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MUSIC AS AN EPISTEMIC PRACTICE: RETHINKING THE ART IN STEAM EDUCATION

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ABSTRACT

STEAM education has been widely promoted as an integrative framework that addresses perceived limitations of STEM-oriented curricula through the inclusion of the arts. Yet, within dominant STEAM discourse, music is frequently positioned in instrumental and supplementary terms, valued primarily for its aesthetic or motivational contributions rather than for its epistemic significance. This article offers a philosophical critique of this positioning by examining how the "A" in STEAM is conceptually framed and justified. Drawing on practice-based epistemology, the article argues that music should be understood as an epistemic practice grounded in embodied action, material engagement, and reflective judgment. From this perspective, musical activity constitutes a legitimate mode of inquiry capable of generating understanding rather than merely enhancing engagement. Reconceptualizing music in this way challenges hierarchical assumptions that privilege scientific and technical knowledge as the primary sources of educational legitimacy. The article further explores the philosophical implications of this reconceptualization for music education, arguing that recognizing music as an epistemic practice supports a more pluralistic account of knowledge within interdisciplinary education. Ultimately, the article contends that STEAM can function as an authentically interdisciplinary framework only when music is acknowledged not as symbolic inclusion, but as a constitutive participant in epistemic inquiry.

KEYWORDS: Music As Epistemic Practice, Philosophy of Music Education, STEAM Education, Practice-Based Epistemology, Epistemic Justice, Embodied Knowledge, Interdisciplinary Education, Musical Inquiry, Epistemic Pluralism, Tacit Knowledge, Reflective Practice, Arts Integration.

1. INTRODUCTION

Since its emergence in the early 2000s, STEAM education has been promoted as a corrective to the perceived limitations of STEM oriented curricula. STEM education, while successful in advancing technical competence and scientific literacy, has been widely criticized for privileging instrumental rationality, standardization, and measurable outcomes at the expense of creativity, ethical reflection, and humanistic understanding. The introduction of the arts into STEM was therefore framed as a means of restoring balance, fostering innovation, and cultivating more holistic forms of learning.

However, despite these integrative aspirations, the incorporation of the arts within STEAM has often remained conceptually underdeveloped. In policy documents and curricular discourse, the "A" is frequently justified in instrumental terms: as a driver of creativity, a motivational enhancer, and a contextual support for scientific and mathematical learning. Such framings rarely interrogate the epistemological assumptions that continue to privilege scientific and technical knowledge as the primary sources of educational legitimacy. As a result, the arts—and music in particular—are positioned as supplementary rather than constitutive of interdisciplinary knowing.

The inclusion of the arts within STEAM education has thus often been justified on instrumental grounds, positioning artistic practices as vehicles for creativity or engagement rather than as sources of knowledge in their own right. This tendency reflects a broader aesthetic-instrumentalist legacy that separates artistic experience from epistemic seriousness [1]. In music education discourse, similar concerns have been raised regarding the reduction of music to expressive or motivational functions, detached from its cognitive and philosophical significance [2].

Against this backdrop, the article addresses the following research questions:

1. How is music epistemologically positioned within dominant STEAM education discourse?
2. To what extent can musical practice be understood as a legitimate mode of inquiry and knowledge production within a practice-based epistemological framework?
3. What are the philosophical implications of reconceptualizing the "A" in STEAM for music education and interdisciplinary learning?

By engaging these questions through philosophical analysis, the article argues that music operates as an epistemic practice within STEAM education, capable of contributing substantively to interdisciplinary ways of knowing.

