

Knowing Through Body, Theatrical Practices, and Technological Tools: The Role of Knowledge Ecologies in Teacher Education for the Digital Transition

Nadia Carlomagno ¹, Valeria Vadalà ² and Arianna Ricciardi ¹

- 1 Suor Orsola Benincasa University, Italy; nadia.carlomagno@unisob.na.it;
arianna.ricciardi@unisob.na.it
- 2 Pegaso University, Italy; valeria.vadala@unipegaso.it

Abstract: In contemporary educational pathways, shaped by digital transformations and processes of hybridization between bodies, technologies, and diverse modes of communication, it becomes necessary to adopt a situated and embodied epistemological paradigm, grounded in emotional and relational dimensions, to rethink the ways in which knowledge takes shape. The pilot study presented is based on the paradigm of ecologies of knowledge and employs an embodied approach to teacher training, exploring the potential of theatrical practices as tools for didactic mediation. The study analyzed the project “Theatre, Teaching, and Pedagogy for Digital Transition in Schools”, aimed at secondary school teachers in the city of Portici (Naples). The training pathway was structured into theoretical and experiential phases, in which theatrical practices were integrated with digital tools to foster pedagogical reflection among the participating teachers. The performed experience developed the teachers’ bodily and relational dimensions and promoted meaningful learning and professional transformation, encouraging reflection on their educational practice and their capacity for interdisciplinary planning. The study employed the Art-Based Research methodology, implemented through the experimental CReAP+T approach, which involved the analysis of both qualitative and quantitative tools. The results of the pilot study highlighted a strengthened awareness among teachers regarding their educational practice, the management of relational and emotional dynamics, verbal and non-verbal communication, and their ability to design inclusive educational environments. The dialogue between theatre, pedagogy, and technology emerges as an innovative perspective for an ecological and embodied redefinition of educational practice.



Copyright: © 2025 by the authors.
Submitted for possible open access
publication under the terms and
conditions of the Creative Commons
Attribution (CC BY) license
(<https://creativecommons.org/licenses/by/4.0/>).

Keywords: Theatrical Practices, Performative Teaching, Relational and Digital Education

¹ Nadia Carlomagno is the author of the paper. She is the main researcher of the project; she wrote the Sect. “The Resonance – Hybridization Between Art and Science: Towards a Transdisciplinary and Performative Teaching”, the Sect. “Theatrical Practices as Epistemic and Educational Devices”, the Sect. “Methodology” and the Sect. “Research Design”; Valeria Vadalà is the co-author of the paper, she wrote the Sect. “Introduction”, the Sect. “Theoretical Framework”, the Sect. “Technological Devices as Tools for Participation and Knowledge Sharing” and the Sect. “Results”; Arianna Ricciardi is the co-author of the paper, she wrote the Sect. “Context and participants”, the Sect. “Discussion” and the Sect. “Conclusions”.

1. Introduction

In the contemporary educational context, teacher training takes place within a scenario characterized by relational, cultural, social, and technological transformations, which significantly impact teaching–learning processes (Rivoltella, 2020). The digital transition contributes to the redefinition of learning contexts and timing, promotes diverse educational modalities, and introduces new forms of interaction (Sibilio, 2020) and technology-mediated knowledge. In this scenario, there is a growing need to preserve the human dimension of knowledge, rooted in embodiment (Sibilio, 2011), relationships (Gallese & Morelli, 2024), and experiential learning (Dewey, 1938; Montessori, 2008), so as not to marginalize the role of the body, emotions, relational processes, and reflection (Turkle, 2015). Teacher education is therefore called to prepare professionals who reflect on how to act within an ecosystem where the human dimension, technological tools, and physical and virtual environments coexist and co-evolve within a network of fluid and dynamic interactions (Bateson, 1972; Morin, 2014), and who are thus capable of navigating the complexity of the contemporary world (Sibilio, 2015). Within this perspective, the integration of theatrical practices and digital technologies aims to foster pedagogical reflection as the development of a new epistemology of education.

In particular, through theatrical practices, it is possible to experience knowledge (Maturana & Varela, 1991) by engaging the emotional and relational dimensions (Gallese & Morelli, 2024), grounded in active listening, authentic presence, whether, physical or virtual, and awareness of the body in action (Berthoz, 2006). The theatrical laboratory conceived as a space for individual and collective experimentation and as a tool for transformation (Mezirow, 2003), thus becomes an environment that promotes experiential learning (Dewey, 1938), where knowledge is co-constructed through action and cooperation. Digital technologies, when used critically and reflectively, can expand the emotional and relational dimensions of cognitive experience, fostering knowledge co-construction and generating forms of distributed intelligence (Jenkins, 2006; Rheingold, 2012). In education, technologies should not replace the human presence of the teacher, but rather be considered ecological extensions of the mind (Bateson, 2000) and body (Clark & Chalmers, 1998), capable of generating new modes of participation to promote learning that integrates bodily, emotional, relational, and technological dimensions.

This perspective aligns with the framework of ecologies of knowledge (Morin, 2014; Bateson, 2020), which propose a systemic and relational view of learning, where the educational act is part of a network of relationships between bodies, environments, languages, and technologies.

In this vision, schools can be seen as living ecosystems (Capra & Luisi, 2014; Keiner & Gross, 2021; Dozza, 2022), contexts in which new forms of agency for teacher professionalism can be experimented with, enhancing the plurality of non-linear languages (Author, 2023) to address the complexity of human experience. The challenge of contemporary society is therefore to train teachers who are aware of their stage presence, which is also their teaching presence (Author, 2023), restoring to education its human, ecological, and transformative dimension (Mezirow, 2003).

2. Theoretical Framework

The enactive view (Varela, Thompson & Rosch, 2017) of teaching and the theories of embodied cognition (Maturana & Varela, 1991) consider knowledge as an

experience that is constantly co-constructed between the subject and the surrounding environment (Varela, Thompson & Rosch, 1991; Gallese, 2005). According to bio-educational pedagogy, which frames learning as an integrated process involving mind, body, emotion, and context (Frauenfelder, 2018), the body becomes an epistemic site, a device for constructing meaning through action, embodied simulation, and perception (Merleau-Ponty, 1945). Learning is thus configured as a situated (Lave & Wenger, 1991; Rivoltella, 2013) and relational (Gallese & Morelli, 2024) phenomenon that emerges from the interaction between subjects, contexts, and practices (Sibilio, 2020), enhancing the educational potential of bodily and performative experience (Author, 2022).

