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Optimizing School Aesthetic Education Governance in the Digital Era: A Conceptual Framework from an Educational Management

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ABSTRACT

The digital transformation of education has changed the conditions under which school aesthetic education is organized, delivered, and evaluated. Digital resources, online platforms, artificial intelligence tools, and virtual cultural environments have expanded opportunities for aesthetic learning. However, the development of digital technologies has not always been accompanied by corresponding improvements in school governance. Existing practices indicate that digital resources may remain fragmented, teacher support may be insufficient, and evaluation mechanisms may focus excessively on visible outputs rather than students' aesthetic development. This study aims to examine how school aesthetic education governance can be optimized in the digital era from an educational management perspective. The study adopts a conceptual literature review approach and analyzes recent studies related to digital transformation in education, aesthetic education, teacher development, and platform governance. Relevant literature was identified through searches of major academic databases, including Web of Science, Scopus, and Google Scholar, using keywords such as"digital transformation" "aesthetic education" "educational governance" "teacher development" and "digital platforms" Studies published mainly between 2020 and 2025 were reviewed, with attention given to research addressing digital education management, arts learning, and school governance. The analysis identifies four major governance challenges: fragmented digital resources, uneven teacher support, platform dependence and data formalism, and weak evaluation feedback. Based on these themes, this study proposes an integrated governance framework consisting of six management dimensions: goals, resources, curriculum, teachers, platforms, and evaluation. The framework emphasizes that digital technology should be embedded within a coordinated governance system rather than treated as an independent technical solution. The study contributes to existing research by shifting attention from the application of digital tools in aesthetic education toward the organizational and managerial conditions required for sustainable development. Practically, the proposed framework provides implications for school leaders and policymakers seeking to strengthen digital aesthetic education governance while maintaining the humanistic value of aesthetic experience.

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1. Introduction

Aesthetic education demonstrates that its educational meaning extends well beyond the teaching of artistic skills alone. Moreover, the findings may suggest that it helps students learn how to perceive form, understand emotion, respond to culture, and express personal experience. Furthermore, the evidence could indicate that aesthetic education gives students a keyway to connect knowledge with feeling. In the light of these results the aesthetic education could prove itself close to creativity, cultural identity, emotional development and more complete personality formation. Aesthetic education connects knowledge, feeling, identity.

But the meaningful results can also imply that the digital transformation of education has transformed the environment in which the aesthetic education is performed. The evidence can also show that students can enter online museums now, they can watch online the high-quality performances, they use digital drawing tools, they can take part in the virtual exhibition and create multimedia products. Thus, the significant results may show that teachers can use digital platforms for organizing materials, sharing examples, recording learning processes, providing feedback. Research on digital transformation further emphasizes that organizational readiness, technological capacity, and institutional support are essential conditions for meaningful digital change [12]. Since the data shows that schools can use data systems to know students' participation, aesthetic education implementation to evaluate, those changes may imply that the aesthetic education has become more open than before. Aesthetic education is opened by digital transformation. Notwithstanding the results, the evidence could point to digital transformation not necessarily enhancing aesthetic education in school, hence the significant results could mean a school could possess many digital resources yet still have no plan to use them. In addition, the key results may show that a teacher may know how to use a platform but still be confused about how to design for meaningful aesthetic learning. And the evidence could be that schools may gather a great number of records of student participation but know little about students' actual aesthetic experience. Problems expose that governance matters most.

However, existing works may just say they are good starting point for that discussion. Based on the deep findings, works on digital transformation in education may contend that technology use is contextualized by the leadership, institutional capacity and infrastructure, teachers' preparedness, and organizational culture [3,11,17]. Also, as key evidence, it may be possible to show that studies into digital education governance make us aware of the fact that platforms and data systems can be sources of new risk, such as platform dependence, unequal access and overreliance on measurable indicators [6,21]. Given that in arts and aesthetics education key results that have been shown the importance of artistic experience, creative learning, teacher agency, and learning through the arts as vital [1,2,8] and hence these studies might be suggesting they could still be useful in understanding the field, studies show gap remains.

Nevertheless, the interesting findings can be that clearly there is a gap even though these studies are all meritorious. The findings can be that much of the literature is all about the how digital tools are used in teaching or the how students are learning in the arts or the how technologies support STEAM, and creative learning. Furthermore, the key results might demonstrate that less attention has been given to the governance system that connects digital resources, school management, teacher development, curriculum implementation, and evaluation feedback. Thus, the important evidence could suggest that current research has explained many parts of digital aesthetic education but has not sufficiently explained how these parts can be organized as a stable school governance system. Research shows governance underexplored.