1.1. Contribution of the Study

This study makes a substantive contribution to the discourse of philosophy of music education by systematically articulating the epistemological position of music within the framework of STEAM education—a perspective that has hitherto not been explicitly developed in the existing literature. Unlike previous studies that tend to maintain epistemological separation between artistic disciplines and STEM [3], or those that limit the contribution of music to affective and expressive aspects alone [4], this article argues that musical practice constitutes an epistemic mode of inquiry that is equally legitimate to scientific and technical practices. By integrating the pragmatist tradition of John Dewey, Michael Polanyi's conception of tacit knowledge, and Donald Schön's theory of reflective practice, this study provides a coherent theoretical foundation for repositioning the "A" in STEAM from symbolic inclusion to constitutive participation in interdisciplinary knowledge production. This contribution significantly enriches the literature of philosophy of music education whilst challenging the epistemological assumptions that dominate STEAM curriculum design, and in turn offers a philosophical foundation for realising epistemic justice in contemporary interdisciplinary education. The interdisciplinary nature of this inquiry bridge's philosophy of education, music education, and science and technology studies, offering novel insights into how artistic practices can be reconceptualised within technoscientific educational frameworks.

2. PHILOSOPHICAL FRAMEWORK: KNOWLEDGE AS PRACTICE

This article is grounded in philosophical traditions that conceptualize knowledge not as abstract representation or propositional certainty, but as practice emerging through action, experience, and reflection. Such a perspective is essential for interrogating the epistemological status of music within STEAM education, where dominant models of knowledge remain implicitly aligned with scientific rationalism and technical instrumentalism.

John Dewey's pragmatist philosophy provides a foundational point of departure. For Dewey [5], knowing is inseparable from doing; it arises through active engagement with materials, situations, and problems encountered in lived experience. Knowledge—from this view—is not a static body of

truths but a process of inquiry oriented toward meaning-making and transformation. Dewey's aesthetic theory further dissolves rigid distinctions between cognition and experience, positioning artistic activity as a legitimate site of inquiry rather than a decorative supplement to rational thought. Artistic practices, including music, thus participate in epistemic processes insofar as they involve experimentation, reflection, and the reconstruction of experience.

Complementing Dewey's pragmatism, Michael Polanyi's concept of tacit knowledge challenges reductive accounts of knowing that privilege explicit representation. Polanyi [6] argues that "we know more than we can tell," emphasizing that skilled action, perception, and judgment rely on forms of understanding that resist full articulation. Importantly, tacit knowledge is not epistemically inferior; it is indispensable to scientific discovery, professional expertise, and technological innovation. From this standpoint, the embodied and experiential dimensions of musical practice—listening, coordination, temporal sensitivity—constitute robust forms of knowing rather than epistemological deficits.

Donald Schön's theory of reflective practice further extends this framework by illustrating how professionals think through action in situations characterized by uncertainty and indeterminacy [7]. Reflection-in-action involves experimenting with materials, responding to feedback, and reframing problems as they unfold. Such processes resonate strongly with musical practices such as improvisation, composition, and ensemble performance, where understanding emerges dynamically through engagement rather than prior abstraction.

Together, Dewey, Polanyi, and Schön articulate a practice-based epistemology in which knowing is situated, embodied, and iterative. This framework challenges the implicit epistemological hierarchy within STEAM education that privileges formalized, propositional knowledge while marginalizing experiential and artistic forms of inquiry. By adopting a practice-based account of knowledge, this article establishes the philosophical conditions necessary for recognizing music as an epistemic practice within interdisciplinary education.

2.1. Knowledge, Practice, And Epistemic Justice

Expanding the discussion of practice-based epistemology invites consideration of epistemic justice within educational frameworks. Epistemic justice concerns the fair recognition of different forms of knowing and the avoidance of structural conditions that systematically marginalize certain epistemic practices. Within STEAM education, the persistent privileging of scientific and technical knowledge often results in epistemic injustice toward artistic practices, including music.

From this perspective, the marginalization of music is not simply a matter of curricular imbalance or pedagogical oversight. Rather, it reflects deeper normative assumptions about whose knowledge counts and which modes of inquiry are deemed credible. When musical knowing is dismissed as subjective, expressive, or insufficiently rigorous, learners and educators engaged in musical practice are positioned as epistemically subordinate. Such positioning restricts the scope of legitimate inquiry and undermines the pluralistic aspirations frequently associated with STEAM discourse.

