound perspective on the interconnectedness of all forms of existence, from the simplest single-celled organisms to distant cosmic phenomena such as pulsars. This perspective invites scholars to delve into sound and musical experiences in ways that transcend mere auditory perception and touch the core of human existence.

The concept of bodily mediation is significant in this discourse, as it refers to the integration of sound and music into human experience. This integration manifests as a unique human capability to transform a wide range of experiences into communicative acts that foster social bonds. Thus, the interaction between physical movement and sound emerges as an essential element in learning and interpersonal interaction, ultimately enriching understanding of both individual and collective expressions of humanity. This emphasis on the interdependence of bodily movement, sound, and social connection may provide valuable insights into the intricacies of human communication and community-building.

The sonic-musical dimension operates as a significant social catalyst, fostering both individual identity formation and collective identification. Central to this phenomenon is a profound sense of participation—encompassing emotional, perceptual, relational, and cultural dimensions. Research by anthropologists, including Merriam (1964), underscores the critical role of shared symbolic meanings in the effective transmission of musical expressions across communities.

This conceptual framework can be applied across diverse historical and developmental contexts, ranging from the social structures inherent in the Neolithic era to the fundamental sonic interactions that characterize mother-child dynamics in early infancy.

Recognizing that music and social behaviors develop in tandem enables a detailed examination of the stages through which individuals cultivate sonic gestures. This developmental trajectory comprises several distinct phases: Initially, individuals engage with their environment through exploration and experimentation, employing trial and error to comprehend their surroundings and the materials at their disposal. Following this, there is a progression toward more sophisticated forms of expression, often facilitated by playful or ritualistic activities. These activities encompass various forms of play—ranging from practice play to symbolic play and structured games—all of which enhance motor and musical skills that are fundamental to social interaction and cultural expression.

The study of these processes not only enhances our understanding of individual developmental trajectories but also provides significant insights into the intricate roles that music and movement play in human socialization and cultural identity. When we critically analyze narration as a generalized form of symbolic action, as posited by Raimond Ruyer (1964), we discern that it transcends traditional narratives, incorporating a diverse array of symbolic expressions, including games, rituals, and musical forms. This broadened perspective highlights the profound interconnectedness of various modes of expression within the fabric of human social life.

Building upon these foundational concepts, it becomes evident that there is a trajectory toward increasingly complex expressive-symbolic forms. These forms often initiate in a rudimentary state, subsequently evolving into more sophisticated manifestations through improvisational practices. This transformative process entails experiential restructuring across multiple sensory modalities—auditory, visual, tactile,

and sensorimotor—and occurs independently of any predefined expressive intent (Carboni, 2005; Vines *et al.*, 2006).

The developmental path outlined in the immediate context highlights the integral role that early musical experiences play in fostering creativity and subsequent artistic growth. As individuals engage in musical activities, they internalize foundational "rules of play," which later evolve into more intentional and structured forms of expression. This process emphasizes the deliberate nature of musical performance, as noted by Barrett (2006), where the expressive intent becomes a guiding principle in artistic endeavors.

Moreover, the communal aspect of music-making cannot be overstated. Musical performances serve not only as a medium for individual expression but also as a vital platform for collective engagement within a community. These shared experiences offer a unique opportunity for participants to articulate collective emotions, thereby reinforcing communal ties. Through the collaborative nature of musical activities, community bonds are strengthened, illustrating the multifaceted role that music plays within social contexts.

2.4 Music and Movement: Mirrored Learning Processes

The focal point of this inquiry is to determine the nature of the correlation between two seemingly disparate forms of activity: motor practice and sound-music experience. Initial findings underscore how learning manifests within these operational-cognitive domains, creating a multifaceted network of interactions among learning modalities.

A significant aspect of this observational study is the cognitive processes that bridge both motor and sensory experiences. For example, performing a series of hops can resemble marking a musical beat. Although these activities—hops and rhythmic pulses—follow different experiential routes, they are indirectly linked by a common framework that emphasizes articulating space through energy patterns and timing, and organizing time through motor references.

Moreover, the interrelation between structured movement experiences and rhythmic time articulation suggests a reciprocal relationship between these modes of learning. In everyday contexts, each learning modality can dynamically stimulate or call forth the others.

The intricate relationship between music and movement is a fundamental dimension of the musical experience, playing an essential role in meaning-making and enhancing multifaceted engagement across cognitive, emotional, and, notably, neuromotor dimensions.

This complex relationship is deeply entrenched in the principles of embodiment and movement, elucidating how these components converge to enrich our understanding of music. Importantly, this connection transcends mere physical actions and extends beyond the basic perception of gestures and motor dynamics—both actual and virtual—to include a wider range of interactions that reshape our experiential understanding of space and time through the lens of music.

Clarke's (2001) study offers a nuanced exploration of the interrelationship between music and movement, challenging traditional interpretations that often segregate these two elements as distinct. Rather than treating music and movement as separate domains, Clarke's research highlights the intricate connections between the acoustic properties of sound and the motor skills involved in gestural processing. This investigation reveals that music is not merely an auditory phenomenon; it is deeply integrated with our physical movements and spatial awareness.

By emphasizing the objective nature of these connections, Clarke invites a reevaluation of our auditory experiences. He argues that to fully appreciate music, one must recognize its interplay with bodily movements, which profoundly influences our perception and engagement with the world. This holistic perspective enriches the understanding of musical experience, suggesting an intricate blend of auditory, physical, and cognitive dimensions.

The connection between music and movement becomes particularly pronounced in activities such as vocal exercises that incorporate bidirectional motion paths, exemplified by ascending and descending glissandi. These practices illustrate a reciprocal relationship that fosters similar learning trajectories, especially concerning spatial orientation and continuity within space-time frameworks. This interconnectedness highlights the importance of environments that synergistically integrate music and movement, suggesting that such an approach can significantly enhance learning. Ultimately, this interplay underscores that music and movement not only coexist but also mutually enrich one another, deepening our understanding of their combined influence. The interplay between kinesthetic learning and auditory perception underscores a sophisticated relationship in which physical movement—characterized by acceleration and deceleration—intersects with the capacity to discern and replicate variations in the speed of sound propagation. This relationship is not merely coincidental; rather, it suggests a profound interdependence wherein the execution of physical movements significantly influences an individual's ability to acquire, process, and interpret auditory information. Conversely, the understanding of auditory stimuli profoundly impacts the quality and execution of motor tasks (Effenberg & Schmitz, 2018).

