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Development of the SWARA (Stimulus, Wondering, Active, Reflective, and Applicative) Music Learning Model in Elementary Education: A Systematic Literature Review

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ABSTRACT

This study aims to develop a conceptual music learning model named SWARA (Stimulus, Wondering, Active, Reflective, and Applicative) based on deep learning principles and local cultural values through a systematic literature review (SLR). The review followed the PRISMA 2020 protocol by analyzing peer-reviewed articles indexed in Scopus and SINTA databases published between 2020 and 2025. Forty-eight relevant studies were selected through rigorous inclusion and exclusion criteria and further appraised using the Joanna Briggs Institute (JBI) critical appraisal tool. Thematic analysis revealed four dominant themes: (1) the role of deep learning in music education, (2) the integration of local cultural values, (3) project-based and collaborative music learning, and (4) the use of digital technology to enhance musical experiences. Based on these findings, the SWARA model is proposed as an innovative learning framework that integrates deep inquiry, local cultural values, collaborative creation, and digital augmentation. The model is expected to support meaningful, reflective, and culturally responsive music learning in elementary education. This study contributes theoretically to the development of contemporary music pedagogy and practically by offering a structured model for deep learning-oriented music instruction.

Keywords: Music Education; SWARA Model; Deep Learning; Local Wisdom; Elementary School

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1. INTRODUCTION

Music education in primary schools is widely recognised as a multidimensional learning domain that contributes to children's cognitive, affective, psychomotor, social, and moral development. Engagement with music not only strengthens performance skills but also supports emotional expression, imagination, problem-solving ability, teamwork, self-regulation, and identity formation (Hallam, 2021; Li & Tu, 2024) These learning outcomes position music education as an important pedagogical medium for shaping holistic learners, especially during the foundational stages of schooling. For countries with strong cultural diversity such as Indonesia, music learning additionally becomes an instrument for transferring cultural heritage, maintaining indigenous knowledge, and cultivating values such as respect, cooperation, and spirituality (Desyandri & Ardipal, 2022; Ghavifekr et al., 2022).

Nevertheless, despite its strategic value, music learning practices in many primary schools tend to remain conventional. Empirical studies consistently report the dominance of teacher-centred learning, product-driven assessment, and a performance orientation that privileges technical precision over meaningful musical understanding (Lee, 2021; Biasutti, 2021). In such contexts, instructional activities are largely based on repetition, imitation, and memorisation, with minimal opportunities for students to explore musical context, cultural narratives, emotional qualities, or personal interpretation (Gulikers et al., 2020) . This results in surface learning, where music becomes an isolated technical skill rather than a medium for creativity, thinking, reflection, and cultural connection.

In contrast, the contemporary paradigm of deep learning highlights the need for educational practices that enable students to construct meaning, develop higher-order cognitive processes, transfer knowledge to real situations, and engage in sustained inquiry (Dillon, 2023; OECD, 2021; Hattie & Timperley, 2020). In music education, deep learning implies that students should function not only as performers but also as listeners, interpreters, creators, and cultural participants who understand the social, historical, and emotional dimensions of music. Learning becomes transformative when students are encouraged to ask questions about the purpose of music, the cultural values it conveys, and its relevance to their lived experiences.

Project-Based Learning (PjBL) offers strong pedagogical potential to operationalise deep learning in music classrooms. Through authentic, collaborative projects—such as ensemble performance, composition, sound exploration, cultural ethnography, and digital production—students take greater ownership of learning, develop metacognitive awareness, and engage in sustained creative and problem-solving processes (Kokotsaki et al., 2022; Biasutti, 2021; Kurniawan, 2023). Additionally, culturally responsive pedagogy highlights that music learning becomes more meaningful when grounded in students' cultural backgrounds and lived experiences (Gay, 2021;Dammers, 2020; Putra & Desyandri, 2023). Integrating traditional music, indigenous instruments, and local musical practices enhances motivation and strengthens cultural identity, while building respect for diversity and community values.