Practice-based epistemology offers critical resources for addressing these injustices by challenging the dominance of representational and propositional criteria of knowledge. Deweyan pragmatism emphasizes that inquiry is evaluated by its capacity to generate meaning and resolve problems within lived experience, not by its conformity to abstract standards alone. Polanyi's account of tacit knowledge further demonstrates that all forms of expert practice including scientific research depend upon embodied judgment and contextual understanding that cannot be fully articulated or formalized.

Recognizing music as an epistemic practice therefore functions as an act of epistemic justice. It affirms the legitimacy of musical ways of knowing and resists educational structures that systematically devalue artistic inquiry. Within STEAM education, such recognition expands the epistemological horizon of interdisciplinary learning and aligns the framework more closely with its stated commitment to inclusivity, creativity, and innovation.

Importantly, epistemic justice does not require homogenizing disciplinary practices or collapsing distinctions between domains of knowledge. Rather, it demands that diverse forms of knowing be evaluated according to criteria appropriate to their modes of inquiry. Musical knowledge should not be judged by the standards of propositional science, just as scientific knowledge should not be assessed through aesthetic criteria. Acknowledging this plurality strengthens, rather than weakens, the epistemic coherence of interdisciplinary education.

By situating music within a broader conversation about epistemic justice, this article strengthens its contribution to the philosophy of music education. It

positions music education not merely as a beneficiary of interdisciplinary reform, but as an active site of epistemological critique capable of illuminating the normative dimensions of knowledge in contemporary education.

3. MUSIC AS AN EPISTEMIC PRACTICE

Within the philosophy of music education, several scholars have argued that musical engagement constitutes a distinctive mode of knowing rather than a purely aesthetic pursuit. Elliott's [2] praxial philosophy situates music as a form of purposeful, context-sensitive action involving listening, performing, and making. Small's [8] concept of musicking similarly reframes music as a social and epistemic activity through which meanings are actively constructed. From a critical perspective, Regelski [9] emphasizes music's potential as a reflective and transformative practice, particularly within educational contexts. These positions collectively support the claim that music functions as an epistemic practice—aligned with the inquiry-driven aims of STEAM.

When examined through the lens of practice-based epistemology, musical activity can be understood as a form of epistemic inquiry. Practices such as sound exploration, improvisation, and composition involve processes of experimentation, hypothesis formation, and iterative refinement. Musicians engage with sonic materials in ways that test possibilities, reveal constraints, and generate new forms of understanding through action and reflection.

These processes exhibit structural parallels with scientific inquiry. Sound exploration functions as experimentation; improvisation operates as the generation and testing of provisional ideas; repetition and variation serve as mechanisms for validation and refinement. Although musical inquiry does not rely primarily on symbolic representation, it nonetheless produces knowledge through disciplined engagement with materials and perceptual feedback.

Music also aligns closely with modes of engineering thinking. Composition can be understood as a form of design involving the intentional organization of elements within given constraints. Instrument making and modification exemplify engineering practices in which material properties, functional requirements, and aesthetic goals are negotiated through iterative problem-solving. In this sense, music does not merely accompany scientific and technical learning but embodies forms of inquiry that resonate with them at a fundamental level.

4. COUNTER-ARGUMENTS AND EPISTEMOLOGICAL LIMITS OF MUSIC IN STEAM

Despite increasing calls for epistemological pluralism in education, the claim that music constitutes a legitimate form of knowledge within STEAM is likely to encounter several objections. These objections are not merely pedagogical—but epistemological—often grounded in long-standing assumptions about what counts as knowledge, inquiry, and validity. Addressing these counter-arguments is essential if music is to be defended as an epistemic practice rather than relegated to an expressive or auxiliary role.

