Digital transformation of educational management of art major in vocational colleges in Guangdong Province

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ABSTRACT

The objectives were to study the digital transformation of educational management and to propose guidelines for implementing digital transformation of educational management of Art Major in Vocational Colleges in Guangdong Province by employing a mixed-method research design. Using Krejcie and Morgan's table and simple random sampling, a sample of 317 teachers out of 1,782 population was selected. In-depth interviews were conducted with 9 administrators and 27 students. Nine experts were purposively selected for the focus group discussion to validate the proposed guidelines. Data collection included a 5-point rating scale questionnaire, an in-depth interview and focus group, using descriptive statistics and content analysis to analyze data. The study revealed that 1) the digital transformation in the educational management of art major included three components: teacher, teaching, and student management; and 2) the guidelines for implementing digital transformation for *teacher management*, are to reducing administrative centralization and authority as a guiding principle, with goals including the development of digital tools and infrastructure, the establishment of a multifunctional digital platform, and the promotion of data-informed decision-making in educational management. Regarding *teaching management*, enhancing teaching practices and acknowledging the strategic importance of digital transformation, with the development of blended teaching models and improved incentive and professional development mechanisms. In *student management*, improving the learning experience and outcomes was identified as a core value, with fairness, transparency, and the development of a personalized talent cultivation system recognized as key goals.

Keywords: Digital Transformation, Educational Management, Art Major, Vocational Colleges

Introduction

The China Education Informatization 2.0 Action Plan issued by the Ministry of Education (2021) highlighted that education informatization should serve as an endogenous force in the systemic reform of education, driving the modernization of education through updated concepts, model innovation, and system reconstruction. Similarly, the Action Plan for Improving the Quality and Training of Vocational Education (2020–2023) called for the digital transformation of vocational education management to enable the integration of information and intelligent technologies across all aspects of institutional administration, thereby significantly enhancing the precision and scientific basis of decision-making processes (Ministry of Education of China, 2020). In this context, the practical challenges and urgent needs faced by education decision-makers in vocational colleges—especially within art education—serve as a crucial foundation for this study. Digital transformation is particularly relevant to the field of art education in vocational colleges due to its potential to optimize educational management processes, improve instructional quality, and personalize learning experiences. Research has shown that digital platforms can facilitate more responsive and flexible administrative systems, which is essential for managing the creative and individualized nature of art education (Huang & Li, 2021). Moreover, art majors require innovative learning environments that support visual, interactive, and practice-based instruction, all of which are enhanced through digital technologies (Chen, 2022; Li & Wang, 2023). Analyzing and addressing the current status and constraints of digital transformation in the educational management of art design majors in Guangdong Province thus carries significant theoretical and practical value.

A comprehensive understanding of the digital transformation process requires examining the core elements that shape it. According to Ning, Liu, and Su (2022), digital transformation in education is characterized by the incorporation of new elements such as data intervention and digital empowerment. In higher education, these transformations manifest across three main dimensions: changes in educational models, talent cultivation, and curriculum reform. Zhang Qingshan (2022) further argued that the reform of vocational education under digital empowerment leads to significant shifts in learning methods, the redefinition of teacher roles, and new approaches to assessment. Based on these insights, this study categorized the management aspects of digital transformation into three areas: student management, teacher management, and teaching management.

In the domain of student management, digital tools can address the specific needs of art students by offering personalized services and monitoring

progress in creative fields. For example, Tang (2017) noted that art design students in vocational colleges exhibit unique administrative challenges that can be addressed through digital transformation. Wang (2018) proposed dividing student management into three dimensions—student services, student education, and student discipline—each of which can benefit from digital systems that enhance efficiency and communication.

In terms of teacher management, Yao (2020) identified three major components—teacher training and development, evaluation systems, and participation in educational governance—all of which can be enhanced through digital platforms. These tools not only streamline performance evaluations and training programs but also promote collaboration and transparency. Moreover, studies have emphasized that the digital literacy of administrators plays a pivotal role in successfully implementing teaching management reforms (Liu & Pan, 2022). Enhanced digital competency among education managers leads to data-informed decision-making and the development of platforms tailored to the specific needs of creative disciplines.

To conclude, this study aims to explore the components of digital transformation of educational management of Art Major in Vocational Colleges in Guangdong Province and to proposed guidelines for implementing digital transformation of educational management of Art Major in Vocational Colleges in Guangdong Province. The goal is to provide decision-makers with a clear framework for transformation, enabling them to harness existing institutional strengths and overcome implementation challenges. By addressing management issues through digital innovation, vocational colleges can enhance the effectiveness, flexibility, and relevance of art education in an increasingly digital world.

Purposes

1. To study the digital transformation of educational management of Art Major in Vocational Colleges in Guangdong Province

2. To proposed guidelines for implementing digital transformation of educational management of Art Major in Vocational Colleges in Guangdong Province

Research Process

Step 1: Conduct a comprehensive literature review and analyze related research to examine policies and the current status of digital transformation in the educational management of art majors in vocational colleges in Guangdong Province.

Step 2: Develop semi-structured interview questions based on an analysis of the key components of digital transformation in educational management, categorized into three domains: student management, teacher management, and teaching management.

Step 3: Conduct in-depth interviews with nine key informants, selected through purposive sampling. These informants

included 9 administrators and 27 students involved in art programs from three vocational colleges in Guangdong Province.

