



FROM TRAINING TO PEDAGOGICAL TRANSFORMATION: PRESCHOOL TEACHERS' EXPERIENCES OF ONLINE PROFESSIONAL DEVELOPMENT IN CREATIVE MUSIC EDUCATION

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Abstract:

Online professional development (OPD) has become an increasingly prominent component of teachers' professional learning, particularly in early childhood education contexts. However, research has often focused on issues of access, effectiveness, or technological competence, paying limited attention to OPD's potential to support deeper pedagogical transformation. This study explores preschool teachers' experiences of OPD in creative music education and examines whether and how these experiences contribute to changes in pedagogical thinking and practice beyond technical training. Adopting a qualitative-dominant action research design, the study involved eight preschool teachers working in Rhodes, Greece. Data were collected between 24 November 2024 and 14 February 2025, during a period in which online and blended learning practices were actively implemented. Data were gathered through an open-ended questionnaire and analysed thematically. Descriptive visualisations were employed to support the interpretation of qualitative patterns without implying statistical generalisation. The findings indicate that teachers valued OPD for its flexibility and accessibility, but, more importantly, perceived it as meaningful when it connected digital tools to pedagogical aims in early childhood music education. Participants reported increased confidence, enhanced reflective practice, and a shift towards more open-ended, child-centred and creative musical activities. Challenges related to digital mediation, embodied interaction, family involvement, and contextual inequalities were also identified. The study concludes that OPD can function as a catalyst for pedagogical transformation in creative

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music education when it is practice-oriented, reflective, and responsive to the specificities of early childhood contexts.

Keywords: online professional development; early childhood education; creative music education; pedagogical transformation; teacher professional learning; digital pedagogy

1. Introduction

In recent decades, teachers' professional development has been increasingly recognised as a critical factor in improving educational quality and fostering pedagogical innovation, particularly within early childhood education (ECE) contexts (Day, 1999; Guskey, 2002). Contemporary approaches conceptualise professional development not as a one-off training event but as a continuous, reflective, and context-embedded process that shapes teachers' professional identities, beliefs, and pedagogical practices (Avalos, 2011; Darling-Hammond et al., 2017). Within this framework, professional learning is closely linked to teachers' capacity to respond creatively and critically to changing educational demands.

The rapid expansion of online professional development has further transformed the landscape of teacher learning. Accelerated by the COVID-19 pandemic, distance education environments became a dominant mode of professional training, compelling teachers to engage with digital platforms, virtual communities, and online pedagogical resources at an unprecedented scale (Trust et al., 2020). While online professional development has been widely discussed in terms of accessibility, flexibility, and cost-effectiveness (Borko et al., 2010; Kennedy, 2016), emerging research suggests that its pedagogical value cannot be reduced to technical skill acquisition alone. Instead, attention is increasingly turning toward the ways in which online professional development may foster deeper pedagogical change and professional growth.

In early childhood education, this discussion acquires particular significance. Preschool teachers are required to design learning environments that are developmentally appropriate, emotionally supportive, and responsive to young children's holistic needs. Creative pedagogical domains, such as music education, play a central role in this process. Music in early childhood settings is widely acknowledged as a powerful medium for fostering creativity, emotional expression, social interaction, and embodied learning (Hallam, 2010; Barrett, 2016). Rather than functioning as a discrete subject, music often operates as an integrative pedagogical practice that supports children's cognitive, emotional, and social development (Young, 2018).

Traditionally, early childhood music education has been associated with face-to-face interaction, physical presence, and multisensory engagement. Musical activities such as singing, movement, improvisation, and sound exploration rely heavily on bodily participation, shared musical experiences, and immediate social feedback (Custodero, 2005; Burnard, 2012). Consequently, the shift toward online and distance learning environments raised significant concerns regarding the feasibility of creative music

pedagogy in virtual contexts. Scholars questioned whether digital platforms could meaningfully support musical creativity, interaction, and embodied learning in early childhood education (O'Neill, 2014; Ruthmann & Hebert, 2012).

Within this context, the professional development of preschool teachers emerged as a crucial mediating factor. Online professional development programmes were expected not only to familiarise teachers with digital tools but also to support them in rethinking pedagogical strategies, adapting creative practices, and sustaining children's engagement in music-based activities under digitally mediated conditions. However, much of the existing literature continues to conceptualise online professional development primarily as skills-based training, emphasising technological competence, instructional delivery, and platform use (Dede et al., 2009; Koehler et al., 2013). Such approaches often overlook the complex pedagogical transformations that may occur when teachers integrate new forms of professional learning into their everyday practice. Pedagogical transformation extends beyond methodological adaptation or the adoption of new tools. It involves qualitative shifts in teachers' pedagogical beliefs, professional self-understanding, and decision-making processes (Mezirow, 2000; Opfer & Pedder, 2011). From this perspective, transformation is closely linked to teacher agency—the capacity of educators to interpret professional learning experiences, exercise professional judgement, and creatively reconfigure pedagogical practices in response to contextual demands (Priestley et al., 2015). In creative fields such as music education, pedagogical transformation may manifest through increased openness to experimentation, the design of open-ended musical activities, and a reconceptualisation of the teacher's role as a facilitator of children's creative agency rather than a transmitter of predetermined knowledge (Burnard, 2012; Westerlund & Gaunt, 2021).