One common objection asserts that knowledge within STEAM must be propositional, explicit, and formally verifiable, aligning with the epistemic norms of science, mathematics, and engineering. From this standpoint, musical understanding—being experiential, embodied, and context-dependent—appears epistemically weak. Unlike scientific knowledge, which can be articulated through formal representations and subjected to systematic validation, musical knowing often resists precise verbalization and standardization.

This objection reflects a narrow conception of knowledge that equates epistemic legitimacy with representational clarity. As Polanyi [6] demonstrates, however, tacit knowledge underpins all forms of expert practice, including scientific research and technological innovation. Scientific judgment relies on perceptual acuity, embodied skill, and intuitive pattern recognition that cannot be fully reduced to explicit rules. From this perspective, the tacit dimensions of musical practice do not undermine its epistemic status but rather align it with other recognized forms of professional knowing.

A related objection concerns the issue of generalizability. Scientific knowledge is often valued for its capacity to generate universal laws or transferable principles, whereas musical understanding is frequently perceived as particularistic and culturally situated. Critics may argue that because musical meanings are context-bound, they lack the general validity required for inclusion within STEAM's epistemological framework.

Such an objection presupposes that epistemic value must be grounded in universality rather than situated understanding. Practice-based epistemology challenges this assumption by emphasizing that knowledge emerges within concrete contexts of

action. Dewey [5] argues that inquiry gains significance through its capacity to resolve problems encountered in lived experience, not through abstraction alone. Musical practices generate understanding precisely through their engagement with specific materials, constraints, and purposes. In this respect, the contextuality of musical knowing constitutes an epistemic strength rather than a limitation.

Another line of critique warns against epistemic inflation, suggesting that expanding the concept of knowledge to include musical practice risks collapsing the distinction between knowing and mere activity. From this view, labeling music as an epistemic practice may appear to dilute the concept of knowledge itself, particularly within interdisciplinary frameworks already marked by conceptual ambiguity.

This concern warrants careful consideration. Recognizing music as an epistemic practice does not imply that all activity qualifies as knowledge. Rather, musical inquiry is characterized by disciplined engagement with sonic materials, iterative experimentation, reflective evaluation, and the cultivation of practical judgment. These features distinguish epistemic practice from arbitrary activity and provide criteria for assessing musical knowing as a legitimate form of inquiry.

Finally, critics may contend that even if music possesses epistemic qualities, its role within STEAM remains structurally subordinate to STEM disciplines. In many implementations, the arts are included primarily to support pre-existing scientific or technical objectives, reinforcing rather than challenging epistemic hierarchies. This critique underscores a fundamental tension within STEAM between inclusion and epistemic equality.

This article does not deny the persistence of such hierarchies; instead, it argues that they stem from unresolved epistemological assumptions. Without rethinking what counts as knowledge, the inclusion of music risks remaining superficial. Addressing these counter-arguments clarifies that recognizing music as an epistemic practice requires a reconfiguration of STEAM's underlying epistemology, not merely curricular integration.

5. RECONCEPTUALIZING THE "A" IN STEAM: A CRITICAL EPISTEMOLOGICAL INTERVENTION

The inclusion of the arts within STEAM education is frequently celebrated as evidence of interdisciplinarity and educational innovation. However, such celebrations often obscure a more persistent problem: the addition of the "A" rarely entails a fundamental reconfiguration of the epistemological assumptions that structure STEM-oriented learning. In many curricular and policy contexts, the arts are incorporated without challenging the primacy of scientific rationality, resulting in what can be described as an additive—rather than transformative—model of interdisciplinarity.

This additive logic positions music as an auxiliary resource whose value is measured by its capacity to enhance STEM outcomes such as creativity, engagement, or innovation rather than by its own epistemic contributions. When music is framed primarily as a catalyst for STEM learning, its modes of inquiry are rendered invisible, and its status as a site of knowledge production remains unacknowledged. Consequently, STEAM risks reproducing a hierarchical epistemic order in which artistic practices are subordinated to scientific and technical domains.