However, the significant findings may suggest that this gap matters because aesthetic education is not a single classroom activity. Considering the key evidence, it could indicate that aesthetic education involves curriculum planning, teacher collaboration, resource allocation, cultural activities, student evaluation, and school leadership. Additionally, the important results might demonstrate that when digital technology enters this field, the management relationship becomes more complex. Given that evidence suggests schools need to decide what resources should be introduced and how platforms should be used, the findings could indicate that without this governance logic, digital aesthetic education may become fragmented, formalistic, or overly dependent on platforms. Fragmentation risks aesthetic education quality.

Although previous studies have provided valuable insights into digital education, arts learning, teacher development, and platform governance, these research areas have largely developed separately. Existing studies have mainly examined how digital technologies support teaching practices or how students engage in artistic learning, while less attention has been given to how schools coordinate digital resources, teacher development, curriculum implementation, platform management, and evaluation mechanisms within a unified governance system.

This gap is particularly important because aesthetic education is not limited to classroom instruction. It involves curriculum planning, resource allocation, teacher collaboration, cultural activities, student participation, and institutional decision-making. When digital technologies become increasingly integrated into school practices, aesthetic education governance faces new challenges concerning organizational coordination, professional support, and value protection. Without appropriate governance mechanisms, digital transformation may increase resource fragmentation, strengthen dependence on measurable indicators, or weaken the experiential and humanistic characteristics of aesthetic education.

Therefore, this study addresses the following research question: How can school aesthetic education governance be optimized in the digital era from an educational management perspective?

To answer this question, this study aims to: (1) identify the major governance challenges emerging from digital transformation in school aesthetic education; (2) analyze the relationship among digital technologies, governance practices, teacher development, and educational management; and (3) develop a conceptual governance framework that supports the sustainable improvement of school aesthetic education.

The contribution of this study is threefold. First, it extends existing discussions on digital education by focusing on governance conditions rather than technology adoption alone. Second, it connects research on digital transformation, aesthetic education, and educational management by integrating these previously separated perspectives into a coherent analytical framework. Third, it provides practical implications for school leaders and policymakers by highlighting the importance of resource coordination, teacher support, feedback-oriented evaluation, and the protection of aesthetic experience in digital environments.

2. Methodology

2.1 Research Approach

This study adopts a conceptual literature review approach to examine how school aesthetic education governance can be optimized in the digital era from an educational management perspective. Literature review research provides a systematic way to synthesize existing knowledge, identify conceptual relationships, and develop theoretical understandings across different research areas [15].

Therefore, this approach is appropriate for the present study because the purpose is not to test the effectiveness of a specific digital technology or establish causal relationships between variables, but to integrate existing knowledge on digital transformation, aesthetic education, educational governance, and teacher development.

Digital transformation in education involves not only the adoption of digital tools but also changes in organizational structures, management practices, and educational processes. Therefore, this study examines digital transformation as a broader educational condition that influences how schools organize aesthetic education. The analysis focuses on how schools coordinate digital resources, support teachers, manage platforms, implement curriculum, and develop evaluation mechanisms.

2.2 Literature Search Strategy

The literature review focused on four interconnected research areas: digital transformation in education, digital governance, aesthetic and arts education, and teacher professional development. These areas were selected because existing research indicates that digital aesthetic education involves multiple dimensions, including technological resources, institutional capacity, teacher competence, and educational values.

The literature search was conducted through major academic databases, including Web of Science, Scopus, and Google Scholar. The search focused primarily on studies published between 2020 and 2025 to capture recent developments in digital education and educational management. The main search terms included:

The literature search used combinations of the following keywords: “digital transformation,” “digital education,” “aesthetic education,” “arts education,” “educational governance,” “school leadership,” “teacher development,” and “digital platforms.” These keywords were combined in different ways to identify studies examining the relationship between technology integration, educational management, and aesthetic learning.

Related combinations of these keywords were also used to identify studies examining the relationship between technology integration, educational management, and aesthetic learning.

The selected literature mainly included peer-reviewed journal articles addressing digital transformation, educational governance, technology-supported learning, arts education, teacher development, and related school management issues. The review emphasized recent studies while also considering influential works that provided important theoretical perspectives for understanding digital governance and aesthetic education.

2.3 Literature Selection Criteria

To ensure relevance to the research purpose, the literature selection followed several criteria. Studies were included when they met at least one of the following conditions:

(1) examined digital transformation or digital governance in educational contexts.
(2) discussed aesthetic education, arts learning, or creativity development in schools.
(3) explored teacher professional development, teacher agency, or digital teaching practices.
(4) analyzed the relationship between technology, educational management, and institutional change.