Recent studies suggest that online professional development has the potential to support such transformative processes when it is designed as a reflective, collaborative, and practice-oriented learning experience (Trust & Horrocks, 2017; Lantz-Andersson et al., 2018). Digital environments can function as spaces for professional dialogue, shared reflection, and experimentation, enabling teachers to negotiate new pedagogical meanings and identities. Nevertheless, empirical research examining how preschool teachers experience online professional development as a catalyst for pedagogical transformation—particularly within creative music education—remains limited.

Most existing studies in early childhood education focus on general digital literacy, platform use, or parental communication during distance learning periods (Dong et al., 2020; Kim, 2020). While these contributions offer valuable insights into the logistical and organisational dimensions of online education, they provide a limited understanding of how teachers perceive changes in their creative pedagogical practices and professional roles. Moreover, research specifically addressing music education in preschool settings often prioritises children's learning outcomes, leaving teachers' professional learning experiences underexplored (Young & Gillen, 2019).

This gap is especially evident in qualitative and practitioner-oriented research that foregrounds teachers' voices and lived experiences. Understanding how preschool

teachers interpret and appropriate online professional development in creative music education is essential for designing training models that move beyond technical instruction and support meaningful pedagogical transformation. Such insights are particularly relevant in the post-pandemic educational landscape, where blended and online professional learning models are likely to remain integral components of teacher education systems.

Responding to this gap, the present study explores preschool teachers' experiences of online professional development in creative music education, focusing on processes of pedagogical transformation. Drawing on an action research framework, the study investigates how participation in online training influences teachers' creative music practices, pedagogical flexibility, and professional self-perceptions. Rather than treating online professional development as a neutral delivery mechanism, this research conceptualises it as a reflective and context-embedded learning process through which teachers negotiate new pedagogical possibilities within digitally mediated environments. By examining teachers' experiences at the intersection of online professional learning and creative music pedagogy, this study contributes to international discussions on teacher agency, pedagogical transformation, and professional development in early childhood education. It seeks to offer empirically grounded insights into how online professional development can function as a catalyst for pedagogical change and to inform the design of future training initiatives that prioritise creativity, reflection, and pedagogical depth alongside technological competence.

2. Literature Review

2.1 Online Professional Development in Early Childhood Education

Teacher professional development (PD) is widely recognised as a key lever for improving teaching quality and supporting educational innovation. Contemporary scholarship has moved beyond viewing PD as episodic "training" and instead frames it as an ongoing, reflective, and context-sensitive learning process that shapes teachers' knowledge, beliefs, identities, and classroom decision-making (Day, 1999; Guskey, 2000). This orientation is particularly relevant in early childhood education (ECE), where pedagogical work is relational, play-based, and developmentally contingent, and where teachers require support not only to acquire new strategies but also to interpret and adapt them to young children's needs.

Research on effective PD highlights design features associated with impact: a focus on content and pedagogy, active learning opportunities, coherence with curriculum and professional contexts, sufficient duration, and collaborative participation (Desimone, 2009). Large-scale syntheses similarly emphasise that impactful PD is typically sustained and practice-oriented, offering opportunities for coaching, feedback, peer learning, and structured reflection, rather than relying on transmissive delivery (Darling-Hammond, Hyler, & Gardner, 2017). These features are especially important when PD targets

creative domains, such as music education, where teachers need to orchestrate open-ended learning processes and respond to children's spontaneous musical ideas.

The rapid growth of online professional development (OPD) has intensified these discussions. OPD is often positioned as a response to constraints of time, location, and access, and as a means to broaden participation and enable flexible engagement. However, the literature cautions that the effectiveness of OPD depends less on the medium itself and more on the pedagogical architecture of the learning experience (Borko, Jacobs, & Koellner, 2010; Kennedy, 2016; Argyriou, 2025). Programmes that build professional dialogue, collaborative inquiry, and practical experimentation are more likely to produce meaningful professional learning than those that focus narrowly on platform operation or content consumption. The COVID-19 pandemic, in particular, exposed the limitations of technology-first approaches and underscored the need for OPD models that support teachers' pedagogical redesign, professional judgement, and emotional labour in digitally mediated contexts (Carrillo & Flores, 2020; Trust, Carpenter, & Krutka, 2020).

A central conceptual shift in this article is the movement from "training" to "pedagogical transformation". Training tends to be associated with the acquisition of discrete skills or tool proficiency, whereas pedagogical transformation implies deeper change: shifts in teachers' beliefs, professional identities, and enacted practice. This distinction aligns with adult learning theory, particularly transformative learning, which describes learning as a process of critically examining assumptions, reconstructing meaning, and adopting new perspectives that can shape action (Mezirow, 1991, 2000). In teacher learning contexts, transformation is often connected to reflective practice and the sustained interrogation of classroom experience, rather than the adoption of pre-packaged methods.