Moreover, tasks that require memorization, such as navigating an environment blindfolded and guided solely by auditory cues, reveal another layer of interdependence inherent in the learning process. These engagements involve spatial orientation reliant on auditory signals and the memorization of sound sequences, which can be construed as pathways within a multidimensional cognitive space. Despite the differing methodologies employed in these activities, they converge on a shared experiential framework that highlights the complementary nature of diverse learning modalities (Stekić, 2026).

The integration of movements that require balance and axial rotation provides valuable insights into the intricacies of learning experiences. Engaging in these activities, particularly when combined with the execution of ternary time signatures—regardless of their complexity—underscores the reciprocal relationship central to the learning process.

Participation in one modality, such as physical movement, enhances the capabilities of another modality, in this case, musical rhythm and timing. This dynamic interplay fosters a rich learning environment, cultivating a deeper understanding of concepts and facilitating comprehensive skill development, as indicated by Juntunen and Hyvönen (2004).

Furthermore, contexts that emphasize motor coordination introduce additional complexity. These activities can be performed independently or in collaborative settings, yet they consistently emphasize rhythmic and melodic synchronization. Such contexts exemplify a unique form of interdependent learning, where the intricate interaction between kinesthetic and auditory modalities is critical. Each modality contributes vital elements to overarching educational outcomes, illustrating the interconnectedness of these learning processes. The collaborative nature inherent in these activities promotes effective teamwork, enhancing individual learning while nurturing a sense of community and shared achievement among participants, as highlighted by Getchell (2007).

In a comprehensive examination of the connection between musical parameters and motor imagery, Eitan and Granot (2004) pursued several key hypotheses.

First, they proposed a vectorial correlation indicating an interplay between the intensity of musical stimuli and the corresponding motor imagery. Specifically, increases in the intensity of musical elements would evoke heightened imagery of kinetic activation, while decreases would lead to a decline in imaginative representations of motor activities.

Second, the researchers contended that a “One-to-Many” mapping exists, suggesting that individual musical parameters can elicit a diverse range of motor characteristics. This implies that distinct motor responses may arise from variations in musical intensification.

Finally, Eitan and Granot explored the notion of directionally symmetrical associations between music and movement. They aimed to validate hypotheses about associative space symmetries, such as mirrored kinetic processes during crescendos and diminuendos—where one symbolizes rising movement and the other falling movement. The methodology employed in their experiment involved participants imagining a variety of anthropomorphized motor qualities associated with different melodic figures. This encompassed the identification of the type of movement (e.g., walking, running, jumping), vertical direction (ascending, descending, stationary), the perceived distance from the observer (approaching, receding, static), and horizontal movement direction (right, left, or stationary).

Additionally, the study considered alterations in pace, the impact of external forces (excluding gravitational effects), and the character's energy levels throughout these imagined movements. Through this nuanced analysis, Eitan and Granot aimed to deepen the understanding of how musical elements can influence and evoke motor imagery.

Research conducted by Eitan and Granot (2004; 2006) elucidates the significant impact of various musical parameters on the evocation of mental imagery. Their findings suggest a nuanced relationship between auditory experiences and the imagination,

indicating that musical elements—including tempo, dynamics, melody, and harmony—profoundly influence the characteristics of the imagined visual sequences.

This study highlights the intricate interplay between auditory stimuli and visual perception, revealing that specific parameters of imagined movements are modulated by these musical elements, thereby demonstrating a strong interconnectedness between sensory modalities.

Subsequent investigations have advanced significantly due to both the broadening of the research scope and the enhancement of the methodologies used to analyze collected data (Kohn & Eitan, 2009; Eitan & Rothschild, 2011; Kolesnikov *et al.*, 2023).

In conjunction with this, Brown *et al.* (2005) investigated the hypothesis of a shared spatial and rhythmic model, as evidenced by the activation of specific brain regions during the integration of sensory information and its synchronization with external stimuli. This model is particularly relevant to whole-body coordination in activities such as dance, sports, collective movements, and musical performance. Their findings reveal that neural activation patterns elicited by rhythmic cues and spatial awareness exhibit similarities across these diverse domains of physical engagement.

The data gathered from these studies align with contemporary research focused on neural activation during rhythmically defined basic motor behaviors. The results indicate a network of interconnected neural regions activated when individuals encode the spatial dynamics of bipedal rhythmic movements—an essential aspect of dance practice. However, the methodologies employed predominantly shed light on the proximity and potential overlap of neural localization, rather than providing a definitive cartography of specific brain functions.

In light of these significant findings, the experiential modes of shared learning that are addressed herein are rooted in a comparable network of neural interactions. This network is pivotal in delineating a spectrum of connection modes and levels through which learning is facilitated in relation to motor practices tied to auditory experiences.

Specifically, it underscores how engagement with sound and music can enhance learning across a multitude of physical activities, thereby fostering a rich interplay between auditory stimuli and motor execution. Thus, the discussed experiential modes of shared learning operate within an analogous network of interactions, illuminating the multifaceted connections and levels through which learning is activated in the context of motor practice and its correlations with sound and music experiences.

3. Operational Models for Methodological Research

3.1 Embodied Thought as the Foundation and Experimentation of Knowing

The inherent participatory nature of bodily communication undergoes a significant transformation as the dynamics of play evolve into a more sophisticated form of communicative expression. This emergent communicative framework is characterized by intentionality and the symbolic dimensions of gestural language, which manifest in various forms and modes of representation. As children engage in play, they transition from refining their postural and dynamic motor patterns to developing a mastery of

structured competencies. These competencies span a spectrum of skills, including communicative, expressive, logical, and verbal abilities, ultimately leading to a more profound understanding of the symbolic and social facets of motor learning (Lewis *et al.*, 2000).

This foundational understanding empowers children to structure their experiences in ways that project vivid imagery and models representative of their internal worlds into their interpersonal interactions. In this context, each child's imagination is afforded expansive space, enabling the creation of shared representations that operate as mediums for collective knowledge and understanding. Such shared experiences facilitate collaboration and foster deeper connections among peers, enriching their social landscape (Ferreira, 2021).