Studies were excluded when they focused only on technical development without educational implications, commercial digital products without academic analysis, or contexts unrelated to school education.After the initial identification of relevant studies, titles and abstracts were screened to

determine their relevance. Selected studies were then reviewed in full text to identify their theoretical contributions, research focuses, and implications for school aesthetic education governance.

2.4 Data Analysis and Thematic Synthesis

The selected literature was analyzed through thematic synthesis. The analysis process involved identifying recurring concepts, comparing perspectives across different research areas, and organizing related discussions into broader conceptual themes [15]. The analysis was conducted through three stages.

First, key concepts related to digital aesthetic education governance were extracted from the reviewed studies. These concepts included digital resources, platform governance, teacher development, artistic experience, curriculum integration, and evaluation practices. Second, similarities and differences among studies were examined across different research areas. Research on digital transformation mainly discusses institutional capacity, infrastructure, leadership, and technology management, whereas research on aesthetic education emphasizes creativity, artistic experience, cultural expression, and student development. Comparing these perspectives helped clarify how technological development and educational values are discussed in existing literature.Third, related concepts were grouped into broader conceptual themes. Five themes emerged from the literature analysis:(1) digital governance conditions.(2) resource coordination.(3) teacher professional support.(4) platform and data management.(5) evaluation feedback mechanisms. These themes provide the analytical basis for discussing governance challenges and possible optimization approaches in school aesthetic education.

2.5 Analytical Framework

Based on the literature synthesis, this study develops an analytical framework to explain how digital transformation has reshaped the governance context of school aesthetic education.The framework is not designed as a causal model or an empirical variable model. Instead, it provides a conceptual structure for organizing the relationships among digital transformation, governance issues, educational management practices, and aesthetic education development.

As shown in Figure 1, digital transformation represents a changing educational context in which schools need to reconsider how they organize resources, support teachers, manage digital platforms, and evaluate aesthetic learning. Within this context, existing literature identifies several governance concerns, including fragmented digital resources, uneven teacher support, platform dependence, and weak evaluation feedback. These concerns are discussed through an educational management perspective, providing the foundation for developing governance optimization strategies.

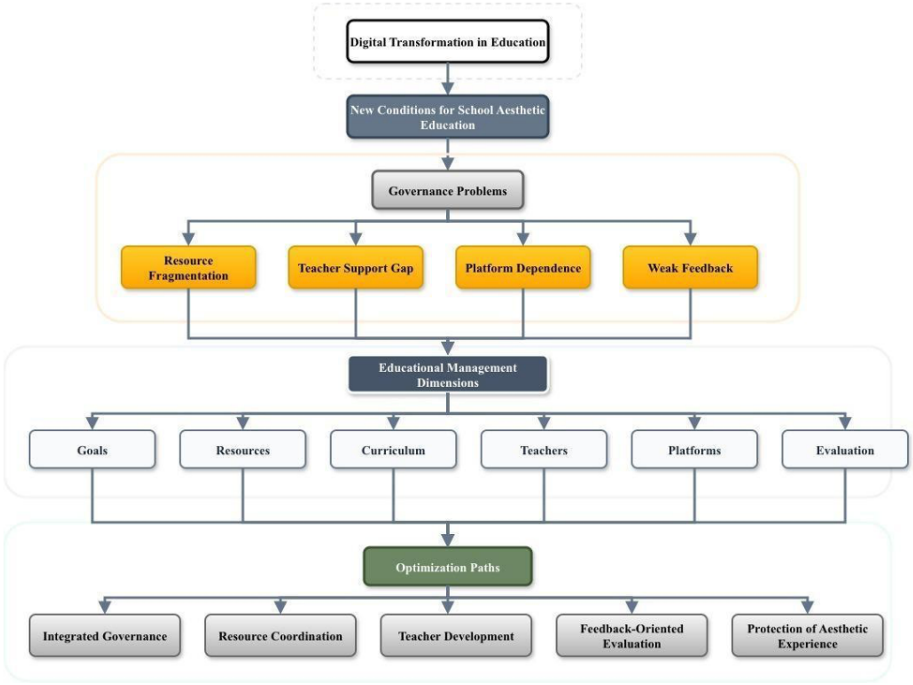

Fig. 1. Conceptual framework for school aesthetic education governance in the digital era

Figure 1 presents the analytical route of this study. The framework illustrates the relationship between digital transformation, governance challenges, educational management dimensions, and optimization strategies. Rather than viewing digital technology as an independent solution, the framework emphasizes that technology needs to be integrated with organizational coordination, teacher development, curriculum design, platform management, and evaluation mechanisms.

The framework also highlights that effective digital aesthetic education governance depends on the balance between technological possibilities and the humanistic characteristics of aesthetic learning. Digital resources and platforms can expand learning opportunities, but meaningful aesthetic development still requires appropriate governance structures, professional teacher support, and feedback-oriented evaluation.