Teacher agency offers a complementary lens. Agency-oriented perspectives emphasise that teachers do not simply implement PD content; they interpret, negotiate, and reconfigure professional knowledge within the material, institutional, and cultural conditions of their work (Priestley, Biesta, & Robinson, 2015). From this viewpoint, professional learning is situated and mediated: what teachers can change depends on resources, constraints, professional cultures, and the opportunities available for experimenting with practice. This is highly pertinent in ECE and, more specifically, in online or distance settings where teachers' pedagogical decisions are shaped by digital infrastructures, home learning environments, and the presence (or absence) of family support.

Action research further strengthens the transformation argument. Classic and contemporary accounts position action research as practitioner inquiry through cycles of planning, action, observation, and reflection, enabling teachers to generate contextually meaningful improvements to practice (Elliott, 1991; Kemmis & McTaggart, 2000; Lewin, 1946). When OPD is aligned with action research principles—supporting teachers to test pedagogical ideas, evaluate them, and share learning—online training can shift from tool-focused instruction to an engine for sustained pedagogical change.

Distance education is commonly defined by the separation of teacher and learner in time and/or space, with learning facilitated through communication technologies (Lionarakis, 2006). It offers clear affordances—flexibility, expanded access, and opportunities for resource sharing—yet it also introduces constraints associated with reduced social presence, diminished immediacy of interaction, and risks of learner isolation (Evans & Nation, 1989). These issues are intensified in early years contexts, where learning is closely tied to physical co-presence, emotional attunement, and play-based interaction.

Pandemic-era research indicates that emergency remote education demanded rapid pedagogical adaptation and intensified workload for teachers, while also exposing structural inequities related to device access, connectivity, and home learning conditions (Aguilera & Nightengale-Lee, 2020; Carrillo & Flores, 2020). For ECE, maintaining engagement, supporting socio-emotional development, and sustaining communication with families became particularly challenging. Accordingly, OPD in such contexts must address not only technological fluency but also pedagogical design under constraint: how to create developmentally appropriate learning experiences, how to maintain relationships and routines, and how to make creative activity viable at a distance.

A recurring pitfall in technology integration research is an overemphasis on tools at the expense of pedagogy. Frameworks such as Technological Pedagogical Content Knowledge (TPACK) have been influential in explaining why effective technology use depends on the intersection of content knowledge, pedagogical knowledge, and technological knowledge, rather than on technical competence alone (Koehler & Mishra, 2009). In the context of creative music education, this intersection is demanding: teachers must understand musical learning as a creative and embodied process, design developmentally appropriate experiences, and select digital affordances that serve musical exploration and participation.

Online learning environments can be conceptualised in terms of their pedagogical functions: Learning Management Systems support organisation and delivery; Content Management Systems support the creation and curation of materials; Virtual Learning Environments may support interaction, participation, and community building. However, the educational value of these environments depends on how teachers orchestrate learning activities—sequencing tasks, scaffolding interaction, facilitating feedback, and creating opportunities for learner agency. Research on online teacher learning suggests that networked environments can also foster professional communities and personal learning networks (PLNs), expanding access to peer support, shared resources, and professional dialogue (Trust, 2012; Trust & Horrocks, 2017; Wenger, 1998). When integrated meaningfully, such networks may reduce professional isolation and support sustained learning beyond formal training sessions.

Recent research highlights that technology-enhanced practices acquire pedagogical value only when embedded within broader cultural and structural frameworks of inclusive education (Argyriou, 2025). This perspective supports the

argument that online professional development should move beyond technical training and address teachers' pedagogical decision-making and reflective practice.

Music in ECE is widely associated with children's holistic development, supporting emotional expression, social interaction, language development, and creative thinking. Crucially, early childhood music education is not primarily about technical mastery but about participation: singing, moving, exploring sound, improvising, and making meaning through musical play. Creativity scholarship in music education emphasises that creativity is not an "extra" but a core dimension of musical experience, cultivated through open-ended tasks, experimentation, and supportive pedagogical climates (Burnard, 2012; Barrett, 2006).

Digitally mediated environments pose a conceptual challenge for this tradition because musical learning is often embodied and socially co-constructed. Yet research on music learning and new media argues that digital environments can open new pathways for participation, production, and collaboration, provided that pedagogy avoids reducing learning to passive viewing or listening (Ruthmann & Hebert, 2012). For preschool contexts, technology can facilitate music learning when it supports active engagement—such as guided movement, call-and-response singing, rhythm imitation and variation, creative sound-making with everyday objects, and opportunities for children to share musical responses.

Creative music education in early childhood is grounded in intentional pedagogical design that integrates expression, exploration, and reflective practice (Argyriou, 2021). Studies explicitly addressing technology in early childhood music settings suggest that the value of digital tools lies in their capacity to enable developmentally appropriate musical experiences—supporting exploration, access to musical resources, and opportunities for interaction—rather than substituting for embodied participation (de Vries, 2013). This implies that OPD in creative music education should prioritise pedagogical design: how teachers can translate creative, participatory music practices into mediated forms while preserving the principles of play, agency, and interaction.