From this perspective, experiential practices activate processes of bodily awareness, emotional expression, and collective knowledge construction (Schechner, 2017; Mezirow, 2003). The bio-educational and embodied approach is embedded within the paradigm of ecologies of knowledge (Bateson, 1972), which interprets knowledge as a systemic, interconnected, and relational process generated through the dynamic interaction of human and non-human, material and immaterial elements.

Within this framework, education takes the form of a cognitive ecology, in which languages, bodies, and digital tools co-evolve within a network that mutually influences itself (Clark & Chalmers, 1998). Consequently, ecologies of knowledge call for a profound reconsideration of teacher training, orienting it toward complex thinking that integrates cognitive, affective, bodily, and technological dimensions within a single educational ecosystem.

Experiential pedagogy (Dewey, 1938) has laid the foundation for a view of learning as a process of interaction between experience, action, and reflection, in which the teacher, assuming the role of a reflective professional (Schön, 1983), is able to learn from their own actions and transform experience into shared knowledge (Brookfield, 2017).

In teaching, laboratory-based training represents a privileged context in which teachers can explore and rework their educational practices through direct experimentation with their own actions. Laboratory experiences in training contexts are based on the idea that knowledge is constructed through direct experience, interaction with the environment, and co-construction of meaning (Dewey, 1938; Lave & Wenger, 1991; Vygotsky, 1978), representing a fundamental approach to promoting active, situated, and transformative learning (Mezirow, 2003) for both students and teachers.

Laboratory experiences give teachers the opportunity to experiment with innovative teaching strategies, reflect on their professional role, foster critical reflection, and build relational and metacognitive skills (Schön, 1983; Mezirow, 2003), as well as develop transversal skills such as adaptability, communication, and management of social interaction dynamics (Biesta, 2015; Sibilio, 2020).

This vision aligns with the 4E Cognition theory (Embodied, Embedded, Extended, Enactive Cognition), which conceives the mind as a dynamic and relational phenomenon, tightly intertwined with the body and the environment.

It overcomes the traditional view of cognition as a purely mental or abstract process, emphasizing the central role of experience, action, and context in knowledge construction.

Embodied cognition (Lakoff & Johnson, 1982; Caruana & Borghi, 2016) attributes a constitutive role to the body in thought, where perception, movement, and

emotion are essential components of cognitive processes. Situated and embodied cognition highlights that all knowledge is rooted in a specific physical, social, cultural, and natural context (Bateson, 1972; Ingold, 2011), in which the environment is an active part of the cognitive system.

The extended mind theory (Clark & Chalmers, 1998; Wilson, 2004; Menary, 2010) argues that the mind extends beyond the body, including tools, artifacts, and technologies that participate in cognitive processes. According to the enactive view, cognition does not consist of representing a pre-given world, but rather of bringing it forth through active interaction with the environment. Within this theoretical framework, body, technology, and environment form a unified system of knowledge. The body becomes the convergence point of perception, emotion, and thought, technology acts as a sensory and relational extension, and the environment constitutes the vital and symbolic context in which knowledge takes shape.

In educational and performative contexts, such as theater, these ideas find a concrete application.

Theater represents a privileged space for embodied learning, where body, voice, gesture, and interaction become tools of knowledge. The theatrical experience allows participants to live the relationship between perception, action, and emotion, offering a pedagogical model in which learning is alive, aesthetic, and reflective. In this perspective, knowing means inhabiting the world consciously and sensorily, actively participating in the construction of meaning.

3. The Resonance - Hybridization Between Art and Science: Towards a Transdisciplinary and Performative Teaching

The resonance between art and science is situated within a transdisciplinary perspective that recognizes, in the performative dimension of human action, a space of encounter between scientific knowledge and artistic knowledge.

In particular, the relationship between theater and teaching constitutes a privileged space for fostering embodied and relational dynamics that characterize learning processes.

Within this scenario, the embodied approach (Maturana & Varela, 1991) to artistic and educational practices aligns with the view of cognitive neuroscience, which recognizes the centrality of the body in processes of knowledge and relationship. This promotes a systematic dialogue between performative arts and educational processes, outlining a bio-educational perspective (Frauenfelder, 2018) in which theatrical action and teaching action are considered embodied and co-evolving forms of knowledge. Cognitive neuroscience (Gallese, 1996; Rizzolatti, 1996; Rizzolatti & Craighero, 2004) has shown that the understanding of another's action is based on embodied simulation processes, i.e., the brain's ability to activate motor circuits corresponding to those involved in performing the observed action, through the activation of mirror neurons (Rizzolatti & Sinigaglia, 2006).

Therefore, in both theatrical and educational contexts, the relationship between actor/audience and teacher/student is based on a process of empathic and cognitive resonance (Rosa, 2019). The performative event (Gallese & Morelli, 2011) and the educational event are thus occasions of co-creation, intersubjective experiences that transcend linguistic and cultural barriers.

In education, teaching is fully realized only when learning is recognized in the reciprocity between teacher and student, forming a structural coupling (Maturana &

Varela, 1980). The relationship between art and science, and specifically between theater and teaching, is founded on the relational, dialogical, and co-emergent nature of the formative event. Theater exists only in the living relationship between actor and audience, in the “communion de perception directe, vivante” (Grotowski, 1965). Similarly, teaching finds meaning only in the embodied and dialogical relationship between teacher and student, in their shared presence in the classroom or experiential laboratory.

Being present in class, as on the theatrical stage, does not merely mean being physically there, but involves full engagement of the body, mind, and emotions. Being present means fully inhabiting the space of experience, making oneself a living and conscious presence. Only under these conditions can the student, like the spectator, be truly participatory in a sensory and cognitive interaction, where empathy and understanding lead to authentic transformation.