3. Literature Background and Research Gap

3.1 Digital Transformation and Educational Governance

Digital transformation has become an important topic in educational research, but existing studies increasingly indicate that digitalization should not be understood only as the introduction of technological tools. Instead, digital transformation involves changes in institutional capacity, leadership practices, infrastructure development, and organizational processes.

Research by Benavides *et al*., [3], McCarthy *et al*., [11], and Timotheou *et al*., [17] demonstrates that successful digital transformation depends on the ability of educational institutions to coordinate technological development with organizational change. Recent research has further attempted to assess the maturity level of institutional digital transformation, suggesting that digital development should be understood as a gradual process involving organizational readiness, strategic planning, and capacity building rather than simple technology adoption [4]. This perspective is particularly relevant for school aesthetic education because governance improvement requires not only access to digital resources but also the development of institutional capabilities to coordinate and utilize these resources effectively. These studies provide important insights into how schools develop digital capacity and manage technological innovation. However, much of this research focuses on general

digital transformation processes rather than the specific governance requirements of aesthetic education. Digital governance research further expands this discussion by examining how platforms, data systems, and digital infrastructures influence educational management. In the context of China, Yan and Yang [20] argue that education informatization has evolved from the construction of digital infrastructure toward a broader transformation of educational systems and governance approaches. This transition indicates that digital aesthetic education should not focus only on introducing digital tools but should consider how technology reshapes curriculum organization, resource allocation, and institutional management.Decuypere *et al*., [6] and Yang *et al*., [21] point out that digital platforms are not neutral tools because they influence what educational activities become visible, measurable, and manageable. These studies highlight important concerns regarding platform dependence, data-based decision-making, and the potential reduction of educational values into measurable indicators.

These findings provide important implications for aesthetic education because aesthetic development involves personal experience, creativity, cultural understanding, and emotional engagement, which cannot be fully represented through digital records alone. However, existing digital governance studies rarely examine how these issues appear specifically within school aesthetic education. This limitation suggests the need to connect digital governance perspectives with the characteristics of aesthetic learning.

3.2 Digital Transformation and Aesthetic Education

Research on aesthetic and arts education emphasizes that aesthetic learning extends beyond the acquisition of artistic skills. Halverson and Sawyer [8] highlight the importance of artistic experience, creativity, and meaning-making in students' development, while Escala *et al*., [7] further demonstrate the educational value of arts-integrated learning in supporting creative expression and cultural understanding.

Digital technologies have expanded possibilities for aesthetic education by providing access to online exhibitions, digital art resources, virtual learning environments, and new forms of creative production. Studies by Sabol [13] and Song *et al*., [16] show that digital approaches can support online art learning when appropriate teaching design and interaction mechanisms are established.

However, current research on digital aesthetic education has mainly focused on the application of digital tools or the learning experiences created by technology. While these studies explain how digital resources can support artistic learning, they provide less discussion on how schools should organize and manage these resources at the institutional level.

Questions regarding resource coordination, teacher support, platform management, and evaluation mechanisms remain insufficiently explored. Therefore, digital aesthetic education requires not only technological access but also governance structures that ensure digital resources are effectively connected with educational goals.

3.3 Teacher Development and Institutional Support

Teachers represent a critical element in the implementation of digital aesthetic education. Research by Anderson *et al*., [1] emphasizes that teacher creativity, professional agency, and well-being influence how teachers engage with new educational approaches. Anderson *et al*., [2] further indicate that teachers' beliefs and values shape their decisions regarding creative teaching practices.

These studies challenge the assumption that digital transformation is mainly a technical process. Instead, they demonstrate that teachers actively interpret, adapt, and redesign digital resources according to educational purposes. Therefore, effective digital aesthetic education requires

professional support systems that combine technological competence with aesthetic understanding and pedagogical design. At the same time, existing research provides limited attention to how schools establish institutional mechanisms to support teachers. Teacher development is often discussed at the individual level, while less emphasis is placed on school-level governance arrangements, collaborative structures, and long-term support mechanisms. This indicates a research gap between understanding teacher capability and understanding how educational organizations create conditions for that capability to develop.

3.4 Emerging Technologies and Interdisciplinary Possibilities

Recent studies have further explored the relationship between aesthetic education, digital innovation, and interdisciplinary learning. Systematic research on STEAM education also indicates that integrating arts with science and technology can promote interdisciplinary learning, but effective implementation requires curriculum coordination and institutional support [14]. This finding reinforces the argument that digital aesthetic education is not merely a technological issue but also a governance challenge involving curriculum design and organizational coordination. Leavy *et al*., [10] and Sanz-Camarero *et al*., [14] demonstrate that STEAM education provides opportunities to integrate arts with science, technology, engineering, and mathematics. Wang *et al*., [18] further discusses the possibilities of virtual learning environments and emerging educational ecosystems.