At the same time, rapid technological development has reshaped the landscape of music education. The integration of digital tools—such as notation software, digital audio workstations, virtual ensembles, and interactive music apps—has been shown to enhance student motivation, creativity, collaboration, and multimodal learning when aligned with pedagogical goals (Brinkman, 2020;Barrett, 2020; Tu et al., 2025). For primary schools in particular, technology can expand access to musical exploration and empower children to produce and share musical ideas beyond the limitations of traditional classroom resources.

Although deep learning, PjBL, cultural responsiveness, and digital integration have each been shown to contribute significantly to high-quality music education, research shows that these four dimensions are typically explored in isolation. Numerous studies emphasise cultural teaching without digital integration; others focus on PjBL without deep reflection; while many digital-music studies overlook cultural values or meaning-making. As a result, teachers lack a unified model capable of guiding music learning that is inquiry-driven, culturally meaningful, collaborative, creative, and technologically enriched. This fragmentation represents a clear theoretical and practical gap in current music pedagogy literature.

Responding to this gap, the present study develops the SWARA (Stimulus, Wondering, Active, Reflective, Applicative) Music Learning Model, a conceptual framework derived from a systematic synthesis of recent research. The model is intended to support deep, reflective, and culturally rooted music learning while promoting creativity, collaboration, critical thinking, and digital fluency. Through the five sequential stages of SWARA, students are guided from initial sensory engagement and curiosity to exploration, interpretation, reflection, and authentic application of musical knowledge. The model aligns not only with global pedagogical trends but also with Indonesia's educational direction, which emphasises student-centred learning, 21st-century competencies, and the integration of cultural values in the Merdeka Curriculum.

Although the literature consistently highlights the contributions of deep learning, project-based learning, cultural responsiveness, and digital music integration, these four dimensions have not yet been synthesised into a unified pedagogical model specifically designed for primary school music education. Current studies tend to adopt a fragmented scope. Research on culturally grounded music learning largely focuses on character building and identity formation, but rarely incorporates structured reflective inquiry or digital enhancement (Desyandri & Ardipal, 2022; Bell, 2020; Putra & Desyandri, 2023). Digital music learning studies show strong potential for creativity and multimodal engagement, but often overlook cultural values and meaning-making processes goals (Brinkman, 2020;Barrett, 2020; Tu et al., 2025) Meanwhile, project-based music learning is proven to foster creativity and collaboration, yet is frequently implemented without systematic metacognitive reflection and cultural contextualisation (Biasutti, 2021 & Kim, 2024 ; Kokotsaki et al., 2022; Kurniawan, 2023) Studies on deep learning in

music tend to remain conceptual or focus on upper-grade or tertiary contexts, offering limited operational guidance for primary school teachers (Chen & Zhang, 2024) . Consequently, there is no pedagogical model that positions students simultaneously as creative musicians, cultural actors, reflective thinkers, and digitally empowered learners through a coherent classroom learning cycle.

The novelty of this study lies in the development of the SWARA (Stimulus, Wondering, Active, Reflective, Applicative) Music Learning Model, which systematically integrates deep inquiry, local cultural values, project-based learning, and digital augmentation into a single comprehensive pedagogical framework. Unlike prior approaches that address these dimensions separately, SWARA provides five sequential learning phases that guide students from sensory exploration to cultural questioning, hands-on experimentation, reflective meaning-making, and authentic application through performance, production, and community-based musical projects (Biasutti, 2021; Gay, 2021; Ladson-Billings, 2021; Li & Tu, 2024)The model is intentionally tailored to the developmental characteristics of primary school learners and aligns with current educational reforms advocating student-centred learning, cultural responsiveness, 21st-century competencies, and digital fluency—particularly within the Merdeka Curriculum in the Indonesian context (OECD, 2021;Dewi & Ananda, 2025; (Putra & Desyandri, 2023)). Accordingly, this study offers both theoretical advancement to contemporary music pedagogy and practical guidance for teachers to design meaningful and culturally grounded music learning in primary education.