Maintaining young children's attention and motivation is a consistent theme in distance ECE. Research on technology-enhanced learning highlights the potential of interactive and multimodal approaches—combining sound, image, movement, and narrative—to support engagement and meaning-making. Augmented reality (AR), for instance, has been discussed as an approach that can render abstract or otherwise inaccessible phenomena more tangible, potentially increasing motivation and participation (Wu, Lee, Chang, & Liang, 2013). Digital storytelling is similarly recognised as a tool for presenting ideas in compelling ways and for supporting interaction and collaborative meaning-making when accompanied by active tasks (e.g., discussion, enactment, creative response).

Educational games have also been studied for their motivational properties and their capacity to support sustained attention and conceptual exploration, though their effectiveness depends heavily on pedagogical integration and purposeful task design

rather than on game mechanics alone (Dereshiwsy, 2017). For creative music education, these insights suggest that OPD should equip teachers with design principles for short, interactive cycles of musical activity, and with strategies for ensuring that multimodal resources function as prompts for participation, not as endpoints of instruction.

In remote early childhood education, the family context becomes a central component of the learning ecology. Home routines, device availability, and adult support shape whether children can participate meaningfully. Research on family–school partnerships indicates that parental engagement is associated with improved learner outcomes and stronger educational relationships, while also noting persistent barriers related to time, language, cultural differences, and socioeconomic inequality (Henderson & Mapp, 2002; Murray, McFarland-Piazza, & Harrison, 2015). Digital communication tools can mitigate some barriers by enabling timely, flexible contact, potentially strengthening collaboration, responsiveness, and continuity (Kraft, 2017; Olmstead, 2013). Recent studies highlight the growing role of messaging applications and mobile communication in facilitating home–school interaction, especially when communication is structured, accessible, and respectful of family capacities (Snell, Wasik, Hindman, & Faria, 2020; Wasserman & Zwebner, 2017). For creative music education in the early years, family partnership is particularly relevant: many musical activities depend on shared participation, everyday household materials, and supportive—but not overly directive—adult involvement. Consequently, OPD that aims to support pedagogical transformation must address communication strategies and realistic partnership models, not only teaching techniques and platform use.

Taken together, the literature suggests that OPD can broaden access to professional learning and support teacher growth, but its impact depends on the extent to which it promotes reflective, collaborative, and practice-oriented engagement. In early childhood creative music education, this requirement is heightened: teachers must preserve the pedagogical integrity of embodied, playful, participatory musical experiences while working within the constraints of digital mediation. Although research exists on effective PD design, online teacher learning, and technology use in ECE, there remains a relative paucity of empirical studies that examine preschool teachers' lived experiences of OPD specifically in creative music education, with an explicit focus on pedagogical transformation—that is, changes in teachers' confidence, professional role, pedagogical flexibility, and capacity to design creative musical activity in mediated contexts. Addressing this gap is essential for informing OPD models that move beyond technical training and support sustainable pedagogical change in early childhood music education.

3. Method

3.1 Research Design

The present study adopted a qualitative-dominant mixed-methods design within an action research framework, aiming to explore preschool teachers' experiences of online

professional development (OPD) in creative music education and the extent to which these experiences contributed to pedagogical transformation. Action research was selected as it enables systematic inquiry into practitioners' own practices through iterative cycles of reflection, action, and evaluation, while simultaneously supporting professional learning and pedagogical change. The study was conducted in Rhodes, Greece, with data collected over a three-month period between 24 November 2024 and 14 February 2025. The design prioritised teachers' lived experiences, perceptions, and self-reported pedagogical changes, while also allowing for the descriptive quantification of selected variables related to training participation and tool use.

3.2 Participants

The research sample consisted of eight ($N = 8$) preschool teachers, all of whom were professionally active during periods of distance or blended education and had participated in online professional development related to music or creative pedagogical practices. Participation was based on purposive sampling, ensuring that all participants had direct and relevant experience of online teaching and training in early childhood contexts. All participants were female, reflecting the gender distribution typical of the Greek preschool education sector. Their ages ranged from 25 to 45 years, and their teaching experience varied between 3 and 20 years. All participants were qualified preschool teachers working in public or private preschool settings and had responsibility for implementing music-related activities with children aged 4–6 years. Participation was voluntary, and informed consent was obtained from all teachers prior to data collection. Anonymity and confidentiality were ensured throughout the research process.

3.3 Context of The Study and Online Professional Development

The OPD experiences examined in this study included structured online seminars, synchronous and asynchronous training sessions, and informal professional learning activities related to creative music education and the pedagogical use of digital tools. These activities were delivered through commonly used platforms such as video conferencing systems, digital learning environments, and shared online repositories. The professional development content addressed: creative and participatory approaches to early childhood music education, the pedagogical use of digital tools for music and movement activities, strategies for maintaining children's engagement and creativity in remote settings, and collaboration with families in digitally mediated learning contexts. Importantly, the OPD was not treated as a uniform intervention but as a set of experiences interpreted and enacted differently by each teacher, in line with action research and teacher agency perspectives.