Through the lens of play, children encounter diverse opportunities to engage with their environment. They possess the capacity to manipulate and transfigure elements within their surroundings, drawing upon their lived experiences to inform their actions. Furthermore, they can modify these elements to better align with their cognitive frameworks or plans, fostering a sense of agency and autonomy. In addition, children can fabricate entirely new experiences or situational constructs that serve as catalysts for further exploration, achievement, and transformative shifts in their perceptions and interactions with the world. This dynamic interplay between embodied cognition and cognitive experimentation lays a robust foundation for their social and intellectual development (Radovanovic & Sommerville, 2025).

The study of intrapersonal relationships sheds light on the intricate interplay between imaginative processes and tangible experiences. As individuals, particularly children, interact with their environment, they begin to construct a mental landscape that integrates sensory inputs—including timings, stimuli, rhythms, and responses—through associative reasoning. This cognitive maturation not only bolsters their capacity to generate organized responses but also fosters a more sophisticated self-perception (Golbeck & Liben, 1988).

Such a holistic understanding encompasses various physical sensations, spatial awareness, and interactions with objects, ultimately contributing to self-recognition. The concept of self is further elucidated by the idea of reciprocal mirroring, in which external experiences shape internal perceptions, and vice versa. Sensations morph into mental images, subsequently inspiring expressive behaviors that mirror one's inner state. Guerra Lisi (1984) articulates that the foundational elements of non-verbal communication are rooted in the intrinsic nature of muscle tone, characterized by the dynamic interplay of "extension and contraction."

Effective communication relies on achieving a balance of this tonic-muscular elasticity, which embodies a rhythmic process of taking and giving—often conceptualized as an "opening-closing-reopening" dynamic (Kosmas *et al.*, 2018).

Nevertheless, it is imperative to acknowledge that this intrinsic capacity for communication may be disrupted by external frustrations, thereby impacting the delicate exchange between the self and the environment. Consequently, the evolution of intrapersonal relationships is intricately linked to both psychological and physiological

dimensions, underscoring the necessity of maintaining psychophysical balance for healthy interpersonal interactions (Guerra Lisi, 1984).

The initial stage of what can be conceptualized as “bodily thought” encompasses an intrinsic, instinctual processing of experience, firmly grounded in our physical sensations and visceral reactions (Fogel, 2013).

This primordial cognitive form is progressively absorbed and integrated into what can be referred to as “concrete thought,” a more organized and rationalized modality for comprehending our lived experiences. At this juncture in our cognitive maturation, the unrefined material of bodily thought is synthesized within a framework that facilitates enhanced clarity and systematic organization of our perceptions.

As cognitive development continues, this concrete thought undergoes further evolution and refinement, ultimately giving rise to a more sophisticated construct known as “symbolic thought.” Although still relatively primitive compared with more advanced cognitive functions, symbolic thought is pivotal to our capacity to articulate and communicate multifaceted ideas (Seitz, 1997).

It empowers us to express a broad spectrum of qualitative dimensions inherent in our experiences, thereby illuminating significant moments that enrich our understanding of existence. This cognitive form is instrumental not only in conveying our thoughts and emotions to others but also in enabling us to comprehend and interpret our experiences intellectually, effectively bridging the chasm between raw sensory input and abstract conceptual knowledge (Jamrozik *et al.*, 2016).

3.2 Musical and Movement-based Play as Cognitive Reorganization

In the field of educational design, two interconnected methodological approaches are crucial for creating a comprehensive and effective educational plan.

1) The first approach centers on the concept of mediated learning, which is foundational for the progressive organization and structuring of knowledge. This orientation emphasizes the importance of recognizing and understanding spatial-temporal relationships that emerge from a variety of experiential learning opportunities. The focus here is not only on acquiring knowledge but also on enhancing logical reasoning and imaginative expression. By doing so, this approach fosters the development of both static and dynamic motor schemas associated with reproductive activities, such as representation and communicative interaction.

Mediated learning utilizes a range of teaching strategies, including both direct instruction and partially pre-structured activities, which are essential stimuli for the processes of assimilation—integrating new information with existing cognitive frameworks—and adaptation—modifying one's cognitive structures in response to new experiences. In this context, the educational process is designed to organize experiential data in ways that are both mnemonic—facilitating memory retention—and classificatory—enabling learners to categorize and make sense of information. This orientation ultimately guides individuals toward autonomous creative processing, empowering them to construct their own understanding and engage with knowledge in meaningful ways.

2) The second methodological orientation encompasses a broad spectrum of techniques and strategies specifically designed to nurture and enhance the development of an individual's inner imagery. This comprehensive framework is founded on the principle of addressing various cognitive, relational, and overarching learning challenges within a well-defined "potential space for development." This notion encapsulates an environment where learners can explore and expand their cognitive abilities and emotional insights.

At the heart of this methodology lies the concept of "magical thinking," a critical construct. Magical thinking enables individuals to articulate and navigate their preconceptual cognitive processes, thereby establishing a profound connection with "bodily thinking." This connection recognizes how physical sensations and embodied experiences interplay with emotional and affective dimensions, thereby enriching the learning experience.

By placing a strong emphasis on developing inner imagery, this methodology empowers learners to navigate and articulate their thoughts and emotions effectively. It encourages them to engage in a more introspective examination of their inner world, paving the way for a more nuanced understanding of their experiences. This enhanced self-awareness is vital for identifying and resolving potential conflicts arising from their embodied experiences, enabling individuals to approach these complex dynamics constructively.

As a result, learners are inspired to immerse themselves in their imaginative capacities and emotional responses. This not only fosters richer engagement with educational material but also encourages a deeper connection to the content being studied. Through this process, learners find themselves significantly enriched, as their educational experiences become more dynamic, reflective, and transformative. This holistic approach ultimately cultivates an environment where learning becomes a deeply personal journey, marked by meaningful discoveries and insights.

The driving force behind the ongoing exploration and development of tools and methods in special education stems from the pressing need to address a wide range of personal and social challenges, particularly in establishing and maintaining a healthy self-image. This necessity is especially vital in areas involving expressiveness and encompasses various aspects of motor skills, gestural communication, and overall bodily functioning (Skulmowski & Rey, 2018).

The primary objective of these interventions is to foster a thoughtful and dynamic adjustment to educational choices, both premeditated and spontaneous. This is achieved through empathetic listening, which is instrumental in understanding each child's unique needs and experiences. By doing so, educators can offer a diverse array of educational options tailored to the specific environmental and contextual factors influencing a child's learning journey.