These studies broaden the understanding of digital aesthetic education by showing that technology can create new forms of artistic participation and interdisciplinary learning. However, such developments also increase the complexity of school management. Digital projects involving multiple disciplines, platforms, and learning environments require coordination beyond individual teachers or temporary activities. Therefore, emerging technologies highlight the importance of governance mechanisms that connect innovation with institutional planning.

3.5 Research Gap and Conceptual Position of This Study

Existing literature has generated valuable knowledge regarding digital transformation, educational governance, aesthetic learning, teacher development, and emerging technologies. However, these research areas have largely developed separately. The comparison of these literature streams shows that each field provides insights into different aspects of digital aesthetic education governance. Digital transformation research explains institutional capacity and organizational change; digital governance research highlights platform management and data-related risks; aesthetic education research emphasizes artistic experience and educational values; teacher development research reveals the importance of professional support; and emerging technology research demonstrates the potential of interdisciplinary innovation. However, these perspectives have rarely been integrated into a unified governance framework for school aesthetic education.

Digital transformation studies mainly examine technological adoption, institutional capacity, and organizational change. Digital governance studies focus on platforms, data, and management risks. Aesthetic education research emphasizes creativity, artistic experience, and cultural expression. Teacher development studies highlight professional competence and teacher agency.

Although these perspectives provide important foundations, limited research has integrated them into a comprehensive governance framework specifically designed for school aesthetic education in digitally transformed environments.

This study addresses this gap by adopting an educational management perspective and developing a conceptual framework that connects digital transformation with governance practices.

Rather than viewing technology as an independent solution, this study examines how schools can coordinate digital resources, teacher development, curriculum implementation, platform management, and evaluation feedback to support meaningful aesthetic education. Table 1 summarizes the main literature streams and their implications for school aesthetic education governance.

Table 1
Literature streams and their contributions to school aesthetic education governance

Literature stream	Focus	Representative studies	Contribution to this study
Digital transformation in education	Institutional change, digital capacity, leadership, and infrastructure	Benavides *et al*., (2020); McCarthy *et al*., (2023); Timotheou *et al*., (2023); Bravo-Jaico *et al*., (2025)	Highlights that digital aesthetic education requires institutional capacity and organizational coordination
Platform and digital governance	Platforms, data systems, visibility, risks, and governance relationships	Decuypere *et al*., (2021); Yang *et al*., (2023); Yan and Yang (2021)	Provides insights into platform management and the risks of data-driven governance
Arts and aesthetic education	Artistic experience, creativity, cultural expression, and digital art learning	Halverson and Sawyer (2022); Escala *et al*., (2024); Sabol (2022); Song *et al*., (2021)	Emphasizes that digital governance should maintain the educational value of aesthetic experience
Teacher creativity and development	Teacher agency, professional beliefs, creativity, and well-being	Anderson *et al*., (2022a); Anderson *et al*., (2022b)	Shows that teacher support is essential for meaningful digital aesthetic education
STEAM and emerging technologies learning	Interdisciplinary learning, virtual environments, and new technologies	Leavy et al., (2023); Sanz-Camarero *et al*., (2023); Wang *et al*., (2022)	Demonstrates the need for institutional coordination in technology-supported aesthetic
Digital aesthetic education and art management	AI-supported art education, digital learning strategies, and creative applications	Jin (2024); Wang and Fu (2024); Chiu *et al*., (2024)	Indicates that digital tools should be integrated with educational objectives and governance practices

Table 1 shows that existing studies have developed rich discussions on digital transformation, platform governance, aesthetic learning, teacher development, and emerging technologies. However, these research areas have generally developed independently. Digital education research emphasizes technological capacity and organizational change, while aesthetic education research focuses more on creativity, experience, and cultural meaning. The comparison of these literature streams indicates that an integrated governance perspective is still needed to explain how schools coordinate digital resources, teachers, platforms, and evaluation mechanisms within aesthetic education.

4. Results

The literature analysis indicates that digital transformation has changed not only the tools used in school aesthetic education but also the ways schools organize resources, support teachers, manage platforms, and evaluate learning processes.

The reviewed studies demonstrate that digital technologies provide new opportunities for aesthetic education, including broader access to artistic resources, new forms of creative expression, and expanded learning environments. However, existing research also reveals that technology adoption alone does not guarantee effective aesthetic education development.

Across the reviewed literature, four major governance challenges emerge: fragmented resources, uneven teacher support, platform dependence and data formalism, and weak evaluation feedback.