The actor’s activity, like that of the teacher, is a path of knowledge and self-work, involving the person fully, physically, mentally and emotionally. Through theatrical practices, the educational experience becomes an exercise in awareness, capable of expanding perception, sensitivity, and one’s educational action (Taviani, 1997).

In this perspective, teaching action reveals an artistic and performative potential, expressed in the here and now of educational interaction (Sibilio, 2020). The teacher’s didactic performance, like the actor’s theatrical performance, is an irreproducible act, in which the body, voice, gaze, and gesture of both teacher and actor become tools of cognitive, emotional, and relational mediation (Rivoltella, 2017; Benvenuto, 2018).

The teacher, like the actor, is called to work on oneself, continually seeking balance between presence, listening, and action. This process is both technical and expressive, expanding bodily and cognitive awareness (Taviani, 1997).

Training in awareness of the embodied dimension of teaching action requires performative experiences that cultivate knowledge of the body as a tool for communication, relationship, and thought.

Presence, understood as the physical and relational quality of the body in action, represents, in theater and teaching, the generative core of learning and transformation (Mezirow, 2003). Theater, in its participatory nature (Barba & Savarese, 2011), thus emerges as a privileged educational tool to foster inclusive processes. Theatrical practice transcends linguistic boundaries, stimulates cooperation, and activates reflection on self and others (Benvenuto, 2018), in line with international and national guidelines on inclusive education (Salamanca Statement, 1994; D.M. 254/2012; D.M. 742/2017), which emphasize cultural awareness and expression as fundamental competencies of European citizens.

The complex and non-linear dimension of teaching action (Sibilio, 2015) finds in theater an adequate epistemological and methodological model, capable of supporting adaptive and creative processes based on circular and interdependent interactions among the actors of the educational process. “Teaching is theater and theater is teaching” (Rivoltella, 2021), as both are based on embodied action, regulated improvisation, and co-construction of meaning.

The encounter between art and science, between theater and teaching, thus opens the way to a pedagogy of embodied action, where knowledge is manifested through bodily experience. This perspective values transdisciplinarity as an epistemological paradigm, integrating the aesthetic, cognitive, and social dimensions of learning (Rivoltella, 2012; Gallese, 2011; Author, 2020).

In this vision, scientific knowledge and artistic knowledge merge in a process of mutual contamination, making authentically human, inclusive (D'Alonzo, 2004) and transformative education possible (Mezirow, 2003).

4. Theatrical Practices as Epistemic and Educational Devices

Starting from the perspective that emphasizes the structural analogy between theater and teaching, educational action aims to orient itself toward the construction of a didactic transposition process capable of transforming expert knowledge, including scientific knowledge, into taught and subsequently learned knowledge, resulting in meaningful and reflective learning in educational contexts (Damiano, 2013; Chevallard, 1985; Rivoltella & Rossi, 2017).

Teaching is configured as a creative and interpretative act, which requires a high degree of professional awareness and reflexivity from the teacher, who assumes the role of director in the teaching-learning process. The teacher is able to design and reshape situations, stimuli, and relational dynamics that promote the emergence of significant and lasting learning in students (Ausubel, 2004).

The teacher thus becomes an intentional perturbator of the educational environment, promoting experiences that stimulate active student participation, with students considered active agents, protagonists, and co-authors of their own learning process. The sharing of scientific approaches and the cross-fertilization of knowledge among professionals from different fields represents an opportunity for transdisciplinarity, facilitating the integration of heterogeneous perspectives that characterize human action. This dialogue between forms of knowledge allows for mutual enrichment based on comparison and critical reflection (Schön, 1993), directing educational practice toward an embodied vision of teaching (Maturana & Varela, 1991), where the body, action, and performative dimension are at the center of the formative process, closely analogous to theater (Rivoltella, 2012; Gallese, 2007, 2011; Rossi, 2011; Author, 2020).

In educational contexts, theater represents a privileged space for exploring knowledge as an embodied and shared practice. Theatrical practices (Author, 2020) are grounded in action, listening, and relationship, placing body and emotion at the core of learning processes. Through the exploration of themes such as active listening, emotion management, self-narration, and the enhancement of individual uniqueness, teachers are enabled to experiment with alternative didactic design methods, based primarily on experiential (Dewey, 1938) and situated approaches.

Theatrical practices are not only an expressive medium but also an epistemological device that allows knowledge to be gained through experiential engagement, involving one's bodily and emotional presence (Grotowski, 1965).

These practices contribute to the development of more inclusive, flexible, and welcoming educational spaces, highlighting how the emotional dimension, often marginalized in school contexts, constitutes a critical factor for engagement and personal and collective transformation (Mezirow, 2003; Zembylas, 2020).

Through role-playing exercises, improvisation, and scenic narration, teachers can experiment with innovative communication and teaching strategies, developing skills in active listening, voice modulation, spatial management, and stage presence, which promote experiential learning for students (Brookfield, 2017).

At the same time, these experiences contribute to the development of transversal skills essential for navigating the complexity of contemporary educational contexts. In

particular, fostering emotional intelligence (Goleman, 1995) enables teachers to recognize and understand their own emotions and those of others, supporting the construction of authentic and meaningful relationships within the school community.

Soft skills such as creativity, flexibility, problem-solving, and effective communication represent fundamental tools for successfully operating in rapidly changing social, cultural, and digital contexts (Heckman & Kautz, 2012).

Laboratory experiences also stimulate the development of teachers' design skills through the integration of non-linear, corporeal, expressive, and digital languages, promoting cross-fertilization between knowledge and practices (Author, 2023). These competencies support the design of inclusive learning environments that are sensitive to students' cognitive, educational, emotional, and relational specificities, fostering the co-construction of knowledge (Biesta, 2015; Author, 2023).