Ultimately, this approach seeks to enhance integration within the classroom and broader community, effectively reducing participation disadvantages that many children face in different activities.

Moreover, it is important to recognize that every child undergoes continuous adaptations during motor-based play activities. These interactions serve as a crucial bridge between imaginative thought and practical control over objects and environments (Besançon *et al.*, 2026). Through the lens of this framework, children often come to appreciate the inherent unpredictability present in these richly variable play scenarios. This unpredictability allows them to develop and nurture the foundations of what is often called "magical thinking," where creativity and the joy of exploration merge.

Such developmental processes are essential across various stages of a child's growth and learning experiences, as they enable the exploration of innovative solutions and approaches to problem-solving. This dynamic is critical to helping children break free from rigid, habitual motor and gestural patterns and to embrace new modalities of expression and interaction. By facilitating this journey, educators empower children to expand their capabilities and engage more fully with the world around them.

In cases of developmental delay, children often experience significant alterations in motor development, which can lead to a skewed perception of their bodily awareness and functional capabilities. This altered perception is frequently accompanied by a reduced sensitivity to their own gestures and motor expressiveness, resulting in a disconnect between the child's intent and their physical actions (Cascio, 2010).

As a consequence, some children may develop hypotonia, characterized by reduced muscle tone, while others may exhibit hypertonic rigidity, characterized by heightened muscle tension. These contrasting responses may be interpreted as protective mechanisms that arise from a depressive state and, at times, an anxious or phobic attitude towards various relational contexts, potentially impacting their interactions with others. This phenomenon often stems from a range of challenging experiences within familial or social environments, where emotional and psychological stressors may shape the child's developmental trajectory. As a critical intervention, engagement in movement activities becomes essential. Such activities help dismantle the child's defensive insensitivity and promote a deeper awareness of their physical body.

This engagement not only equips children with the skills to navigate their physical world but also fosters confidence in their motor abilities and enhances their self-esteem. Through inclusive movement practices, it becomes possible to address communicative stereotypies and repetitive gestures that can occasionally indicate underlying pathological ritualism. By providing opportunities for exploration and expression through movement, caregivers and therapists can identify, nurture, and refine essential psychomotor skills that might otherwise remain underdeveloped. This holistic approach contributes positively to the child's overall developmental progression, ultimately supporting their ability to communicate and interact more effectively with their environment and peers.

3.3 Bodily Expressiveness between Prevention and Integration

In educational practice, an approach predominantly focused on achieving specific academic objectives often imposes the entrenched cultural values of the adult world on

learners. This tendency can inadvertently lead to the gradual suppression of their inherent creative spontaneity and imaginative impulses (Bertin-Renoux, 2025).

Instead of fostering the rich and intricate tapestry of original thought—which encompasses the wonder and joy derived from primal mental processes—such educational paradigms may culminate in a rigid, linear conceptualization of knowledge, frequently dictated by simplistic logical sequences (Kamp *et al.*, 2019).

Examining education through the lens of prevention invites a more nuanced exploration of how pedagogical planning can strategically shape the curriculum. This perspective is particularly salient when assessing educational practices that integrate physical movement alongside their intricate associations with sound and music. Engaging learners in activities that promote bodily expressiveness not only enhances subject-specific learning outcomes but also significantly contributes to holistic development.

A key and defining characteristic of activities grounded in creative expression and empathic interaction emerges through this discourse. These activities serve as fundamental means of fostering ease of learning, facilitating both cognitive and interpersonal connections, and promoting overall psychomotor well-being (Macedonia, 2019).

They allow for the flourishing of personal lived experiences, enabling learners to shape, internalize, and recollect these experiences through multisensory engagement and a sense of expressive completeness.

Within this educational framework, the integration of physical movement, interactive spaces, relationship-building, and play emerges as an essential pedagogical marker. These elements intricately weave the strands of a rich tapestry, transforming learners' creative experiences into autobiographical narratives.

Concurrently, such experiences cultivate a complex network of perceptual and cognitive interconnections that enrich learners' understanding and interactions with the surrounding world, thereby establishing a robust foundation for lifelong learning and personal growth.

The development of semi-structured experiential frameworks that seamlessly integrate playful, imaginative scenarios with participatory, cooperative activities is critical to advancing the design of educational experiences. This innovative paradigm not only redefines conventional learning but also embodies the concept of the "potential space" for personal development, a notion initially articulated by psychoanalyst Donald Winnicott in varying contexts (Arzy, 2021).

Davis and Wallbridge (1984) underscore the significance of helping relationships and reciprocal learning, asserting that effective communication occurs at the intersection of these potential spaces. Within this context, individuals engage in a dynamic exchange that fosters formative experiences and harnesses the inherent creative impulses of play. According to Winnicott (1971), the essence of play is foundational; it establishes the core upon which an individual's experiential existence is constructed. By systematically integrating such frameworks into educational settings, we cultivate environments that

not only facilitate meaningful learning but also foster essential dimensions of personal growth.

These frameworks empower learners to engage in exploration, experimentation, and self-expression, leading to enhanced educational outcomes and a profound comprehension of their identities and capabilities. In summary, the incorporation of imaginative play and collaborative activities within educational practice is paramount for the dual cultivation of knowledge and personal development (Fink, 1976).

4. Didactical Generative Processes

4.1 Frame Games and Plot Games

The educational devices known as "Frame Games" represent an innovative way to structure learning experiences for both individuals and groups. A typical example of a "frame game" in music or movement involves using a framework—whether playful or imaginative—that alters not the activity itself, but the participant's perception of the task. Achieving the goal is not a self-referential act; instead, it involves creatively solving a problem or navigating an adventure.

By conceptualizing a frame game (FG) as a type of ludic container, we delve into the idea of "potential space," a term coined by the psychoanalyst D.W. Winnicott. Winnicott suggests that play takes place within a specific environment that nurtures creativity and fosters meaningful interaction among participants. He states, *"To give play a place of its own, I postulated a potential space [...] an intermediate area of play, where the idea of the magical originates [...] play is an experience that is always creative"*.

In this framework, the concept of FG extends beyond mere playful interaction; it embodies the activation of participants' innate creative readiness and willingness to engage. Educational devices consequently assume a role that goes beyond that of simple structural elements—whether narrative, imaginative, ludic, or symbolic. They are crucial in delineating the conditions for learning, shaping components such as the physical spaces where learning occurs, the temporal aspects of the learning process, the modalities or styles of engagement, and the myriad possibilities for both individual and collective development.