3.4 Data Collection Instrument

Data were collected using a researcher-designed questionnaire, which included both closed-ended and open-ended questions. This instrument was selected to capture a combination of descriptive data (e.g., frequency of tool use, perceived usefulness of

training) and reflective qualitative data (e.g., perceptions of pedagogical change, challenges, and professional learning outcomes). The questionnaire was structured into four thematic sections:

- Demographic and professional background (age, teaching experience, context of employment).
- Participation in online professional development, including type, duration, and perceived relevance of training.
- Use of digital tools in creative music education, focusing on platforms, resources, and pedagogical strategies.
- Perceived pedagogical impact, including changes in confidence, creativity, flexibility, and role perception as music educators.
- Closed-ended items primarily used Likert-type scales, while open-ended questions invited participants to elaborate on their experiences and reflections in their own words.

3.5 Data Collection Procedure

The questionnaire was administered electronically between November 2024 and February 2025, allowing participants to complete it asynchronously at a time convenient to them. This approach aligned with the digital nature of the research topic and ensured accessibility for all participants. Participants were provided with written instructions and were informed that there were no “correct” or “incorrect” answers, emphasising the reflective and exploratory purpose of the research. The average completion time for the questionnaire was approximately 20–25 minutes.

3.6 Data Analysis

Quantitative data from closed-ended questions were analysed using descriptive statistics, including frequencies, percentages, and mean values, in order to provide an overview of participation patterns, tool usage, and general trends in teachers’ responses. Given the small sample size, no inferential statistical tests were applied; instead, the analysis focused on transparency and clarity of reported patterns.

Qualitative data derived from open-ended questions were analysed using thematic analysis. Responses were read repeatedly to ensure familiarisation, then coded inductively to identify recurring concepts and patterns related to pedagogical transformation, creative practice, and professional learning. Codes were subsequently grouped into broader thematic categories, such as: perceived changes in pedagogical role, creative adaptation of music activities, challenges and constraints of online contexts, and professional confidence and reflective practice. The integration of quantitative and qualitative findings allowed for methodological triangulation, enhancing the credibility and depth of the analysis.

3.7 Ethical Considerations

The research adhered to fundamental ethical principles of educational research. Participation was voluntary, informed consent was obtained, and participants retained the right to withdraw at any stage. No personal identifiers were collected, and all data were stored securely and used exclusively for research purposes. Given the reflective nature of action research, particular care was taken to present participants' responses respectfully and to avoid evaluative or judgmental interpretations of their practices.

4. Results / Findings

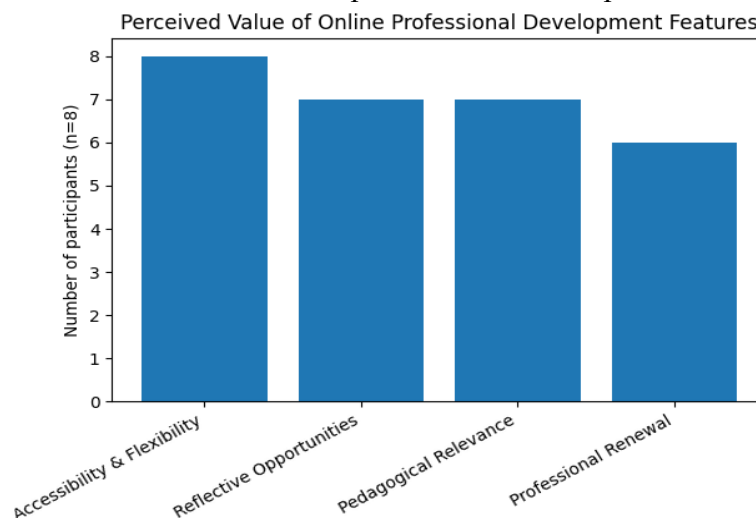
The findings are presented in relation to the research questions and are organised into four thematic sections that capture preschool teachers' experiences of online professional development (OPD), their use of digital tools in creative music education, and perceived processes of pedagogical transformation.

4.1 Preschool Teachers' Experiences of Online Professional Development

Participants reported generally positive experiences of OPD, emphasising its accessibility, flexibility, and relevance to their professional needs. All teachers indicated that online formats enabled them to participate in training activities that would have been difficult to attend in person due to time, geographical, or professional constraints. Asynchronous access to materials and recordings was perceived as particularly valuable, allowing teachers to revisit content and reflect at their own pace. Several participants highlighted that OPD created opportunities for professional renewal and learning continuity, especially in periods marked by rapid pedagogical change. Teachers described online training as a space for exposure to new ideas and practices, rather than solely as a technical introduction to digital platforms. At the same time, some participants noted that the effectiveness of OPD depended heavily on the structure and pedagogical orientation of the training, indicating that sessions focused exclusively on technical issues were less impactful than those linking tools to pedagogical practice. Overall, teachers perceived OPD as a meaningful professional learning experience when it combined practical examples, opportunities for reflection, and relevance to early childhood contexts.

Figure 1 illustrates the frequency with which participants referred to key features of online professional development, based on qualitative coding of questionnaire responses. The figure reflects descriptive trends rather than statistical generalisation.