5. Technological Devices as Tools for Participation and Knowledge Sharing

For teacher professionalism, the digital transition of contemporary society represents an opportunity for an ecological rethinking of one's educational practice (Floridi, 2014; Rivoltella, 2020). In this perspective, technologies are not merely external supports but agents endowed with cognition, capable of transforming the ways of learning and interacting, becoming an integral part of a learning ecosystem that fosters new forms of participation, collaboration and the co-construction of knowledge. Digital devices can indeed be interpreted as authentic tools for participation and knowledge sharing, as they allow real-time dissemination of information, facilitate cooperation among distant participants, and personalize the learning experience, adapting it to individual rhythms, interests, and potential.

From this viewpoint, technologies do not merely enhance the transmission of knowledge but radically transform it, generating dynamic and inclusive environments in which the cognitive, emotional, and bodily dimensions intertwine with the digital, giving rise to learning experiences based on interaction, active participation, and multisensory engagement (Sibilio, 2020; Merleau-Ponty, 1945).

Thus, these devices constitute not only technological tools but true epistemic spaces for aesthetic and cognitive exploration, where art and science converge in the search for new ways of representing and understanding reality (Sibilio, 2012; Author, 2020). The integration of theatrical practices and digital technologies allows the classroom to be conceived as a performative space, supporting the idea of an ecological pedagogy (Haraway, 2016; Barad, 2007) that recognizes the distribution of educational agency between human and virtual relations.

Teachers are therefore called to redefine their educational professionalism, positioning themselves as facilitators of knowledge, attentive and welcoming directors, and co-creators of meaningful experiences. Through theater-based training integrated with digital tools, teachers can develop transformative agency (Biesta, 2015), grounded in greater bodily awareness and enhanced relational competence in both physical and virtual contexts, demonstrating the ability to navigate the complexity of contemporary educational settings with a reflective and creative approach.

In this sense, the teacher functions as an ecological mediator, able to promote interactions between bodies, languages, and technologies, fostering embodied (Maturana & Varela, 1991), inclusive (D'Alonzo, 2024), and reflective (Schön, 1993) learning, supporting a vision of the educational context as a dynamic, interconnected

ecosystem of knowledge, in which the human and digital dimensions cooperate to build participatory and transformative learning experiences.

6. Methodology

The methodology adopted for this pilot study is *Art-Based Research* (ABR), a research approach that employs the arts as cognitive tools to explore, investigate, and communicate knowledge. It promotes innovative modes of inquiry that allow educational phenomena to be examined through creative, performative, and sensory practices, placing at the center the embodied dimension of experience and the shared construction of meaning.

This methodology was implemented through the holistic and experimental CReAP+T approach, an acronym standing for *Creativity, Corporeality, Relationship, Emotion, Action, Performatività + Technology/Training*.

The CReAP+T experiential model employs theatrical and performative techniques to enhance teachers' bodily awareness, emotional regulation, and relational competencies, with particular attention to the integration of body, mind, and educational context. The workshop was structured into two complementary phases. The *first phase*, theoretical in nature, began with an initial *brainstorming activity* carried out using the digital tool *Mentimeter*, through which participating teachers shared their reflections and personal interpretations of the terms *pedagogy*, *didactics* and *theatre*. This activity highlighted the importance of technology as a means of active participation and sharing, facilitating the emergence of individual perceptions and the collective construction of preliminary meanings. Subsequently, a theoretical module was developed through interactive lectures in which teachers were encouraged to actively engage with the content, discuss practical cases, and share professional experiences. Structured *debriefing sessions* were included to reflect on emerging observations, critically analyze lived experiences, and consolidate learning outcomes. These guided reflection moments promoted not only the acquisition of knowledge about the neuroscientific and pedagogical foundations of embodied education but also the collaborative construction of meaning through dialogue and critical reflection, fostering an interactive, participatory, and co-constructive learning environment. The *second phase*, experiential in nature, took the form of a laboratory pathway in which theatrical practices were used to develop awareness of the body as a cognitive, expressive, and relational tool. Training activities included exercises in mindful breathing, body awakening and relaxation, eye contact, spatial movement, and emotional regulation, both at the individual and collective levels. These practices aimed to strengthen the centrality of bodily and emotional dimensions in teaching, promoting greater awareness of educational action, emotional and communicative dynamics, and the ability to design inclusive learning environments.

Theatrical training, in its educational dimension, does not aim solely at the development of technical skills; rather, it enables the exploration and expression of emotions, collaboration within group dynamics, and the cultivation of a conscious and authentic teaching presence. The integration of theatrical practices with educational interventions involving digital tools can thus represent a significant pedagogical innovation, capable of fostering holistic and multisensory learning while simultaneously enhancing the bodily, emotional, and cognitive dimensions of teachers.

6.1. Research Design

The pilot study is situated within the epistemological and educational framework of the First-Level Master's Degree in *Theatre, Pedagogy, and Didactics: Methods, Techniques, and Practices of the Scenic Arts* and the Second-Level Master's Degree in *Performing Arts: Theatre, Pedagogy, and Didactics. Methods, Techniques, and Practices of the Performing Arts* at the University of Suor Orsola Benincasa in Naples.

Both programs, drawing on the ecologies of knowledge, are conceived as theoretical-practical experiential frameworks aimed at training education professionals, teachers, educators and social practitioners, who, at the end of the training experience, acquire the skills to design innovative pedagogical interventions centered on the valorization of the body, educational relationships, and the plurality of non-linear, expressive, and creative languages (Author, 2023) within the teaching-learning process. Within this framework, the pilot study was conducted at the "F. S. Nitti" High School in Portici, near Naples, where the workshop *Theatre, Didactics, and Pedagogy for the Digital Transition in Schools* was carried out with a group of participating teachers. The training program integrated theatrical practices, digital tools, and pedagogical reflection, shaping itself as a research-action environment oriented toward a transdisciplinary didactic vision and the experimentation of innovative, body-centered educational methodologies.

The workshop, lasting a total of 30 hours, was organized into weekly four-hour sessions and structured in two complementary phases. The first phase, theoretical in nature, focused on analyzing and deepening the neuroscientific and pedagogical foundations of embodied education (Embodied Cognition). The second phase, experiential in nature, consisted of laboratory activities employing theatrical practices to foster in participants an awareness of the body as a cognitive, expressive, and relational tool, capable of mediating learning and educational communication. The workshop aimed to promote greater awareness among teachers of the role of the body in educational relationships, exploring its function as a cognitive and emotional mediator in teaching and learning processes. Furthermore, it sought to encourage the construction of embodied knowledge, integrating reflective, aesthetic, and technological dimensions within the perspective of a performative and ecological pedagogy.