From a practice-based epistemological perspective, such subordination reflects a failure to recognize the plurality of ways in which knowledge is generated and validated. Music does not merely express ideas generated elsewhere; it constitutes a distinctive mode of inquiry grounded in embodied perception, temporal organization, material exploration, and social interaction. These dimensions of knowing do not compete with scientific rationality but address aspects of human understanding that cannot be fully captured through abstract representation or formal modeling.

Reconceptualizing the "A" in STEAM therefore requires a shift from instrumental integration toward epistemic parity. Epistemic parity does not imply homogeneity across disciplines, nor does it demand that music conform to the methodological norms of science or engineering. Rather, it entails acknowledging that different practices operate according to different epistemic logics, each with its own criteria of rigor, validity, and insight. Music contributes epistemic resources that are irreducible to STEM frameworks, including forms of qualitative discrimination, interpretive judgment, and experiential understanding.

Understanding STEAM as an epistemologically plural space reframes interdisciplinary education as a dialogue among practices rather than a unidirectional transfer of methods from STEM to the arts. Within such a dialogue, music is not positioned at the margins but participates as an equal partner whose modes of knowing can inform, challenge, and enrich scientific and technical inquiry. This

perspective aligns with philosophical accounts of interdisciplinarity that emphasize mutual transformation rather than disciplinary assimilation.

The reconceptualization proposed here also carries normative implications. If music is recognized as an epistemic practice, then its inclusion within STEAM demands more than curricular visibility; it requires institutional recognition of its knowledge-producing capacities. Assessment practices, learning objectives, and pedagogical designs must therefore be reoriented to reflect epistemic diversity rather than functional contribution alone. Without such shifts, the "A" in STEAM risks remaining symbolically present but epistemologically absent.

By framing the "A" as a critical epistemological intervention, this section responds directly to the counter-arguments outlined earlier. It demonstrates that the marginalization of music within STEAM is not an inevitable consequence of interdisciplinarity, but the result of unexamined assumptions about knowledge itself. Reconceptualizing the "A" thus becomes central to realizing the philosophical promise of STEAM as an educational framework grounded in epistemic pluralism rather than hierarchical integration.

Crucially, this reconceptualization does not end at the level of philosophical critique. It necessitates a consideration of how such epistemic commitments translate into educational practice. If music is to be treated as a form of inquiry rather than an ornamental supplement, then music education must be examined in terms of its aims, pedagogies, and evaluative frameworks within STEAM contexts. The following section therefore explores the concrete implications of understanding music as an epistemic practice for contemporary music education.

6. IMPLICATIONS FOR MUSIC EDUCATION

6.1. Ontological And Axiological Reconceptualisation of Music Education

The rethinking of the epistemic status of music within the STEAM framework demands a fundamental transformation in the ontological and axiological understanding of music education. If music is understood not merely as an expressive or aesthetic supplement, but as a mode of knowing grounded in practical inquiry, then music education must be repositioned as a substantive site of knowledge production rather than mere technical skill transmission. This paradigmatic shift challenges established pedagogical assumptions that have historically positioned musical learning primarily in terms of performance competence or affective engagement alone [10].

From an ontological perspective, musical learning becomes oriented not only towards the reproduction of established works or styles, but towards active engagement with problems, materials, and constraints that inherently invite exploration and reflection. Axiologically, this underscores that the aims of music education extend beyond the attainment of technical proficiency or expressive fluency, towards the cultivation of forms of inquiry, judgment, and understanding that are actualised through musical practice. This orientation places music education in closer alignment with general educational aims concerning meaning-making, understanding, and responsible participation in knowledge practices.