This leads us to a central paradox in education: the achievement of personal autonomy is inherently linked to the presence of a network of mediators, which can be understood as a "potential space." This network serves as a vital connection to others and is essential for meaningful interactions and shared experiences, as noted by Canevaro. The dynamics of this interplay underscore the notion that genuine independence does not exist in a vacuum; rather, it emerges and flourishes within a community context. This insight emphasizes the complex relationship between individual agency and social interdependence in the educational sphere, revealing how personal growth is inextricably tied to collaborative learning and the collective wisdom of groups.

The "Frame Game" presents a distinct and innovative approach to education, emphasizing the value of semi-structured play where not every component is predetermined. This inherent flexibility is crucial, as it enables both educators and

learners to immerse themselves in activities supported by a rich relational and cognitive-integrative framework.

Evaluating learning in a semi-structured game focuses primarily on the individual problem-solving strategies employed by each participant. This includes examining their concreteness, applicability, effectiveness, and utility. The game's dynamics do not follow a strictly linear path; as a result, they stimulate metacognitive processes, encourage alternative perspectives on the game, and foster cooperative attitudes among participants. (Clapper, 2015)

This background not only enhances the overall learning experience but also serves as a motivational reference point, guiding the meanings and content of educational activities. As described by Canevaro (1996), this approach encourages the co-evolution of diverse identities among participants, fostering an environment where individuality is respected and celebrated.

Although the primary objectives of the Frame Game often focus on developing specific skills or techniques, incorporating relational, gestural, and bodily learning experiences can considerably enrich the educational journey. By creating a playful context, the Frame Game not only facilitates the acquisition of techniques but also intricately weaves together the affective, cognitive, and psychomotor dimensions of learning. This holistic approach recognizes that education is not merely about transferring knowledge; it encompasses a spectrum of learning modalities that must all be engaged for deeper understanding.

Canevaro further underscores the pivotal role of play as a medium through which learners can interact and connect with new concepts. The sensory and motor stimuli naturally present in playful activities play a critical role in helping individuals generate personal meanings tied to abstract and symbolic ideas. These personal interpretations are particularly valuable because they can be juxtaposed with the collective understandings that emerge among participants, fostering richer dialogue and a shared learning experience (Canevaro, 1980).

In this context, the playful dimension operates as a dynamic backdrop for learning, positioned between structured planning and the fluidity of procedural distinctions. This unique positioning enables a more nuanced understanding of how various educational settings can effectively leverage play to facilitate meaningful learning experiences. The Frame Game thus emerges not only as a method for teaching skill sets, but as a comprehensive educational framework that bridges cognitive learning with emotional and physical engagement, ultimately leading to a more profound and lasting impact on learners.

The second instance, designated as the "Plot Game" approach or Narrative-Play, represents a paradigm within educational proposals that transcends the notion of play as merely a structural component or activity goal. Rather, it positions play as an intrinsically embedded pedagogical intent that informs the design and execution of educational experiences. This approach posits play as a foundational element of the learning process, thereby making it central to instructional methodology rather than an auxiliary consideration.

The instructional practices associated with the Plot Game approach cultivate distinct conditions for teaching and learning while fostering unique relational dynamics between educators and learners. (Arató & Fridrich, 2026)

A narrative play or plot game evolves and gains substance through its own development. The elements of the narrative intertwine with the initial narrative context. Participants themselves create and define a common narrative and playful thread. The primary goal is to play together, with disciplinary objectives and learning outcomes secondary to the shared creative journey.

Grounded in Vygotsky's theoretical framework, this approach acknowledges that engagement with educational tasks enables children not only to acquire specific operational skills but also to internalize underlying structural principles that are broadly applicable beyond the immediate task. Vygotsky articulates this dual progression by asserting that for each step forward in knowledge acquisition, children effectively advance two steps in their holistic development (Vygotsky, 1935/1973). This perspective highlights the intricate and non-linear interplay between knowledge acquisition and cognitive growth, elucidating the interconnected nature of skills and personal development.

At its essence, the Plot Game approach conceptualizes the educational journey as an organic, continuous process of growth, characterized by relational interactions that are themselves integral parts of a dynamic "narrative grid." This metaphor underscores the complex interrelations and experiences that collectively constitute the fabric of learning. The approach operates as a catalyst for motivation, attention, and cognitive engagement, thereby stimulating diverse learning processes. By creating an environment rich in narratives and playful elements, educators can effectively harness children's innate curiosity and creativity, fostering a deeper, more holistic educational experience.

The playful element in educational contexts is deeply embedded in a variety of experiences involving exchange, inquiry, exploration, experimentation, construction, and re-elaboration. This sense of playfulness is not merely an adjunct to potential teaching methods; rather, it is an essential aspect of the educational process that precedes, accompanies, and continually enhances these practices (Weisberg *et al.*, 2013).

Creative imagination thrives on bold and audacious endeavors, which are underpinned by robust frameworks—conceptually illustrated by the metaphor of the Swedish wall bar. This wall bar represents Language, in which the Word engages dynamically and playfully with various competencies. This dynamic interaction is informed by the ideas put forth by Umberto Eco in 1971, whose theories, despite their origins in differing theoretical domains, offer profound insights into the structural and linguistic dynamics that govern playful interactions within learning environments.

This foundational structure is instrumental in activating a broad spectrum of competencies, empowering learners to navigate diverse communicative contexts adeptly. Such an environment encourages the synthesis of knowledge at the intersections of various codes and cultural identities, fostering a rich dialogue that not only embraces but celebrates differences (Wai *et al.*, 2020).

This concept aligns closely with Jean Piaget's theoretical framework, in which he describes structure as a system of transformations that reflects the constructivist approach to lifelong learning, as articulated in his 1968 work. In this manner, learning becomes an ongoing, dynamic interplay within a vibrant space of inquiry and creativity, allowing learners to continually construct and reconstruct their understanding and skills in relation to the world around them.

The complex interrelations among various structural components can be examined through the framework of transformative systems, characterized by their interdependence and mutual generation. This perspective suggests that authentic structures are fundamentally operational.

Transformation inherently implies a process of formation, and the principles of self-regulation evoke notions of self-construction and autonomous development. To encapsulate these foundational elements, we will employ the term "general coordination of actions," which reflects the complex associations inherent in sensorimotor coordination—pivotal to understanding both individual and collective responses to stimuli.