At the end of the course, the participating teachers created a collective dramaturgy as a performative restitution of their experience. The final performance consisted of staging a collective letter addressed to their colleagues who had not taken part in the workshop. Through bodily expression and stage action, they narrated and re-enacted the theatrical practices they had explored and made their own, emerging from the training path both professionally and personally transformed. This concluding moment represented a symbolic act of sharing and dissemination of knowledge, aligned with the vision of a reflective and continuously learning professional community.

6.2. Context and participants

The pilot study was conducted at the Francesco Saverio Nitti High School in the city of Portici, in the province of Naples, from March 2025 to June 2025, for a total of 30 hours.

The study sample consisted of 18 participants, including 16 women and 2 men, all aged 41 years or older, and residing in the Campania Region. Regarding educational

background, 27.8% held a pre-reform university degree, 33.3% a single-cycle master's degree, 5.6% a two-year master's degree, 16.7% a bachelor's degree, 5.6% a high school diploma, 5.6% a second university degree, and 5.6% a Ph.D. Among participants currently engaged in professional activities, 82.4% worked in the educational and training sector within schools, 11.8% in the educational and training sector outside schools, and 5.9% in other professions, including a chartered accountant registered with the Naples Professional Association. With respect to previous professional experience, 94.4% of participants reported having had prior work experience, while 5.6% had not previously worked. Among those with professional experience, 64.7% had worked in other professions, 23.5% in the school education sector, and 11.8% in the non-school educational and training sector.

Specifically, the professions included in the "other professions" category were: lawyer, business and tax consultant, mechanic, quality service interviewer, theatre technician, instructor and athletic trainer, accountant, chartered accountant, biologist, and university researcher.

6.3. Results

Data collection was carried out using qualitative tools such as participant observation, video recordings of the activities, analysis of participants' reflective journals, and narrative interviews. The analysis of the collected data made it possible to observe the evolution of participants' professional orientation before and after the laboratory experience.

Before the start of the workshop, participating teachers were asked to share what the concepts of pedagogy, didactics, and theatre represented for them. The responses, presented below, were collected and visualized using the digital application Menti-meter (Figure 1; 2; 3).

Figure 1



Studio: study	Pratica: practice
Educare: educate	Pazienza: patience
Formare: train	Comunicare: communicate
Trasmissione consapevole: conscious transmission	Cura: care
Lo studio del pensiero: the study of thought	Istruire: instruct
Educare alle emozioni: educating about emotions	Educazione: education
Divenire: becoming	Mettersi in gioco: putting oneself to the test
Emozione: emotion	Educare all'affettività: educating about affection
Scienza: science	Costanza: perseverance
Attenzione per il prossimo: care for others	Crescere: grow
Conoscenza: knowledge	Lo studio del carattere: the study of character
Lo studio delle emozioni: the study of emotions	Valore: value
Curiosità: curiosity	Educare all'inclusione: educating for inclusion

Figure 2



Metodo: method	Apprendimento: learning
Educazione: education	Empatia: empathy
Trasmissione: transmission	Scoperta: discovery
Mettersi in gioco: putting oneself to the test	Conoscere: know
Apprendere: learn	Percorso: journey
Istruire: instruct	Cambiamento: change
Trasmissione di saperi: transmission of knowledge	Innovazione: innovation
Conoscenza: knowledge	Passione: passion
Insegnare: teach	Imparare: learn
Condivisione: sharing	Competenze: skills
Comunicazione: communication	Insegnamento: teaching
Equilibrio: balance	Adattamento: adaptation
Coinvolgere: involve	Ascolto: listening
	Conoscenza: knowledge
	Scambio: exchange

Figure 3



Empatia: empathy	Metodo: method
Emozione: emotion	Autostima: self-esteem
Divertimento: fun	Espressione: expression
Rappresentazione: representa- tion	Condivisione: sharing
Identificazione: identification	Espressività: expressiveness
Gradimento: appreciation	Recita: acting
Denuncia: denunciation	Apprendimento: learning
Mimesi: mimesis	Comunicazione: communication
Libertà: freedom	Messaggio: message
Creatività: creativity	Cuore: heart
Distrazione: distraction	Introspezione: introspection
	Coscienza: consciousness

Building on the reflections that emerged during this preliminary phase, the laboratory pathway was designed with the aim of fostering a transformation in teachers' perceptions, guiding them toward a more integrated and embodied understanding of education, teaching practice, and theatrical experience, while highlighting the role of the body, relationships, and emotions in the teaching–learning process. In particular, the analysis of the narrative interviews, in relation to the orientation of the participants' teaching practice, made it possible to identify each teacher's predominant modes of action and the degree of integration of multiple approaches, revealing potential changes in terms of creativity, emotionality, rationality, and the ability to enhance positive aspects in problematic situations.

The investigation aimed to highlight the impact of the laboratory experience on the participants' professional style, capturing both their initial preferences and the transformative effects of the workshop on their professional practice.

Before the laboratory experience, participants' orientation was predominantly rational. Specifically, 44% favored a rationally centered approach, 18% an approach grounded in creativity, 23% an emotion-centered approach, and 15% an orientation focused on valuing the positive aspects of problematic situations. Among those who employed multiple professional action modes, the reported sequences of importance indicated that rationality was most often the primary mode, followed by creativity, emotionality, and appreciation of positive aspects, confirming a more analytical and structured professional orientation. After the laboratory experience, a positive shift in professional orientation was observed. The rationally centered mode decreased to 6%, while creativity-based action rose to 33%, emotion-centered action to 45%, and the approach focused on valuing positive aspects of problematic situations to 16%, indicating an increase in more engaging and adaptive modes of professional practice (Figure 4).