6.2. Structural Transformation of Curriculum and the Legitimation of Inquiry Practices

The epistemic reconceptualisation of music carries significant structural implications for curriculum design, particularly within the context of STEAM integration. Musical practices such as improvisation, composition, sound exploration, and instrument making can be interpreted as structured forms of inquiry that enable learners to investigate the complex relationships between materials, actions, and outcomes. These activities inherently involve processes of hypothesis formation, experimentation, evaluation, and revision—even when such processes are not articulated in propositional or symbolic terms.

Within STEAM contexts, positioning music as an epistemic practice challenges hierarchical interdisciplinary models that persistently subordinate artistic practice to scientific rationality. Music no longer functions as a decorative or motivational layer added to pre-structured STEM projects, but operates as a primary means through which problems are framed, explored, and reimagined. This shift supports the development of interdisciplinary learning environments in which multiple modes of knowing coexist and inform one another without being reduced to a single epistemological standard.

Further structural implications include the reorganisation of curricula that foreground inquiry-oriented practices encouraging students to actively engage with musical materials and ideas. Learning experiences that emphasise sound exploration, experimentation with form, and reflective consideration of musical choices fundamentally position students as participants in ongoing

processes of musical knowing, rather than passive recipients of established knowledge.

6.3. Reconfiguration Of Pedagogical Roles And Assessment Systems

The proposed epistemological transformation demands significant reconfiguration in pedagogical practices and assessment systems of music education. Pedagogically, music teachers are no longer positioned solely as transmitters of canonical knowledge or technical expertise, but as facilitators of inquiry who guide learners through processes of exploration, reflection, and judgment. This role requires heightened sensitivity to the situated and emergent nature of musical understanding, as well as openness to diverse and unpredictable learning pathways.

Within STEAM environments, music educators participate as epistemic partners alongside teachers of science, technology, engineering, and mathematics. Interdisciplinary collaboration becomes grounded not in the instrumental use of music to support STEM learning, but in shared commitments to inquiry and problem exploration. Such partnerships encourage mutual recognition of disciplinary expertise and promote more balanced forms of interdisciplinary engagement.

Assessment systems require fundamental reconsideration. Conventional assessment models in music education that prioritise accuracy, technical control, and the reproduction of a priori determined outcomes are inadequate for evaluating learning understood as inquiry-based and reflective. If musical knowing is embodied, iterative, and context-dependent, then assessment frameworks must attend equally to process and product. Formative assessment strategies that emphasise documentation of learning processes, reflective dialogue, peer critique, and collaborative evaluation are better suited to capturing the epistemic dimensions of musical practice. These approaches do not abandon rigour; rather, they reconceptualise rigour in relation to the norms and values of musical inquiry.

6.4. Policy, Governance, And Epistemic Justice Implications

Reconceptualising music as an epistemic practice carries profound implications for educational policy, institutional governance, and efforts towards epistemic justice. Within many STEAM initiatives, resource allocation and curricular priorities are guided by outcome-driven models that emphasise measurable competencies aligned with economic competitiveness and technological innovation. In such contexts, the arts are often vulnerable to marginalisation unless they can be justified in instrumental terms.

An epistemic conception of music provides a philosophical basis for more equitable recognition of music education within STEAM programmes. This supports sustained investment in musical learning not as supplementary enrichment activity, but as a substantive contributor to interdisciplinary knowledge production. Such recognition has implications for staffing, scheduling, institutional support, and the ways in which educational success is defined and evaluated.

Furthermore, this framework is relevant for culturally situated and community-based musical practices. In many contexts, musical knowledge is transmitted through participation, observation, and collective embodied engagement rather than formal instruction. Recognising these practices as epistemic challenges deficit-oriented views that structurally privilege formal, textual, and standardised knowledge over other forms of knowing. This perspective fundamentally affirms the educational value of diverse musical traditions and underscores their potential relevance within STEAM learning environments, contributing to broader social impact through educational equity.