Through engaging in these associations, individuals develop acquired operational patterns that pave the way for sensorimotor intelligence—the capacity to understand and navigate one's environment through coordinated sensory and motor actions. This, in turn, facilitates the development of instrumental behaviors, purposeful actions tailored to achieve specific objectives within that environment.

Moreover, the semiotic function—expressed through language, symbolic play, and imagery—serves as a robust mechanism for evoking scenarios that may not be immediately accessible.

This capability allows thought processes to manifest as representations, enabling abstract and critical thinking about experiences. Consequently, this cognitive process culminates in the emergence of reflective abstractions, which involve deriving and analyzing relationships among diverse sensorimotor schemata.

These relationships are "reflected" onto a novel cognitive plane, facilitating the evolution of distinct behavioral patterns and innovative conceptual structures. This process, as highlighted in Piaget (1968), underscores the intertwining of cognitive development and the ability to navigate complex interactions within one's environment, ultimately leading to a more sophisticated understanding of both self and context.

4.2 An Integrative Educational Backdrop

The initial phase of a child's engagement with creativity predominantly manifests through play-based activities. At first glance, these activities may seem 'simple' in execution. However, as a child's development progresses, they transition into more complex activities, often described as 'derived' activities. These allow children to articulate the nuanced specifics of their knowledge, skills, and competencies in a playful context. This progression can be observed in various forms of play, where children begin to integrate their learning and experiences into the activities they create or participate in, reflecting a deeper understanding of the world around them (Carboni, 1987).

In this regard, the play-based framework becomes an integrative educational backdrop. It not only serves as a foundational canvas for children to explore and expand their creativity but also creates an environment that accommodates the diverse possibilities inherent in educational projects. This framework effectively prepares and stimulates the creative potential and resources of individual participants and the collective. It becomes a vibrant space where imagination can unfold and be nurtured, setting the stage for deeper learning experiences (Nilsson *et al.*, 2018).

When discussing the concept of an *integrative backdrop*, it is essential to highlight the "institutional backdrop." This refers to a systematically organized context encompassing various dimensions, such as physical spaces, temporal arrangements, established rules, and structural elements. These components are specifically designed to promote children's autonomous development of strategies for constructing their understanding of the world. By creating such an environment, educators can enhance children's self-motivation while simultaneously fostering a robust sense of spatial and temporal connectedness within the learning experience (Canevaro, 1996).

Moreover, an educational project that incorporates a Plot Game framework (P.G.) signifies a unique convergence between "play" and "experience" within a cohesive didactic mechanism or cognitive and creative activity. This methodological approach is particularly effective in stimulating indirect and cross-curricular learning by orchestrating collaborative work environments. Within these environments, competencies from a wide array of disciplinary domains are actively engaged, allowing for a richer educational experience.

Additionally, the Plot Game framework cultivates distinct moments and opportunities for learners to acquire essential techniques and concepts in a contextualized manner. This contextualization is crucial as it helps learners grasp the practices and rules intrinsic to the game itself, thereby fostering not only their cognitive abilities but also their social and emotional development. Furthermore, this approach encourages children to think critically, solve problems collaboratively, and adapt their strategies, thereby enhancing their overall educational journey.

The concept of a game extends far beyond its simple structure; it embodies a complex, dynamic dialogue between the game and the player. This interaction is marked by a unique tonal voice, subtle gestural nuances, and the enduring imagery that leaves a lasting imprint on the player's memory (Borges, 1963). In this context, the game becomes an extension of the player's experience, inviting emotional engagement and cognitive reflection.

Some scholars argue that at the heart of human creativity lies the ludic attitude, which is evident across a wide array of expressive domains, from art and literature to science and everyday life (Huizinga; Winnicott; Berne).

This viewpoint suggests that playfulness is not merely an entertaining pastime but a fundamental aspect of how humans engage with the world creatively.

In contrast, other theorists propose that creativity is a pervasive phenomenon embedded within the full spectrum of human activity. They argue that while playfulness is a significant component, it is not the only facet of our creative capabilities (Vygotsky;

Piaget; Guilford; Gardner). This perspective underscores the importance of recognizing various forms of creativity that arise in different contexts and functions.

Creativity can thus be thoroughly examined through two interrelated dimensions. The first dimension is receptive and broadly systemic, allowing for the exploration of ideas and concepts that emerge from cultural, historical, and environmental contexts. The second dimension is inherently active, focusing on the generative processes through which individuals express their creativity. Both perspectives interact and have been represented in a plethora of cultural expressions—ranging from ancient myths and modern narratives to philosophical treatises and empirical research studies.

Furthermore, the intersection of culture and creativity highlights a transformative and adaptive pathway that ties origin myths to Darwinian evolutionary theories and links these ideas to contemporary advances in our understanding of DNA and the human genome. This rich tapestry of thought invites deeper contemplation on the essential principles of existence, questioning what it means to create and innovate within our ever-evolving world.

The receptive aspect of creativity encourages individuals to reflect on the environmental and contextual conditions that foster openness to change, thereby facilitating personal growth, collective development, and societal progress. By embracing this intricate interplay of creativity and culture, we can gain valuable insights into the human experience and the ongoing quest for understanding and meaning.

The concept described highlights a nuanced understanding of a receptive dimension that plays a crucial role in the emergence of various phenomena in both biological and psychological contexts.

This dimension emphasizes the importance of time and space as fertile grounds for creativity and transformation. It suggests that the act of creation is embedded within a broader framework of attentiveness and anticipation, allowing for a continuous interplay between waiting and action.

In this context, the notion of industrious waiting is a crucial element, in which silence transforms into a dynamic state of listening and understanding. This openness not only prepares individuals to engage with their surroundings but also cultivates a fertile ground for innovation. Such a perspective invites us to recognize the intricacies of interactions and relationships, which are essential for fostering a sense of identity and belonging.

Furthermore, the creative process described transcends mere self-reflection or individual assertiveness. Instead, it embraces the richness of diversity and otherness as foundational components of creative breakthroughs. This approach enriches our understanding of creativity, positioning it as a collaborative and communal endeavor that thrives on the interplay of various perspectives and experiences. By acknowledging these factors, we can better appreciate the complexity of the creative process and its capacity to reshape meanings and enhance originality within different environments.