Figure 4

Perception of Teaching Practice	Percentage before the workshop	Percentage after the workshop
Rationality-centered action	44	6
Creativity-centered action	18	33
Emotion-centered action	23	45
Action focused on leveraging the positive aspects of a problematic situation	15	16

From the analysis of the reflective journals written by the teachers at the end of each laboratory session, it was possible to identify several common thematic areas concerning classroom management, the building of trust-based relationships, the use of theatrical practices as a pedagogical tool, reflection on the teacher's role, and the emergence of certain challenges related to professional educational practice.

7. Classroom Management and the Complexity of the Teacher's Role

One of the first findings concerns the perception of the increasing complexity of the teacher's role, particularly evident during simulations in classroom contexts with disengaged or unmotivated students.

The simulated experiences, conducted through role-playing techniques, demonstrated that even when effective teaching strategies are employed, teachers may still face complex student behaviors that hinder the flow and effectiveness of the lesson. Participants reflected on the need to adopt best practices derived from theatrical techniques, such as modulating vocal tone, varying lesson pacing, and stimulating students' motivation to learn by considering the student as an active protagonist, thus the actor of their own learning experience.

From this perspective, the laboratory experience allowed teachers to understand that a lesson becomes truly meaningful for students not when content is transmitted, but when it is experienced and enacted through the teacher's embodied action. Knowledge, in fact, is not simply transmitted; it is embodied in experience and expressed through non-linear languages, taking shape within the educational relationship and through interaction with others.

Teaching effectiveness, therefore, lies in the teacher's ability to create experiential learning contexts where students can actively and directly engage with what they are learning. In this framework, the teacher assumes the role of a facilitator, capable of adapting to the relational dynamics of the classroom, embracing uncertainty and error as integral parts of the growth process, and maintaining a professional role that is authentic and open to vulnerability, where even failure becomes an opportunity for reflection and shared learning.

7.1. *Positive Climate and Building Trusting Relationships*

A recurring theme in the reflective journals is the centrality of creating a positive and welcoming classroom climate, which supports both student learning and motivation. The laboratory activities highlighted the importance of establishing a learning environment where students feel heard, valued, and not judged, fostering an educational relationship based on mutual trust. In particular, some training exercises showed that safety, attention, and care are essential elements for promoting an authentic teacher-student relationship. These experiences also allowed teachers to reflect on the importance of acknowledging students' emotional experiences and co-designing educational interventions based on their emerging needs.

7.2. *Theatrical Practices as a Pedagogical Tool*

The teaching simulations, conducted using role-playing techniques, and the exercises based on theatrical practices highlighted the importance of non-verbal communication in both relational dynamics and classroom management.

During the laboratory activities, teachers experimented with the use of gestures, vocal tone, rhythm, and posture as pedagogical tools, capable of capturing students' attention and promoting authentic and meaningful learning.

The incorporation of theatrical practices also provided teachers with the opportunity to personally engage, allowing them to pay closer attention to their emo-

tional, relational, and communicative skills. This experiential dimension enabled them to observe how the body and emotions can become active and central tools in the educational process.

7.3. Reflections on the Teacher's Educational Role and the Development of Professional Competencies

The reflective journals highlighted how the laboratory experiences promoted significant reflection on the teacher's professional role. Participants reported a greater awareness of their own limitations, strengths, and the strategies needed to make their teaching more effective. In particular, the simulations encouraged careful reflection on classroom management dynamics during especially challenging moments, allowing teachers to consider the centrality of the educational relationship in relation to disciplinary content. These moments of self-reflection also emphasized the need to design more inclusive and engaging activities for students in order to emotionally stimulate their learning.

7.4. Challenges in Educational Professional Practice

The reflective journals also highlighted some challenges that affect the effectiveness of the teaching–learning process. Laboratory participants pointed out that the school context and the organizational management of lessons often do not support the design of innovative activities that stimulate creativity and non-linear thinking, underscoring the need for broader reflection on possible structural reforms in schools. The analysis of the journals therefore indicated that the laboratory experiences had a significant impact on the development of teachers' relational, emotional, and methodological skills. The interaction between teaching simulations focused on the body, the use of theatrical practices, and practical, experiential activities allowed teachers to reflect on their role, analyze and rethink classroom management strategies and methodologies, and enhance the educational and communicative relationship with their students. This highlighted the potential of laboratory activities as a tool for continuous professional development, capable of connecting theory to practice and, consequently, integrating the experiential, emotional, and relational dimensions in the construction of knowledge.

8. Discussion

The results emerging from the qualitative analysis of the collected data allow for the delineation of a complex and articulated picture of the evolution of participants' professional orientation, highlighting significant transformations following the laboratory experience.

The data, collected through participant observation, video recordings, reflective journals, and narrative interviews, indicate that the laboratory positively influenced the cognitive, emotional, and relational dimensions of the professional practice of the involved teachers. A comparison of the data collected before and after the laboratory experience highlighted a shift in teachers' perception of their teaching practice.

Before the laboratory, participants' orientation was strongly anchored in a rational and analytical dimension, with 44% favoring rational approaches and a lower incidence of creative and emotional strategies. By the end of the program, a significant

reversal of this trend was observed: rationally oriented action decreased to 6%, while creativity-based action increased to 33% and emotion-centered action to 45%. Among participants who reported adopting multiple educational action modes in their profession, the primary modes were emotional and creative, followed by approaches aimed at enhancing positive aspects in problematic situations.

The increase in flexibility, creativity, and the ability to manage challenging situations positively indicates that the laboratory experience promoted a move away from a linear and purely traditional teaching model, focused solely on the cognitive dimension, toward a more dynamic, reflective, and complexity-oriented approach (Sibilio, 2015).

The qualitative data from the reflective journals, collected at the end of each laboratory session, confirmed this change, showing that the workshop enhanced awareness of the complexity of the teacher's role and the need to integrate emotional, communicative, and relational skills into teaching and learning processes.

Reflection on classroom management dynamics, which emerged particularly strongly during role-playing simulations, allowed participants to recognize the importance of experiential teaching, based on authentic interaction and the conscious use of the body, voice, and posture as educational tools. These findings highlight the centrality of corporeality and performativity in teaching–learning processes (Schön, 1983; Brookfield, 2017).