2. METHOD

This study employed a Systematic Literature Review (SLR) to synthesise recent empirical and conceptual findings on deep learning-oriented music pedagogy in primary schools. The review followed the PRISMA 2020 reporting guidelines to ensure transparency and replicability in the procedures of article identification, screening, eligibility assessment, and final selection (Page et al., 2021). The SLR approach was chosen because it enables structured evidence synthesis and theoretical mapping of pedagogical trends and gaps across diverse educational contexts (Lasauskiene & Rauduvaite, 2017).

2.1. Search Strategy

A multi-database search was conducted across Scopus, Web of Science, ERIC, Google Scholar, and Garuda (SINTA) to ensure global and regional coverage. Boolean combinations were used to retrieve studies focusing on the integration of deep learning, project-based learning, cultural values, and digital technology in music education:

"music education" AND "deep learning"
"project-based learning" AND "music"
"culturally responsive teaching" AND "music"
"local culture" AND "music learning"
"elementary school" OR "primary school"

The search was limited to 2020–2025 to capture emerging trends in post-pandemic educational reform and digital transformation in arts education (OECD, 2021; Duffy & Healey, 2023). Only peer-reviewed journal articles written in English or Indonesian were included to ensure academic rigor.

2.2. Inclusion and Exclusion Criteria

Eligibility criteria were formulated following PRISMA principles and the PICoS framework (Population–Interest–Context–Study type). The criteria are summarised below:

Table 1. Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
Focus on primary/elementary school context	Studies limited to secondary or tertiary levels
Music education with deep learning, PjBL, cultural values, or digital technology	Music studies without educational context
Empirical or conceptual peer-reviewed research	Conference abstracts without full text
Published 2020–2025	Duplicate publications

2.3. Study Selection and Quality Appraisal

The search generated 1,246 initial records. After duplicate removal, 1,008 articles proceeded to title/abstract screening, and 143 advanced to full-text eligibility assessment. Quality appraisal of the remaining studies employed the Joanna Briggs Institute (JBI) Critical Appraisal Tools, covering clarity of research objectives, alignment of methodology and analysis, contextual relevance, and reporting transparency (Lasauskiene & Rauduvaite, 2017). Studies not meeting minimum credibility and methodological criteria were excluded, resulting in 48 final articles for synthesis.

2.4. Data Extrction

Data extraction was carried out using a structured coding matrix that captured the following elements from the selected studies: bibliographic data; educational setting and sample profile; instructional design or intervention; cultural integration elements; technological components; learning outcomes (cognitive, social, affective, cultural, creative); challenges and opportunities reported by authors. This coding procedure supports systematic comparison and pattern recognition across interdisciplinary studies (Kemendikbudristek, 2023)

2.5. Data Analysis

A thematic synthesis approach was employed to identify recurring conceptual patterns and pedagogical principles. The analysis involved three iterative cycles: open coding of extracted data; categorisation of codes into subthemes; and synthesis of subthemes into overarching themes. This approach allows data-driven identification of latent pedagogical structures supporting meaningful music learning, including deep inquiry, cultural contextualisation, collaborative creation, and digital augmentation (Biasutti, 2021; Kurniawan, 2023; Tu et al., 2025). The thematic synthesis then served as the empirical basis for constructing the SWARA conceptual model.

2.6. Research Rigor and Validity

To maintain review validity and reliability: search and screening procedures were performed by two independent reviewers; inter-rater agreement was calculated during full-text screening; and discrepancies were settled through consensus meetings. This triangulation strategy reinforces the credibility and consistency of evidence synthesis in SLR-based educational research (Aromataris & Munn, 2020; Page et al., 2021).

3. RESULTS AND DISCUSSION

The systematic screening of literature identified 48 eligible studies published between 2020 and 2025 that examined music education in primary school settings through the lenses of deep learning, cultural values, project-based learning, and digital technology. Thematic synthesis revealed four dominant and interrelated pedagogical dimensions that shape contemporary music learning. These include: deep learning and reflective musical inquiry; integration of local cultural values; project-based and collaborative musical creation; and digital augmentation in music learning.