4.1 Fragmented Resources and Weak Coordination

Digital transformation has significantly expanded the availability of aesthetic education resources. Schools can access online museums, digital art collections, virtual exhibitions, educational platforms, and creative software. These resources provide opportunities for students to engage with diverse artistic experiences beyond traditional classroom boundaries.

However, existing literature indicates that the availability of digital resources does not automatically lead to effective educational outcomes. Research on digital transformation emphasizes that technology integration requires institutional planning, leadership support, and organizational capacity [3,11,17].

Within school aesthetic education, digital resources are often introduced by different departments or individual teachers according to immediate needs. Some resources may support classroom teaching, while others are used for cultural activities, competitions, or exhibitions. Without coordination mechanisms, resources remain scattered and difficult to integrate into long-term curriculum development.

Therefore, the central issue is not whether schools possess sufficient digital resources, but whether these resources are selected, organized, and connected with educational objectives. Effective governance requires schools to establish systems that link digital resources with curriculum planning, teaching practices, and student development.

4.2 Uneven Teacher Support

Teachers play a central role in transforming digital resources into meaningful aesthetic learning experiences. Digital aesthetic education requires teachers not only to operate platforms but also to select appropriate resources, design learning activities, guide creative processes, and evaluate students' artistic development.

Existing research on teacher creativity and professional development demonstrates that teachers' beliefs, agency, and professional support influence the quality of technology integration [1,2]. However, current teacher support often emphasizes technical skills rather than pedagogical and aesthetic application. Teachers may receive training on using platforms, uploading materials, or managing digital assignments, while receiving less support in integrating digital tools with artistic expression, creativity development, and aesthetic experience.

Research on online art education further shows that digital teaching requires careful instructional design rather than simply transferring traditional teaching methods into online environments [13,16].

Therefore, teacher development should be considered an essential component of digital aesthetic education governance. Schools need to provide continuous professional support that combines digital competence, artistic understanding, curriculum design, and reflective practice.

4.3 Platform Dependence and Data Formalism

Digital platforms provide important functions for school aesthetic education management. They can support resource sharing, student participation records, assignment submission, artwork presentation, and learning process documentation.

Nevertheless, research on digital governance highlights that platforms influence what becomes visible and measurable within educational systems [6,21]. Excessive reliance on platform-generated indicators may create a risk that aesthetic education becomes evaluated mainly through measurable outputs.

For aesthetic education, this limitation is particularly significant. Student participation rates, uploaded works, and online activity records can provide useful information, but they cannot fully represent students' aesthetic growth, creativity, cultural understanding, or emotional engagement.

Therefore, digital platforms should function as supporting tools rather than replacing professional educational judgment. Effective governance requires combining digital records with teacher observation, student reflection, portfolios, and qualitative evaluation.

4.4 Weak Evaluation Feedback

Evaluation represents another important challenge in digital aesthetic education governance. Existing practices often focus on whether courses are provided, activities are completed, and student works are displayed. While these indicators are useful for management purposes, they provide limited information about students' aesthetic development. Aesthetic learning is a gradual process involving observation, interpretation, imagination, creativity, and personal expression. These processes cannot be fully captured through final products or participation statistics.

Digital technologies provide possibilities for improving evaluation practices. For example, digital portfolios can record students' creative processes, revisions, reflections, and learning development. Research on AI-supported art education also indicates that digital systems can support artistic learning when combined with appropriate educational design [5].

However, evaluation should not become mechanical scoring. The value of digital evaluation lies in generating richer information for improving curriculum design, teacher support, and resource allocation. Based on the literature analysis, the four governance challenges identified above are summarized in Table 2.

Table 2
Main governance problems in school aesthetic education under digital transformation

Governance problem	Main manifestation	Possible consequence
Fragmented resources	Digital resources are collected and used separately by different departments or teachers	Resources increase, but their educational effect remains limited
Uneven teacher support	Training focuses on platform operation rather than aesthetic teaching design	Teachers may use tools without changing learning quality
Platform dependence	Participation data and uploaded works become the main evidence of achievement	Aesthetic growth may be reduced to measurable indicators
Weak evaluation feedback	Evaluation results are recorded but not used for governance adjustment	Schools repeat activities without improving curriculum and support

Table 2 summarizes the main governance challenges identified from the literature. These challenges are interconnected rather than independent. Fragmented resources, insufficient teacher support, platform dependence, and weak evaluation feedback all reflect the broader issue that digital aesthetic education requires stronger governance coordination.

Therefore, the key challenge is not the absence of digital technology, but the lack of mechanisms that connect technology with educational purposes, professional practice, and continuous improvement.