Creative receptivity functions as an underlying mechanism that facilitates a distinctive moment of exchange, arising from a confluence of personal influences, contextual variables, and environmental conditions. This intricate interplay is essential

for the manifestation of authentic creative events. In delving into this concept, we observe a significant alignment with Gianfranco Staccioli's insights, which underscore the necessity of attentiveness to others within collaborative contexts.

Staccioli posits that children possess a fundamental drive to engage with their peers, particularly in play activities that require a shared objective. Rather than promoting competition or antagonism, these interactions are intentionally structured to foster collaboration and collective achievement.

For instance, activities such as climbing on one another or grasping hands to spin in a circle exemplify how children instinctively desire to unify for a common purpose. Such forms of play not only provide entertainment but also cultivate a deep-rooted need for social connection—a genuine yearning to engage with others.

Staccioli further elaborates on the multifaceted purposes of collaboration: it satisfies the intrinsic desire to connect with another individual, fosters an atmosphere of trust, enables participants to both offer and receive support, and engenders a sense of mutual acceptance. This framework elucidates the essence of collaborative play, highlighting its intrinsic role in fostering social competencies and emotional bonds among children (Staccioli, 1998).

4.3 Creative Action and Cognitive Dissonance

The concept of creativity encompasses a dynamic interplay between action and form, as emphasized in various academic discussions. The active dimension of creativity, deeply rooted in ancient linguistic traditions, is fundamentally about *doing*—the transformative process of bringing something from potentiality to tangible existence.

This process encompasses not just the generation of ideas but also the establishment of stability and coherence in both time and space, leading to the development of meaning and significance.

This act of creation is intricate, as it transcends mere production. It involves careful engagement with materials and ideas—an engagement that allows concepts to evolve into recognizable figures. The interplay of physical and gestural qualities during the creative process highlights that creativity is inherently linked to human experience, as it reflects our capacity to manipulate, join, and experiment with various elements.

In this light, creativity can be viewed as a methodical journey in which trial and error are fundamental components of the quest for innovative tools and solutions. Thus, the process is not linear but rather a complex amalgamation of actions aimed at constructing and actualizing ideas, resulting in creations that are perceivable, memorable, and shareable within societal and cultural frameworks. This multifaceted understanding of creativity recognizes it as an essential aspect of human existence, fostering connection and communication through both material and conceptual means. Embodiment and playfulness are intricately intertwined concepts that reflect the multifaceted nature of human experience. Within both realms, emotional and relational dimensions are interwoven with ethical and cultural considerations.

An individual participating in movement—observable in playful endeavors—demonstrates a comprehensive expression of identity. Such individuals not only express

their physicality; rather, they align themselves with a range of ideals—whether consciously recognized or not—expectations—both direct and indirect—and sociocultural pathways—be they clearly defined or subtly indicated. This dynamic illustrates how different cultures have created forms of play that reflect and bolster their own values and behaviors considered admirable. Indeed, throughout various societies, play and physical activity have served as essential tools for education, knowledge sharing, growth, and cultural shaping (Staccioli, 2010).

Moreover, creative action is inherently 'embodied,' resonating even in its most fundamental motoric definition. The etymological origins of concepts such as "seeking" and "exploring" enable us to reclaim a fundamental understanding of the physicality inherent in these actions. These terms suggest the act of clearing a path and venturing into the unknown—an expanse that encompasses both what remains undiscovered and a state of primal innocence. This notion of movement is conveyed through circular or progressively expansive motions, encompassing actions such as "running," "flowing," "investigating," and "attempting to discover."

The process of cognition is intertwined with movement—both internal and external—mirroring how the body navigates physical territory. Additionally, the idea of discovery is framed as an act of unveiling: lifting a veil or removing a covering to uncover what lies beneath. This process necessitates clearing away visual or conceptual barriers to reveal what was inherently present yet obscured from our sensory perception.

Ultimately, creative action is characterized by the dynamism of relocating an object—or oneself—toward a specified destination or within a defined trajectory. This notion may appear counterintuitive; however, the conceptualization of creativity as a solitary cognitive construct is an exceptionally recent development in the long narrative of human history. Creative ideation is more often associated with intuition and analogical imagination than with relying solely on analytical reasoning or data-driven interactions. The creative process is a multifaceted journey that entails carefully evaluating and considering a range of potential solutions. This involves engaging in various evaluative and comparative mechanisms that operate across multiple levels, including neural, sensory, bodily, imaginative, and figurative aspects of cognition and experience.

When a "problematic" element is recognized in any educational context, it catalyzes an exploratory mindset geared towards investigating and resolving the issue at hand. This event or phenomenon serves as a springboard for inquiry and introspection, prompting learners to delve deeper into the situation's complexities.

In this framework, obstacles are not merely hindrances but rather significant opportunities for exploration. They open avenues for examining various "branches of the possible," allowing the formulation of hypotheses about the effectiveness of existing procedures and processes.

The work of Canevaro highlights the importance of this dynamic, stressing that when learners experience "cognitive dissonance"—a state of mental discomfort arising from holding conflicting thoughts or beliefs—it necessitates a meaningful reconfiguration of their knowledge landscape. He posits that *"when the backdrop shifts, a*

compensatory reorganization becomes necessary. Learning consists of precisely this" (Canevaro, 1996).

This insight suggests that learning is not a linear process but rather an adaptive one, requiring flexibility and responsiveness to new information and challenges. From this standpoint, the "methodological" dimension of the integrating background plays a critical role in identifying opportunities for organizing a "system of mediators." This system actively engages participants in defining and negotiating the "rules" of engagement, which in turn facilitates the development of meta-learning skills—skills that empower learners to understand and regulate their own learning processes.

By implementing a holistic approach to training, we can capture the cognitive richness inherent in the intricate interplay between problem-solving and learning. This pedagogical perspective embodies deep insights into pedagogical processes central to Andrea Canevaro's legacy. It entails recognizing that effective learning environments thrive on collaboration, adaptability, and continuous reflection. Through this lens, obstacles become catalysts for growth, enriching both the learning experience and individuals' cognitive development. Learning rarely unfolds along a linear path; rather, it takes place within a dynamic ecosystem where every challenge can become a genuine opportunity for growth. Special education therefore has the task—perhaps even the duty—of highlighting unconventional educational pathways that serve as catalysts for deeper understanding and skill development. It is in this context that the complexity of learning environments can be transformed into a welcoming space where educators and learners alike can cultivate resilience and adaptability.