Figure 1: Perceived value of online professional development features (n = 8)



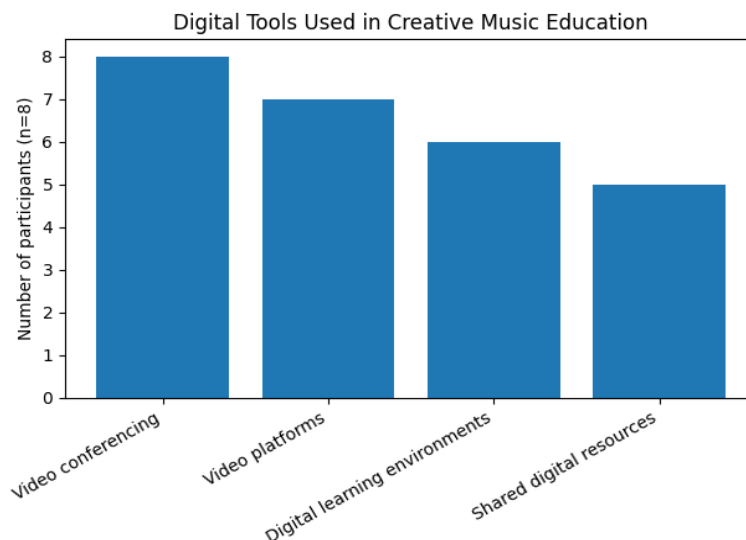
Teachers' positive perceptions of accessibility, flexibility, and pedagogical relevance were consistently reflected across responses. As shown in Figure 1, accessibility and flexibility were referenced by all participants, while reflective opportunities and pedagogical relevance were also prominently highlighted.

4.2 Use of Digital Tools in Creative Music Education

All participants reported using digital tools to support music-related activities during periods of distance or blended learning. Frequently mentioned tools included video conferencing platforms for synchronous interaction, video-sharing platforms for accessing musical material, and digital learning environments for sharing resources and communicating with families. Teachers described using digital tools to support a range of creative music activities, such as singing, rhythm games, movement-based activities, and musical storytelling. Video resources were often used as stimuli or models, while synchronous sessions enabled shared musical experiences, such as group singing or guided movement. Several teachers emphasised that digital tools were not used as replacements for musical activity but as mediating resources that supported engagement and continuity. Despite these positive practices, participants also identified constraints. These included limited opportunities for real-time interaction, technical difficulties, and challenges related to children's sustained attention. Teachers stressed that creative music activities required careful adaptation to the online environment, particularly in terms of duration, structure, and clarity of instructions.

Figure 2 presents the digital tools most frequently reported by participants as supporting creative music activities in early childhood education. Frequencies indicate the number of participants referencing each tool.

Figure 2: Digital tools used in creative music education during online or blended learning (n = 8)



The range of digital tools employed by teachers is summarised in Figure 2, which indicates widespread use of video conferencing platforms and video-based resources to support creative music activities.

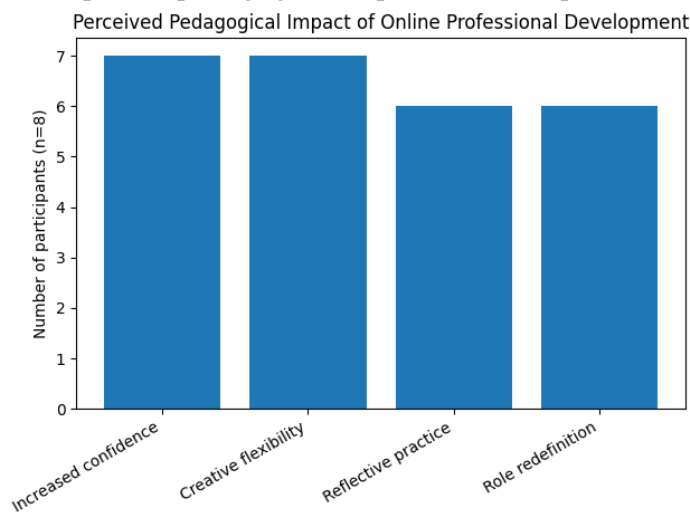
4.3 Perceived Pedagogical Changes and Professional Growth

A central finding of the study concerns teachers' perceptions of pedagogical change following participation in OPD. Most participants reported increased confidence in designing and implementing creative music activities in digitally mediated contexts. Teachers described a shift from initial uncertainty and hesitation towards greater experimentation and flexibility in their pedagogical approaches.

Several participants indicated that OPD encouraged them to rethink their role in music education, moving from a more directive stance towards facilitating children's exploration, expression, and participation. This was reflected in the adoption of more open-ended activities, the use of everyday materials for sound exploration, and greater emphasis on children's responses rather than predefined outcomes. Teachers also reported enhanced reflective practice, noting that engagement with OPD prompted them to evaluate their teaching choices and adapt activities based on children's engagement and feedback. For some participants, this reflective process extended beyond the period of distance education and influenced their current face-to-face practice. These findings suggest that OPD functioned not only as a source of new ideas but also as a catalyst for pedagogical transformation, supporting changes in confidence, creativity, and professional self-perception.

Figure 3 summarises participants' self-reported pedagogical impacts of online professional development, derived from thematic coding of qualitative responses.

Figure 3: Self-reported pedagogical impact of online professional development



Participants' self-reported pedagogical changes are visually summarised in Figure 3, highlighting increased confidence, creative flexibility, and reflective practice as key dimensions of professional growth following engagement in online professional development.