The analysis highlighted an increasing global trend toward pedagogical innovation in music education after 2022, driven partly by post-pandemic curriculum reforms and the rise of digital learning environments. However, thematic patterns indicated that innovation in music learning is uneven across regions, with the most developed integrative models emerging from schools with stronger cultural and technological ecosystems.

3.1. Distribution of Themes in the Selected Studies

The distribution of research themes among the 48 included articles is summarised in Table 2.

Table 2. Thematic Distribution of Research Focus in Selected Studies (2020–2025)

Theme	Number of Studies (n = 48)	Percentage	Main Indicators
Deep learning in music education	14	29.2%	Critical listening, meaning-making, metacognition, interpretation, self-regulation
Local cultural values	12	25.0%	Traditional repertoire, cultural identity, value transmission, community-based learning
Project-Based Learning in music	13	27.1%	Ensemble projects, composition, cultural documentation, creative collaboration
Digital augmentation in music learning	9	18.7%	Music software, DAWs, virtual ensembles, digital multimedia for creative output

Thematic synthesis indicates that while deep learning and PjBL appear most frequently, there is a recent surge in research combining cultural values with digital music integration (Hidayati & Prabowo, 2025; Duffy & Healey, 2023; Tu et al., 2025), demonstrating a shift toward hybrid learning experiences.

3.2. Trends in Publication Over Time

Analysis of publication frequency indicates a continuous upward trajectory from 2020 to 2025, with the highest number of studies appearing after 2022, coinciding with global efforts to rebuild and modernise school learning after the COVID-19 era.

Table 3. Number of articles published each year

Year	Publications
2020	5
2021	8
2022	9
2023	11
2024	10
2025	5

3.3. Pedagogical Patterns Supporting the SWARA Model

Across the 48 studies, four pedagogical pillars repeatedly emerged as drivers of meaningful music learning:

Table 4. Pedagogical Pillar and Evidence from Studies

Pedagogical Pillar	Evidence from Studies
Deep Inquiry	Supports interpretation, analysis, reflection, and meaning-making in musical tasks
Local Culture Value	Enhances student motivation, identity affirmation, and social learning
Collaborative Creation	Strengthens peer learning, agency, creativity, and problem-solving
Digital Augmentation	Expands access to musical tools, multimodal expression, and creative production

These pillars align directly with the conceptual foundations of the SWARA Music Learning Model, with each SWARA phase corresponding to one or more of the pillars:

Table 5. The Conceptual Foundations of the SWARA

SWARA Phase	Pedagogical Pillar Alignment
Stimulus	Deep Inquiry; Cultural Value
Wondering	Deep Inquiry; Cultural Context Questioning
Active	Collaborative Creation; Hands-on Musical Exploration
Reflective	Metacognition; Identity and Value Internalisation
Applicative	Authentic Performance / Digital or Community-Based Production

3.4. SWARA Music Learning Model Phases (Primary School Music Education Context)

3.4.1. Stimulus — Deep Inquiry & Cultural Value

The Stimulus phase aims to establish an initial emotional and cognitive connection between children and musical experiences through exposure to performances, soundscapes, cultural artefacts, or social–musical phenomena that resonate with their daily lives. Rather than presenting music solely as subject matter, teachers facilitate aesthetic encounters that spark curiosity and personal relevance. Early emotional engagement is essential because musical interpretation and meaning-making are grounded in meaningful prior experiences (Burnard, 2020; Gay, 2021). Incorporating music from students' local cultural heritage reinforces shared identity and belonging while broadening access to contextualized musical understanding (Desyandri & Ardipal, 2022)The Stimulus phase therefore forms the emotional and cognitive foundation for later reflective and meaningful music learning in primary school.

3.4.2. Wondering — Deep Inquiry & Cultural Context Questioning

The Wondering phase encourages pupils to generate critical questions about the meaning, value, function, musical structure, and cultural practices associated with the music being studied. Through inquiring, predicting, debating, and investigating, children deepen their awareness of how music connects to social and cultural life. Research shows that self-directed questioning promotes deeper learning, musical interpretation, and reflective capacity (Hattie & Timperley, 2020;Farida & Handayani, 2024) . When children ask questions such as "Why is this music important to the community?" or "Why does the melody or rhythm sound this way?", they move beyond memorizing facts toward constructing contextual musical meaning (Ladson-Billings, 2021; Putra & Lestari, 2025). Thus, the Wondering phase positions pupils as cultural investigators and active interpreters rather than passive recipients of knowledge.