5. Discussion

The findings of this conceptual review indicate that optimizing school aesthetic education in the digital era requires more than introducing digital technologies. It requires schools to improve management practices, strengthen teacher support, coordinate educational resources, and develop appropriate evaluation approaches. From an educational management perspective, digital transformation should be understood as a change in how schools organize and implement aesthetic education rather than simply a process of technology adoption. Existing studies have provided valuable insights into digital transformation, educational governance, aesthetic learning, teacher development, and emerging technologies. However, these research areas have often developed separately, resulting in limited understanding of how schools can coordinate technological resources with educational objectives.

Based on the literature synthesis, this study proposes a governance-oriented perspective that considers digital transformation as a change in the conditions of school management rather than simply a process of technology adoption. From this perspective, effective digital aesthetic education requires coordination among resources, teachers, curriculum, platforms, and evaluation mechanisms. The following sections discuss the implications of the proposed framework and explain how it contributes to understanding school aesthetic education governance in the digital era.

5.1 Building an Integrated Management Structure for Digital Aesthetic Education

The literature analysis indicates that fragmented school management is one of the major challenges affecting the effective implementation of digital aesthetic education. Digital resources, curriculum activities, teacher practices, and platform management are often distributed among different departments or individuals, which may limit their overall educational value.

Research on digital transformation emphasizes that successful technology integration depends on institutional capacity, leadership support, and organizational coordination [3,11,17].These studies demonstrate that digital transformation requires organizational change rather than simple technological adoption. However, existing research on digital transformation often examines schools in general contexts, while aesthetic education requires additional attention to artistic experience, creativity, and cultural meaning.

Therefore, an integrated governance structure should not be understood as merely creating new administrative arrangements. Instead, it requires coordination among school leaders, curriculum managers, teachers, technology staff, and cultural resources. Such coordination allows digital resources and platforms to serve educational purposes rather than operate as independent technical systems.

This perspective extends previous research by highlighting that digital aesthetic education governance is both a technology management issue and an educational management issue. Schools

need management mechanisms that connect digital innovation with the educational values and characteristics of aesthetic education.

5.2 Coordinating Digital Aesthetic Education Resources

The literature demonstrates that digital resources have expanded the possibilities of aesthetic education. Online museums, virtual exhibitions, digital art collections, and creative software provide students with broader opportunities to engage with artistic experiences.

However, access to digital resources does not automatically result in improved aesthetic learning. Research on digital education emphasizes that technological resources require appropriate institutional planning and organizational support to generate educational value [3,17]. Meanwhile, studies of aesthetic education highlight that artistic learning depends on experience, interpretation, creativity, and personal engagement [7,8].

The comparison between these research areas reveals an important difference. Digital education research often focuses on technological availability and capacity building, whereas aesthetic education research emphasizes human experience and cultural meaning. Effective governance therefore requires connecting technological possibilities with the educational characteristics of aesthetic learning.

Schools should move beyond collecting digital materials and develop coordinated resource systems linked with curriculum objectives. Digital resources should be selected according to their ability to support observation, creativity, reflection, and cultural understanding. In this way, resource governance becomes not only a matter of efficiency but also a means of protecting the educational purpose of aesthetic education.

5*.3 Strengthening Teacher Professional Development*

Teachers represent the critical connection between digital technologies and aesthetic learning. Digital platforms and resources cannot independently create meaningful aesthetic experiences; teachers remain responsible for interpreting resources, designing learning activities, guiding creative processes, and supporting students' artistic development.

Research by Anderson *et al*., [1] and Anderson *et al*., [2] demonstrates that teacher creativity, professional agency, beliefs, and well-being influence how teachers engage with educational innovation. These findings challenge technology-centered approaches that view teachers mainly as users of digital tools.

In digital aesthetic education, teacher development should therefore extend beyond technical training. Teachers need support in integrating digital competence with artistic understanding, curriculum design, creative pedagogy, and reflective practice. Without this connection, digital tools may be used only as replacements for traditional teaching materials rather than as resources for meaningful aesthetic learning.

Furthermore, teacher development should not rely only on individual improvement. Digital aesthetic education often involves interdisciplinary learning that connects arts, technology, culture, and other subjects. Schools should therefore establish collaborative professional environments where teachers can share experiences, design learning activities, and develop innovative practices together.

This discussion expands existing teacher development research by emphasizing the organizational conditions required for teachers to effectively participate in digital aesthetic education governance.

5.4 Developing a Feedback-Oriented Evaluation Mechanism

The literature review identifies evaluation feedback as an important but insufficiently developed dimension of digital aesthetic education governance. Traditional evaluation approaches often emphasize visible outcomes, including completed activities, displayed works, and participation records. Although these indicators provide useful information, they cannot fully represent students' aesthetic development.