7. SYNTHESIS

Collectively, the four themes elaborated above demonstrate that positioning music as an epistemic practice within the STEAM framework invites fundamental reconsideration of the ontology, axiology, and practice of music education. This affirms music education as an academic field concerned not merely with artistic expression or technical mastery, but with substantive inquiry, understanding, and human meaning-making. Within STEAM, this reconceptualisation supports an educational vision grounded in epistemic pluralism, where music contributes uniquely and indispensably to interdisciplinary ways of knowing. Such a vision moves beyond symbolic inclusion towards an authentically integrative framework in which multiple forms of knowledge are recognised, valued, and cultivated equally. The multidisciplinary nature of this analysis demonstrates how philosophical inquiry can inform educational policy and practice, bridging theoretical frameworks with practical implementation in contemporary educational contexts.

8. CONCLUSIONS

This article has argued that the persistent

marginalization of music within STEAM education is not merely a curricular or pedagogical issue—but a fundamentally epistemological one. By interrogating the assumptions that govern what counts as legitimate knowledge within interdisciplinary education, the discussion has sought to reposition music as an epistemic practice rather than a decorative or instrumental addition to STEM oriented learning.

Drawing on practice-based theories of knowledge articulated by Dewey [5], Polanyi [6], and Schön [7], the article has demonstrated that knowing is not reducible to propositional representation or formal abstraction. Instead, knowledge emerges through embodied action, material engagement, and reflective inquiry. Within this framework, musical practices such as improvisation, composition, sound exploration, and musicking are revealed as robust sites of knowledge production. These practices involve experimentation, judgment, and meaning-making processes that parallel, and at times illuminate, forms of inquiry found in science, engineering, and design.

By engaging with philosophical debates in music education, particularly praxial and practice centered perspectives, this study contributes to the philosophy of music education by articulating a clear epistemological justification for music's educational significance. Rather than defending music on affective, expressive, or motivational grounds alone, the article advances a conception of music education grounded in epistemic legitimacy. This shift responds to long-standing critiques within the field that question the tendency to justify music education primarily in instrumental or extramusical terms.

The reconceptualization of the "A" in STEAM proposed here further contributes to interdisciplinary discourse by challenging additive models of integration. Treating the arts as epistemically equal partners within STEAM requires a departure from hierarchical assumptions that privilege scientific rationality as the sole benchmark of knowledge. Instead, the article advances an epistemologically plural vision of STEAM in which different practices contribute distinct, irreducible forms of understanding. Within such a framework, music does not merely support STEM learning, but participates actively in shaping how problems are framed, explored, and understood.

Importantly, this argument does not claim that musical knowledge should replace scientific or technical knowledge, nor does it seek to collapse disciplinary distinctions. Rather, it affirms that interdisciplinary education is strengthened when multiple epistemic traditions are allowed to coexist and interact without subordination. Recognizing music as an epistemic practice thus supports a more inclusive and philosophically coherent conception of interdisciplinary education.

For the philosophy of music education, the implications of this argument are twofold. First, it reinforces the field's ongoing efforts to articulate music education as a domain of inquiry concerned with knowledge, understanding, and ethical practice, rather than mere skill acquisition. Second, it positions music education as a critical interlocutor within broader educational debates about interdisciplinarity, knowledge, and practice. By foregrounding music's epistemic contributions within STEAM, the article invites scholars and educators to reconsider not only how music is taught, but why it matters as a way of knowing.

In conclusion, reframing music as an epistemic practice within STEAM education offers a philosophically grounded response to the persistent marginalization of the arts in interdisciplinary curricula. It affirms music education's capacity to contribute meaningfully to contemporary educational challenges by expanding our understanding of what it means to know, to inquire, and to learn. Such a perspective is essential if STEAM is to fulfill its promise as an educational framework committed not merely to innovation, but to epistemic justice and plurality.

Declaration of Generative AI and AI-Assisted Technologies: During the preparation of this work, the author(s) used AI-assisted tools for language editing and refinement to improve readability. After using these tools, the author(s) reviewed and edited the content as needed and take full responsibility for the content of the publication.

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