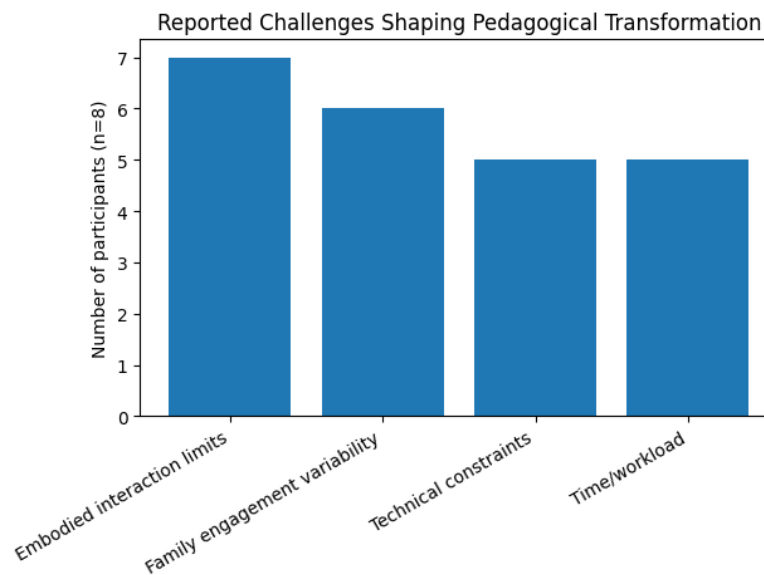
4.4 Challenges and Conditions Shaping Pedagogical Transformation

Despite the generally positive outcomes, participants identified several challenges that shaped their experiences and the extent of pedagogical change. A recurrent issue concerned the limitations of digital environments for early childhood music education, particularly the absence of physical co-presence and embodied interaction. Teachers noted that musical activities relying on movement, shared sound-making, or immediate feedback were difficult to fully replicate online.

Another significant challenge related to collaboration with families. While some teachers reported supportive family involvement, others described uneven participation or difficulties in sustaining communication. These differences influenced children's engagement and the feasibility of certain activities, highlighting the role of contextual factors beyond teachers' control. Participants also referred to disparities in access to devices, internet connectivity, and digital familiarity among families, which constrained implementation. Time constraints and increased workload were further noted as factors limiting experimentation and sustained innovation. Importantly, teachers emphasised that pedagogical transformation was more likely to occur when OPD was practice-oriented, provided concrete examples, and encouraged reflection rather than focusing narrowly on technical tool use. Supportive professional environments and opportunities for peer exchange were also perceived as facilitating change.

Figure 4 depicts the challenges most frequently mentioned by participants as influencing pedagogical transformation in digitally mediated music education.

Figure 4: Reported challenges shaping pedagogical transformation in online music education



As illustrated in Figure 4, limitations related to embodied interaction, family engagement, and technical constraints emerged as the most frequently reported challenges shaping pedagogical transformation.

4.5 Use of Descriptive Visualisations in the Qualitative-Dominant Study

The figures presented in this section constitute descriptive visualisations derived from qualitative coding of participants' responses. Specifically, they depict the frequency with which particular themes, practices, or perceptions were referenced across the dataset ($n = 8$). Their purpose is not to quantify effects or to support statistical inference, but rather to enhance transparency and facilitate interpretation of qualitative patterns within the findings. In line with qualitative-dominant and action research methodologies, these visual representations function as heuristic tools that complement thematic analysis by illustrating the relative prominence of themes, without implying generalisability beyond the specific research context.

5. Discussion

The purpose of the research was to explore how preschool teachers experienced online professional development (OPD) in creative music education and to examine whether and how these experiences contributed to pedagogical transformation rather than mere technical training. The findings suggest that OPD can function as a meaningful catalyst for pedagogical change when it is grounded in reflective, practice-oriented, and creative approaches that resonate with the specificities of early childhood education.

Consistent with previous research, the findings indicate that OPD was valued primarily for its flexibility, accessibility, and continuity of professional learning (Trust et al., 2016; Carrillo & Flores, 2020). However, the present study extends existing literature by demonstrating that teachers did not perceive OPD solely as a mechanism for acquiring

digital skills. Instead, when professional development activities explicitly linked digital tools to pedagogical aims in music education, teachers reported deeper engagement and learning outcomes. This supports Guskey's (2002) argument that effective professional development is not defined by format (online or face-to-face) but by its capacity to influence teachers' beliefs, attitudes, and classroom practices. In line with Day (1999) and Opfer and Pedder (2011), the study highlights that professional learning becomes transformative when it is situated, reflective, and connected to teachers' professional identities and everyday challenges.

A central contribution of this study lies in its focus on pedagogical transformation rather than effectiveness or satisfaction. Teachers' accounts revealed shifts in pedagogical confidence, role perception, and creative practice, particularly in relation to music education. These findings align with research suggesting that music education in early childhood benefits from pedagogies that prioritise exploration, embodiment, and child agency (de Vries, 2013; Burnard, 2012). Teachers reported moving from directive, outcome-oriented approaches towards more open-ended and facilitative roles, allowing children greater freedom in musical expression. This shift reflects broader constructivist and socio-cultural perspectives on learning, where teachers act as mediators of experience rather than transmitters of content (Vygotsky, 1978; Salomon, 1992). Importantly, OPD appears to have supported teachers in reconceptualising creativity not as a fixed ability but as a pedagogical process that can be nurtured even within digital environments.