Another important aspect concerned the creation of a positive climate characterized by trustful relationships within the educational context. Laboratory activities helped teachers develop the ability to create welcoming learning environments, characterized by listening, non-judgment, and recognition of students' emotional experiences.

This awareness also fostered a teaching approach centered on co-design and continuous pedagogical adjustment, as the educational relationship assumes a fundamental constitutive function in learning.

Theatrical practices also proved to be an important pedagogical tool, stimulating teachers' creativity and willingness to engage personally. The use of non-verbal language, gestures, and proxemics enabled teachers to explore alternative, non-linear forms of communication and to activate embodied learning processes, where knowledge is constructed through direct experience and bodily participation. These findings underline the effectiveness of theatrical practices as tools for experiential and reflective training, capable of integrating theory and practice in a transformative perspective (Freire, 1996; Mezirow, 2003). Reflections in the journals showed that the laboratory promoted the development of greater professional awareness, understood as the ability to critically analyze one's own practices, recognize personal vulnerabilities, and redefine intervention strategies in an inclusive and relational key. This metacognitive reflection process (Schön, 1983) represents a significant indicator of transformative learning (Mezirow, 2003), in which the teacher assumes the role of a reflective professional, open to change and methodological innovation.

The laboratory experience emerged as a training framework with high transformative potential, capable of significantly impacting not only technical and didactic competencies, but also the identity, relational, and emotional dimensions of educational practice. The results support the idea that promoting training pathways based on experience and the integration of non-linear languages, inspired by the ecologies of knowledge, can represent an innovative methodological perspective, one that fosters

authentic and meaningful learning (Ausubel, 2004) and reaffirms the human, experiential, and transformative value of the teaching profession.

9. Conclusions

The pilot study conducted through the proposed laboratory experience aimed to analyze the effectiveness of a training approach that integrates bodily, relational, emotional, and digital dimensions into teaching professionalism, with the goal of reconsidering teacher education and orienting it toward a complex form of thinking capable of integrating cognitive, affective, bodily, and technological dimensions within a single educational ecosystem.

The results indicate that the adoption of theatrical practices, supported by digital tools, can foster a significant change in teachers' professional orientation, promoting more participatory modes of action characterized by creative approaches that pay attention to emotional and relational dimensions within an inclusive perspective.

The laboratory experience highlighted how the body and performative action can serve as privileged epistemic tools for the construction of embodied knowledge (Maturana & Varela, 1991), capable of transforming not only technical and didactic competencies but also teachers' awareness of the complexity of their role (Sibilio, 2015).

Debriefing and guided reflection sessions supported the consolidation of learning, promoting metacognition and critical reflexivity (Schön, 1993). The hybridization of theatre, pedagogy, and digital technologies is proposed as an innovative perspective for teacher training, able to redefine the educational paradigm in an ecological and relational key (Haraway, 2016; Barad, 2007; Gallese & Morelli, 2024). Developing body awareness, emotional management, and teaching presence generates transformative effects on the professional level (Mezirow, 2003), fostering situated, embodied, and performative teaching (Author, 2022). The data also suggest that training programs focused on participants' experiential engagement can contribute to the creation of reflective professional communities, capable of dialogue between heterogeneous experiences and interdisciplinary knowledge (Wenger, 1991; Vygotsky, 1978).

The embodied approach (Maturana & Varela, 1991), integrated with digital tools and theatrical practices (Author, 2020), can establish itself as an effective and innovative model to support the digital transition in schools, while emphasizing the centrality of human, bodily, and relational dimensions in teaching-learning processes.

This demonstrates how performative and embodied education can serve as a transformative strategy for continuous teacher training, promoting flexible, creative, and reflective professionalism, capable of navigating complexity and unexpected challenges in educational practice.

References

- Barad, K. (2007). *Meeting the universe halfway: Quantum physics and the entanglement of matter and meaning*. Durham, NC: Duke University Press.
- Barba, E., & Savarese, N. (2011). *L'arte segreta dell'attore*. Edizioni di Pagina.
- Bateson, G. (1972). *Steps to an ecology of mind*. New York, NY: Ballantine.

- Bateson, G. (2000). *Verso un'ecologia della mente*. Milano: Adelphi.
- Benvenuto, G., Stella, D., & Viti, E. (2018). Danzare, riflettere, apprendere. Excellence and Innovation in Learning and Teaching, 3(1).
- Berthoz, A., & Petit, J.-L. (2006). *Phénoménologie et physiologie de l'action*. Paris: Odile Jacob.
- Biesta, G. J. (2015). *Beautiful risk of education*. London: Routledge.
- Brookfield, S. D. (2017). *Becoming a critically reflective teacher*. John Wiley & Sons.
- Author, (2020).
- Author, (2022).
- Author, (2023).
- Caruana, F., & Borghi, A. (2016). *Il cervello in azione*. Bologna: Il Mulino.
- Capra, F., & Luisi, P. L. (2014). *The systems view of life: A unifying vision*. Cambridge: Cambridge University Press.
- Chevallard, J. (1985). *La transposition didactique: Du savoir savant au savoir enseigné*. Grenoble: La Pensée Sauvage.
- Clark, A., & Chalmers, D., (1998). The extended mind. *Analysis*, 58(1).
- D'Alonzo, L., (2004). *La gestione della classe. Modelli di ricerca e implicazioni per la pratica*. Brescia: La Scuola.
- D'Alonzo, L., & Giaconi, C. (2024). *Manuale per l'inclusione*.
- Damiano, E. (2013). *La mediazione didattica. Per una teoria dell'insegnamento*. Milano: Franco Angeli.
- Dewey, J. (1938). *Experience and education*. Indianapolis, IN: Kappa Delta Pi.
- Dozza, L. (2022). Ecology and education. *Formazione & insegnamento*, 20(3).
- Floridi, L. (2014). *The fourth revolution: How the infosphere is reshaping human reality*. Oxford: OUP.
- Freire, P. (1996). *Pedagogia dell'autonomia. Saperi necessari per la pratica educativa*. Torino: Edizioni Gruppo Abele.
- Frauenfelder, E. (2018). *Perché una relazione tra pedagogia e biologia? Sezione RTH Brain Education Cognitive*, Napoli.
- Gallese, V. (2005). Embodied simulation: From neurons to phenomenal experience. *Phenomenology and the Cognitive Sciences*, 4(1).
- Gallese, V. (2007). Il corpo teatrale: Mimetismo, neuroni specchio, simulazione incarnata. In *Culture teatrali. Studi, interventi e scritture sullo spettacolo*. Bologna: Edizioni Carattere.
- Gallese, V., & Morelli, U. (2011). *Il teatro della metafora del mondo e del teatro nella mente*. Castiglioncello (PI): 25 Febbraio.
- Gallese, V., & Morelli, U. (2024). *Cosa significa essere umani? Corpo, cervello e relazione per vivere nel presente*. Milano: Raffaello Cortina Editore.
- Gallese, V., Fadiga, L., Fogassi, L., & Rizzolatti, G. (1996). Action recognition in the premotor cortex. *Brain*, 119 (Pt 2).
- Goleman, D. (1995). *Intelligenza emotiva*. London: Bloomsbury.
- Grotowski, J. (1965). *Vers un Théâtre Pauvre*. Losanna: L'Âge d'Homme.