5. Conclusions

In this regard, we can identify a few fundamental educational options:

1. In discussions of music, the body, and motor activities in educational contexts, it is crucial to examine the concepts of embodiment and corporeality. These ideas highlight the individual as a complex configuration shaped by relational and communicative dynamics that serve as pathways for both creative expression and personal exploration. It is important for educational planning to go beyond simplistic frameworks that rely solely on a single code or a linear relationship between signifier and signified. Instead, the focus should be on nurturing the inherent potential of various forms of expression, thereby promoting a deeper, more nuanced understanding of the relationship among the body, music, and movement in educational settings. The idea from which this study starts—that "the body is the proof"—underscores the critical role of physicality in understanding processes of integration and inclusion within educational paradigms. In this context, a pedagogical approach anchored in the interplay between the body and music reveals a unique cognitive framework. This framework emphasizes that cognition is not solely a brain-centric activity but rather a distributed phenomenon, intricately woven through emotional engagements and musical experiences. Such an approach foregrounds interactions between the body as a whole and its environment, suggesting that knowledge and learning emerge from a holistic engagement with

experiential contexts. This perspective invites educators to reevaluate traditional notions of cognition and to consider the broader implications of embodiment in teaching practices.

2. Achieving educational objectives requires cultivating a diverse array of interactions that engage learners through kinesthetic, auditory, tactile, and visual modalities. These interactions must not merely stimulate learners physically and sensorially but also facilitate the synthesis and reorganization of their personal discoveries into innovative, imaginative experiential forms. This dynamic process allows learners to refresh the meanings associated with their experiences or to establish new significances that resonate with their individual narratives.

In this framework, the concept of body schema undergoes significant evolution. As individuals engage in various educational activities that foster exploration and discovery, they progressively develop a more holistic self-understanding. This encompasses a refined representation of body image that mirrors their unique experiences, perceptions, and insights. The progression of body schema is further augmented by structured educational opportunities that promote inquisitive exploration. Activities that encourage learners to experiment with their physical capabilities, perceive and interact with their environments, and engage playfully with objects and peers are crucial. These experiences play a transformative role, enhancing learners' understanding of their actions in relation to their bodies.

3. The interplay of motor action and educational experiences is a fascinating area of study that highlights how musical expression, sensory engagement, and physical movement intertwine to enhance learning. Motor actions can manifest both intentionally, through structured activities, and spontaneously, through natural interactions with the environment. These actions activate a range of learning processes that are crucial for honing perceptual discrimination skills. Refining these skills enables individuals to make finer distinctions in what they see, hear, and feel, which is essential for improving overall motor adjustment, organization, and coordination. As students engage in these motor actions, they are not only learning to control their movements but also developing a deeper understanding of the materials and concepts they are working with. This foundational skill set is vital for fostering deeper creative engagement across various forms of artistic expression, whether through performance, the reproduction of existing works, the invention of new ideas, or improvisation. In essence, the common and shared focus on motor action and educational experiences enriches the learning environment and cultivates a holistic approach to creativity and artistic mastery.

4. Learning can be understood as a dynamic interplay between cognitive processes and the relational environment, highlighting the critical role of embodied experiences centered on fundamental units of gestural and musical interaction. These units, encompassing basic postures and motor patterns, form the essential building blocks through which individuals communicate and engage with their surroundings. The adoption of a listening mindset—characterized by openness and receptivity—alongside a broad "creative gaze" and a personal aesthetic sensibility, can significantly augment these learning experiences. This integrative approach encourages individuals to delve

into the subtleties of their environments and the interactions that transpire within them. The multimodal interactions that emerge from the synthesis of movement, music, imagery, and storytelling are particularly advantageous. This rich nexus of sensory experiences cultivates meaningful connections across various modes of expression, thereby enhancing communication skills.

5. In contemporary educational discourse, the integration of playful and communicative elements is increasingly recognized as essential to fostering holistic development among learners. This pedagogical approach emphasizes the pivotal role of perceiving and interpreting reality through diverse media such as music, bodily expression, and movement. The focus on such modalities not only supports the implementation of inclusive activity frameworks but also enhances broader learning experiences that leverage functional and expressive methodologies. The cultivation of competencies in non-verbal communication and expressive mediation is facilitated through a meticulously structured progression of learning stages. This educational journey involves translating corporeal experiences into meaningful, shareable content that fosters participatory communication. The methodological progression outlined in this framework highlights the integration of personal development with the enhancement of individual and intersubjective competencies. A fundamental characteristic of this approach is the ongoing nature of interactive educational inquiry, which occurs not only between teachers and students but also among peers. This method exemplifies action research by incorporating the exploration of communicative attributes and the exchange of learning, all of which are intrinsic to movement, rhythm, and gesture. This foundation establishes an educational framework that allocates the necessary time and space to acknowledge, discern, and understand the cultural influences shaping various modes of expression. In this context, participants can convert their physical experiences into a structured, codified, participatory, and shared language. Ultimately, the design of the educational project must remain flexible, allowing for an emphasis on enactive bodily identity, expressive gestural identity, and embodied musical identity as required. Such an integrative and holistic perspective enriches the educational landscape, thereby paving the way for comprehensive and inclusive learning experiences that are responsive to the varied needs of learners (Schiavio & Schyff, 2018).

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Conflict of Interest Statement

The author declares no conflicts of interest.

About the Author

Mauro Carboni's academic profile reflects an interdisciplinary integration of music, cognitive psychology, clinical pedagogy, and special education. From 2000 to 2014, he worked as a tenured researcher at the University of Rome "Foro Italico", where his research focused on special education and educational studies aimed at developing inclusive processes. In particular, his work addressed empathic motor and gestural behaviors in inclusive learning contexts, as well as the design of virtual learning environments mediated by sensory and motor experiences. In 2014, after fifteen years of academic activity, he joined the Conservatory of Music in Perugia as Full Professor of Music Pedagogy, a position he held until October 31, 2025. He formally retired on November 1, 2025. From 2020 to 2025, he served as Delegate for Disabilities and Specific Learning Disorders at the "Morlacchi" Conservatory of Music in Perugia. In this institutional role, in addition to addressing individual student learning and inclusion needs, his aim was to bridge the gap between institutional academic expectations and the learning potential of students with cognitive and functional disabilities. To this end, he worked to strengthen accessibility criteria and promote more inclusive educational environments.

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