Aesthetic learning involves gradual processes of observation, interpretation, imagination, creativity, and emotional engagement. These aspects are difficult to capture through simple quantitative indicators. Therefore, evaluation mechanisms need to consider both measurable information and qualitative evidence.

Digital technologies provide new opportunities for improving evaluation practices. Digital portfolios, learning records, and AI-supported tools can help document students' creative processes and provide richer feedback when combined with appropriate educational design [5].

However, digital evaluation also creates potential risks. Research on digital governance indicates that platforms influence how educational activities become visible and measurable [6,21]. If schools rely excessively on platform indicators, aesthetic education may become reduced to measurable outputs.

Therefore, evaluation should function as a feedback mechanism rather than a simple accountability tool. Digital information should be combined with teacher observation, student reflection, creative processes, and qualitative judgment to support continuous improvement.

To illustrate this idea, Figure 2 presents the conceptual feedback cycle for school aesthetic educationgovernance.

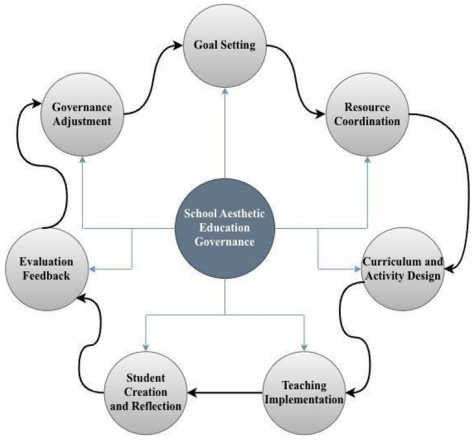

Fig. 2. Feedback-based governance cycle for school aesthetic education

Figure 2 illustrates the feedback cycle proposed in this study. The framework shows that evaluation should not be considered the final stage of aesthetic education but rather a mechanism that supports continuous governance improvement.

The cycle connects student learning evidence, teacher teaching practices, and school-level governance decisions. Information generated through digital portfolios, learning records, teaching reflections, and resource use can provide feedback for curriculum adjustment, teacher support, resource coordination, and future governance planning.

Rather than replacing professional judgment with digital indicators, the feedback cycle emphasizes the combination of technological information and educational interpretation. Through

continuous reflection and adjustment, schools can improve aesthetic education practices while maintaining the humanistic characteristics of aesthetic learning.

5.5 Protecting Aesthetic Experience in Digital Aesthetic Education

Although digital transformation creates new opportunities for aesthetic education, the literature indicates that technology should not replace the humanistic foundation of aesthetic learning.

Research on arts education emphasizes that aesthetic experience involves perception, emotion, creativity, cultural understanding, and personal expression [8]. Digital technologies can expand access to artistic resources and create new forms of participation, but they cannot fully substitute students' direct engagement with artistic experiences.

The development of artificial intelligence and digital creative tools further demonstrates the need to balance technological innovation with educational values. Studies by Jin [9], Wang and Fu [19], and Chiu *et al*., [5] show that emerging technologies can support artistic learning, but their educational value depends on appropriate pedagogical design and governance arrangements.

Therefore, digital governance should focus on using technology to enrich aesthetic experiences rather than transforming aesthetic education into a technology-centered activity. Schools need to maintain attention to creativity, cultural meaning, emotional engagement, and personal expression while adopting digital tools.

This perspective represents an important contribution of this study. Previous research has often examined technology adoption and aesthetic learning separately, whereas this framework emphasizes that meaningful digital aesthetic education requires schools to integrate technological possibilities with educational purposes, teacher practices, and students' aesthetic experiences.

6. Conclusion

Digital transformation has created new possibilities for school aesthetic education by expanding access to digital resources, online learning environments, and creative technologies. However, this conceptual review demonstrates that technological availability alone cannot ensure meaningful aesthetic education development. The effectiveness of digital aesthetic education depends on how schools organize resources, support teachers, manage digital platforms, and evaluate students' learning experiences.

Based on the synthesis of existing literature, this study proposes a conceptual framework from an educational management perspective. The framework highlights five interconnected dimensions: resource coordination, teacher professional development, platform management, evaluation feedback, and the protection of aesthetic experience. The study contributes to existing research by shifting attention from the use of individual digital tools toward the management conditions required for sustainable digital aesthetic education.

The findings suggest that digital transformation should be integrated with the educational purposes of aesthetic education rather than treated as a purely technological process. While digital technologies can enrich artistic learning opportunities, schools must maintain attention to creativity, cultural understanding, emotional engagement, and student experience. The proposed framework provides a conceptual foundation for understanding how schools can improve aesthetic education practices in increasingly digital learning environments.

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