- Haraway, D. (2016). *Staying with the trouble. Making kin in the Chthulucene*. Durham, NC: Duke University Press.
- Heckman, J. J., & Kautz, T. (2012). Hard evidence on soft skills. *Labour Economics*, 19(4).
- Ingold, T. *Being Alive*. (2011). London–New York: Routledge.
- Jenkins, H. (2006). *Convergence culture: Where old and new media collide*. New York, NY: New.
- Keiner E., Gross B. (2021). Biblioteche universitarie ed ecologia della conoscenza nell'era della post-verità. In G. Cavrini et alii. *Per tutta la vita. Pedagogia come progetto umano*. Milano: FrancoAngeli.
- Lakoff, G., & Johnson, M. *Metaphors We Live By*. (1982). Chicago: University of Chicago Press.
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge: Cambridge University Press.
- Maturana, H. R., & Varela, F. J. (1980/2001). *Autopoiesi e cognizione. La realizzazione del vivente* [Trad. it.]. Venezia: Marsilio.
- Maturana, H. R., & Varela, F. J. (1991). *Autopoiesis and cognition: The realization of the living*. Springer.
- Menary, R. (Ed.) (2010). *The Extended Mind*. Cambridge (MA): MIT Press.
- Mezirow, J. (2003). Transformative learning as discourse. *Journal of Transformative Education*, 1(1).
- Merleau-Ponty, M. (1945). *Phénoménologie de la perception*. Paris: Gallimard.
- Montessori, M. (2008). *Educare alla libertà*. Milano: Mondadori Editore.
- Morin, E. (2014). *La tête bien faite. Repenser la réforme, réformer la pensée*. Média Diffusion.
- Rheingold, H. (2012). *Net smart: How to thrive online*. Cambridge, MA: MIT Press.
- Rizzolatti, G., Craighero, L. (2004). The mirror neuron system. *Annual Review of Neuroscience*, 27.
- Rizzolatti, G., Fadiga, L., Gallese, V., & Fogassi, L. (1996). Premotor cortex and the recognition of motor actions. *Cognitive Brain Research*, 3.
- Rizzolatti, G., & Sinigaglia, C. (2006). *So quel che fai. Il cervello che agisce e i neuroni specchio*. Milano: Raffaello Cortina Editore.
- Rivoltella, P. C. (2012). *Neurodidattica*. Milano: Raffaello Cortina Editore.
- Rivoltella, P. C. (2020). *Nuovi alfabeti. Educazione e culture nella società post-mediale*. Brescia: Scholé.
- Rivoltella, P. C., & Rossi, P. G. (2017). *L'agire didattico. Manuale per l'insegnante*. Brescia: La Scuola.
- Rivoltella, P. C., Garavaglia, A., Ferrari, S., Carenzio, A., Bricchetto, E., Petti, L., & Triacca, S. (2013). *Fare didattica con gli EAS. Episodi di apprendimento situato*. Brescia: La Scuola.
- Rosa, H. (2019). *Resonance: A sociology of our relationship to the world*. John Wiley & Sons.
- Schechner, R. (2017). *Performance studies: An introduction*. London: Routledge.
- Schön, D. A. (1983/1993). *Il professionista riflessivo. Per una nuova epistemologia della pratica professionale*. Bari: Dedalo.
- Sibilio, M. (2011). Corporeità didattiche: I significati del corpo e del movimento nella ricerca didattica. In *Il corpo e il movimento nella ricerca didattica. Indirizzi scientifico-disciplinari e chiavi teorico-argomentative* (Vol. 1). Liguori.
- Sibilio, M. (2012). La dimensione semplessa nell'agire didattico. In Id. (a cura di), *Traiettorie non lineari nella ricerca. Nuovi scenari interdisciplinari*. Lecce: Pensa.

- Sibilio, M. (2015). Simplex didactics: A non-linear trajectory for research in education. *Revue de synthèse*, 136(3–4).
- Sibilio, M. (2020). *L'interazione didattica*. Brescia: Scholé-Morcelliana.
- Taviani, F. (1997). Passaggi e sottopassaggi. In M. De Marinis (a cura di), *Drammaturgia dell'attore*. I Quaderni del Battello Ebbro. Porretta Terme.
- Turkle, S. (2015). *Reclaiming conversation: The power of talk in a digital age*. Penguin.
- Varela, F. J., Thompson, E., & Rosch, E. (2017). *The embodied mind: Cognitive science and human experience*. Cambridge, MA: MIT Press.
- Wilson, R. A. (2004). *Boundaries of the Mind: The Individual in the Fragile Sciences: Cognition*. Cambridge (UK): Cambridge University Press.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes* (Vol. 86). Cambridge, MA: Harvard University Press.
- Zembylas, M. (2020). Emotional capital and education: Theoretical insights from Bourdieu. In Bourdieu and education. Routledge.