3.4.3. Active — Collaborative Creation & Hands-On Musical Exploration

The Active phase represents learning by doing through hands-on musical participation, including performing, sound exploration, improvising, composing, recording, and producing musical works. At this stage, the learning design shifts to project-based musical creation, requiring collaboration, communication of ideas, and creative problem-solving. Active engagement in musical creation has been shown to strengthen creativity, agency, and social–collaborative skills in primary school learners (Biasutti, 2021; Kokotsaki et al., 2022; Kurniawan, 2023). Furthermore, digital tools enable new

opportunities for multimodal experimentation and artistic expression, broadening access to composition and production beyond traditional instruments (Brinkman, 2020;Barrett, 2020; Tu et al., 2025). The Active phase ensures that children develop authentic musical proficiency and creativity through meaningful participation—not only theoretical understanding.

3.4.4. Reflective — Metacognition & Identity/Value Internalisation

The Reflective phase provides structured opportunities for children to make meaning from their musical experiences, evaluate collaborative processes, and articulate the cultural values and identity elements embedded in their work. Reflection facilitates metacognition, enabling learners to understand their own thinking and artistic decision-making processes. It also supports cultural self-awareness, which is critical to music education in diverse learning environments (Gay, 2021;Wahyuni & Nugroho, 2024) .Studies demonstrate that learners who reflect systematically on their creative processes develop stronger empathy, confidence, and socio-cultural awareness (Wibowo & Rahmadani, 2025). Therefore, Reflection ensures that music learning extends beyond the production of sound into deeper personal and cultural meaning-making—shaping character, identity, and emotional intelligence.

3.4.5. Applicative — Authentic Performance / Digital or Community-Based Production

The Applicative phase enables students to apply their musical knowledge and skills in real-world contexts through live performance, digital publication, community-based showcases, multimedia uploads, or collaborative virtual music projects. This phase reinforces the principle of authentic performance, wherein children present their work to real audiences—physically or digitally—which strengthens intrinsic motivation, competence, and cultural pride (OECD, 2021; (Zaki et al., 2024) In the digital era, online publication and multimedia documentation expand the children's artistic participation beyond the classroom, promoting confidence, creativity visibility, and social presence (Tu et al., 2025). The Applicative phase ensures that music learning becomes a socially meaningful experience that contributes to personal, cultural, and community expression—rather than an isolated school task.

The results of this systematic review demonstrate that meaningful music learning in primary schools increasingly depends on the integration of deep inquiry, local cultural values, collaborative creation, and digital augmentation. These four dimensions collectively address the limitations of traditional skill-based and performance-oriented music instruction. Previous research has shown that conventional teacher-centred pedagogy tends to prioritise technical mastery while neglecting cultural understanding, reflection, and creativity, leading to surface learning outcomes (Bauer, 2020). In contrast, the thematic synthesis of 48 studies in this review highlights that children learn music more meaningfully when instructional design encourages them to interpret, question, create, and express identity.

A key implication emerging from the findings is that music should not be treated solely as an artistic product but as a process of cultural exploration, meaning-making, and collaborative identity

construction. Studies emphasising cultural integration show that musical experiences situated in students' sociocultural realities generate stronger emotional involvement, intrinsic motivation, and social connectedness (Desyandri & Ardipal, 2022; Putra & Desyandri, 2023). However, research also indicates that such culturally rich learning requires structured guidance to develop reflective and analytical thinking, otherwise the learning process risks becoming merely celebratory rather than transformative.