While the literature often problematises the compatibility of digital environments with creative and embodied learning in early childhood (Edwards, 2013), the findings of this study suggest a more nuanced picture. Teachers demonstrated pedagogical adaptability by using digital tools as mediating resources rather than substitutes for musical experience. This resonates with Kron and Sofos' (2007) view that technologies should function as tools for expression, exploration, and collaboration rather than as passive instructional media. Nevertheless, participants clearly articulated the limitations of digital mediation, particularly the reduced opportunities for embodied interaction, synchronised music-making, and immediate emotional feedback. These constraints echo concerns raised by Evans and Nation (1989) and underscore the irreplaceable value of physical co-presence in early childhood music education. The findings therefore support a complementary rather than substitutional model of digital pedagogy, in which online tools extend and enrich practice without replacing face-to-face musical experiences.

The action research orientation of the study illuminates the role of teacher agency and reflection in shaping professional learning outcomes. Teachers who perceived OPD as an opportunity for reflection and experimentation were more likely to report pedagogical transformation. This aligns with Schön's (1983) concept of the reflective practitioner and with contemporary models of teacher learning that emphasise inquiry, autonomy, and professional judgement (Biesta et al., 2015). At the same time, the findings highlight the influence of contextual factors, including family involvement, access to digital infrastructure, and institutional support. Unequal access to devices and varying

levels of parental engagement constrained the implementation of creative music activities, reinforcing existing concerns about digital inequality in early childhood education (Aguilera & Nightengale-Lee, 2020). These findings suggest that pedagogical transformation cannot be understood in isolation from broader socio-educational conditions.

Taken together, the findings suggest that OPD in creative music education is most effective when it: foregrounds pedagogical purpose rather than technical skill acquisition, provides concrete, practice-based examples relevant to early childhood contexts, encourages reflective practice and peer exchange, and acknowledges the embodied, social, and creative dimensions of music learning. The findings resonate with broader discussions on multimodal pedagogy, which frame digital tools as mediators of meaning rather than instructional ends in themselves (Argyriou & Tapsis, 2025). These implications resonate with international literature calling for professional development models that are collaborative, sustained, and embedded in teachers' professional realities (Darling-Hammond et al., 2017). For music education specifically, OPD should explicitly address creativity, embodiment, and child-centred pedagogy, rather than assuming that digital competence alone leads to pedagogical innovation.

6. Limitations and Directions for Future Research

The research's findings should be interpreted in light of certain limitations. The small, purposive sample limits generalisability, although it is consistent with the exploratory and qualitative nature of action research. Future studies could expand the sample size, incorporate longitudinal designs, or triangulate teachers' self-reports with classroom observations and children's perspectives. Further research is also needed to examine how OPD influences pedagogical transformation over time and across different cultural and institutional contexts. Comparative studies between online, blended, and face-to-face professional development formats in music education would offer valuable insights into the conditions under which transformative learning is most likely to occur.

7. Concluding Remarks

In conclusion, this research contributes to the growing body on online professional development by shifting the focus from training effectiveness to pedagogical transformation. Researchers demonstrate that, when thoughtfully designed, OPD can support preschool teachers in reimagining creative music education, strengthening professional confidence, and developing reflective, child-centred pedagogical practices. Rather than positioning digital technologies as constraints, the findings highlight their potential as mediating tools within a broader pedagogical vision that values creativity, agency, and professional growth.

8. Conclusions

The research set out to examine preschool teachers' experiences of online professional development (OPD) in creative music education and to investigate whether such experiences supported pedagogical transformation rather than mere technical upskilling. The findings demonstrate that OPD can function as a meaningful and transformative professional learning process when it is pedagogically grounded, reflective, and responsive to the specific characteristics of early childhood education. Teachers' experiences revealed that OPD contributed to increased professional confidence, pedagogical flexibility, and a redefinition of their role as facilitators of children's creative musical engagement. Rather than perceiving digital tools as constraints, participants used them as mediating resources to support exploration, expression, and continuity of musical learning, even within the limitations of remote environments. These outcomes suggest that pedagogical transformation is closely linked to teachers' agency, reflective practice, and the alignment of professional development content with authentic classroom realities. At the same time, the study highlights that transformation is neither automatic nor uniform. Contextual factors such as access to digital infrastructure, family engagement, institutional support, and the embodied nature of music learning shape the extent and sustainability of pedagogical change. Consequently, OPD should be conceptualised not as a substitute for face-to-face professional learning, but as a complementary and potentially enriching dimension of teachers' professional trajectories. Overall, the study contributes to international discussions on teacher professional development by foregrounding creativity, pedagogical purpose, and reflective practice in online learning contexts. It underscores the need for professional development models that move beyond technical training and support teachers in critically reimagining their pedagogical practices in creative and meaningful ways.

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Conflict of Interest Statement

The authors declare no conflicts of interest.

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