Meanwhile, PjBL-based music learning has demonstrated strong potential for strengthening student agency, creative problem-solving, and collaboration (Kokotsaki et al., 2022; Biasutti, 2021; (Kurniawan, 2023). Yet several studies report inconsistency in learning outcomes due to insufficient scaffolding for metacognition and cultural interpretation. Similarly, digital music learning significantly enhances engagement and creativity but learning outcomes remain limited when technology is used merely as a tool rather than as a medium for contextual inquiry and cultural expression. These patterns confirm the gap identified in previous literature: although each approach—deep learning, cultural integration, PjBL, and digital technology—has shown benefits, they have rarely been operationalised simultaneously and systematically in the context of primary school music learning.

In response to this empirical gap, the SWARA Music Learning Model provides a comprehensive pedagogical structure that links the strengths of each dimension into a sequence of learning phases: Stimulus → Wondering → Active → Reflective → Applicative. The sequence ensures that students first connect musically and culturally (Stimulus), then interrogate meaning (Wondering), engage in hands-on creation (Active), internalise values and metacognition (Reflective), and finally apply their learning in real-world musical contexts (Applicative). This sequential cycle mirrors learning progression frameworks in deep learning and arts-based inquiry, where meaning and creativity are jointly constructed through iterative reflection and action.

The SWARA model also provides direct pedagogical implications for teachers. First, it positions teachers not merely as evaluators of musical products, but as facilitators of inquiry, reflection, and collaborative creativity. Second, the model integrates cultural responsiveness not as a decorative component but as the conceptual anchor of musical learning, ensuring that children understand music as part of identity and community. Third, the model constructs productive synergy between hands-on musical exploration and digital innovation, enabling children to experiment musically beyond conventional resource limitations. Finally, the structured phases assist teachers in aligning learning activities with 21st-century competencies—creativity, collaboration, critical thinking, communication, and cultural literacy—relevant to the Merdeka Curriculum.

Theoretically, this study advances contemporary music pedagogy by providing a model that conceptualises music learning as a meaning-oriented, culturally grounded, socially collaborative, and technologically enriched cognitive process. Practically, the model offers teachers a concrete

instructional blueprint that bridges classroom learning with real cultural and digital ecosystems. The SWARA framework also opens opportunities for future research, particularly empirical validation through quasi-experiments, design-based research, or large-scale implementation studies in diverse school contexts.

4. CONCLUSION

This systematic literature review synthesised 48 empirical and conceptual studies published between 2020 and 2025 to identify key pedagogical dimensions that support meaningful music learning in primary schools. The thematic analysis revealed that contemporary music education increasingly depends on the integration of deep inquiry, local cultural values, collaborative creation through project-based learning, and digital augmentation. However, previous studies show that these four dimensions have typically been implemented in isolation, resulting in fragmented pedagogical frameworks and inconsistent student learning outcomes.

In response to this gap, the present study proposes the SWARA (Stimulus, Wondering, Active, Reflective, Applicative) Music Learning Model, which provides a coherent instructional sequence that positions students as creative musicians, reflective thinkers, cultural participants, and digitally empowered learners (Brinkman, 2020;Barrett, 2020; Tu et al., 2025). The SWARA model offers theoretical significance by conceptualising music not merely as a technical performance domain but as a meaning-making process grounded in cultural experience and collaborative creativity. Practically, it provides teachers with a structured framework to design music learning that is student-centred, culturally responsive, reflective, and aligned with 21st-century educational goals and the Merdeka Curriculum.

Although this review provides a strong conceptual foundation for the SWARA model, the study has limitations due to its reliance on secondary data and its focus on peer-reviewed publications. Future research is therefore recommended to empirically validate the SWARA model through classroom implementation—such as design-based research, quasi-experimental studies, longitudinal evaluations, or cross-cultural comparative research—to analyse its impact on students' musical understanding, creativity, cultural identity, and digital fluency. The development of learning modules, lesson plans, digital resources, and assessment tools based on the SWARA model is also suggested to strengthen its applicability across diverse primary school contexts.

Overall, the findings of this study reinforce the need for innovative pedagogical frameworks that transcend traditional skill-driven music instruction and instead emphasise meaning, identity, reflection, collaboration, and creativity. The SWARA model offers such a framework and holds strong potential to guide the future of music education in primary schools.

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