Population, Sample, and key informants

The population consisted of 1,782 teachers from three vocational colleges in Guangdong Province. Using Krejcie and Morgan (1970) and simple random sampling, a sample of 317 teachers was selected. In-depth interviews were conducted with 9 administrators and 27 students. Additionally, 9 experts for focus group discussion.

Instruments and Data Collection

This study employed a mixed-methods approach for data collection. A structured questionnaire was developed to assess the current level of digital transformation across three key domains of educational management: student management, teacher management, and teaching management. The questionnaire utilized a 5-point rating scale and was analyzed using descriptive statistics, including frequency, percentage, mean, and standard deviation.

In addition, in-depth interviews were conducted with nine administrators and twenty-seven students from vocational colleges offering art programs. The qualitative data obtained were analyzed using content analysis to extract key themes and insights. Based on the findings from both quantitative and qualitative data, a set of practical guidelines for the digital transformation of educational management in art majors was proposed.

To ensure the validity and applicability of the proposed guidelines, expert validation was conducted. Nine experts in the fields of educational management, digital transformation, and vocational education were selected through purposive sampling to review and provide feedback on the guidelines.

Conclusion and discussion

Conclusion

1. Digital transformation of educational management of Art Major in Vocational Colleges in Guangdong Province**.**

1.1 The analysis of policies and the current situation reveals that digital transformation in the educational management of art majors in vocational colleges in Guangdong Province is strongly supported. Key policies include: (1) the Opinions on Promoting the High-Quality Development of Modern Vocational Education, which emphasizes the integration of digital technology to modernize vocational education systems (State Council of China, 2021); and (2) at the provincial level, the Three-Year Action Plan for Vocational Education Expansion, Quality Improvement, and Strong Service (2019–2021) and the 2023 Funding Arrangement Program both highlight digital infrastructure and smart management systems as essential tools for administrative reform (Guangdong Provincial Government, 2019; Guangdong

Provincial Department of Education, 2022).

1.2 Analysis of the current situation of digital transformation of education management of art major in vocational colleges in Guangdong Province from literature reviews, interview, and questionnaire result with digital technology in the context of three key domains of educational management: student management, teacher management, and teaching management. The result as below:

Questionnaire result show that the sample of teachers (n=317) consists of a nearly equal gender distribution (49% male, 51% female). Most participants are aged 40 or above (53%), with 55% holding an undergraduate degree and 21% holding a postgraduate degree or higher. The majority have over three years of teaching experience (62%), and 98% hold positions as teachers or administrative staff, while only 2% are principals or deans.

1.2.1 Student management

The analysis of student management in higher vocational colleges in Guangdong Province, based on 11 questions, shows an overall high level of satisfaction (mean scores between 3.719 and 3.852). The three highest-rated items are: Q(5) – inclusion of skill-based content in online teaching for art majors ($\bar{x}$=3.852, SD=1.122), which effectively boosts student engagement; Q(9) – recognition of unique traits among art design students, such as active thinking and emotional sensitivity ($\bar{x}$=3.839, SD=1.157); and Q(7) – the positive impact of interactive online classrooms on student satisfaction and support for online teaching ($\bar{x}$=3.839, SD=1.123). The lowest-rated item is Q(6) ($\bar{x}$=3.719, SD=1.153), which suggests that while students prefer recorded/live teaching over static materials, there is still room for improvement in teaching technologies. These findings reflect that the digital transformation in student management is generally effective, particularly in content relevance and student-centered approaches, but technical aspects of online delivery still require enhancement.

The interview results support the findings from the questionnaire, indicating that while the overall efficiency of education management in higher vocational colleges in Guangdong Province is high, the level of student services remains relatively low, with noticeable shortcomings in certain application functions such as information access and online administrative procedures. Teachers generally acknowledge and support the rapid advancement of online teaching driven by digital transformation, aligning with the high satisfaction ratings in the questionnaire. However, both sources emphasize the urgent need to further develop and improve high-quality educational resources, both online and offline, to enhance teaching effectiveness. Additionally, the interviews confirm that students majoring in art design possess distinct personal and learning characteristics, which require tailored educational strategies. Lastly, while digital tools have improved management

efficiency, concerns remain regarding the fairness and equity of education management systems, indicating a need for more balanced and transparent mechanisms.

1.2.2 Teacher management

The analysis of teacher management in higher vocational colleges in Guangdong Province, based on nine questions, shows consistently high satisfaction across all aspects, with mean scores ranging from 3.733 to 3.909. The three highest-rated items are: Q(14) – establishing links with enterprises to provide practical experience and digital skills training for teachers ($\bar{x}$=3.909, SD=1.111), Q(17) – use of scientific, quantifiable standards to evaluate teachers' professional ability and ethics ($\bar{x}$=3.849, SD=1.112), and Q(20) – scientific and reasonable management of online teaching during COVID-19, especially for practical courses ($\bar{x}$=3.814, SD=1.111). These results reflect strong support for professional development, fair evaluation, and adaptive online teaching management. However, the lowest-rated item is Q(19) ($\bar{x}$=3.744, SD=1.077), indicating a lack of sufficient teacher participation in policy-making processes such as allowance systems and management rules. This suggests that while the digital transformation has enhanced training and evaluation practices, it still needs to address systemic issues in governance and inclusivity, particularly by ensuring that teachers have a stronger voice in decision-making.

The interview findings reinforce the questionnaire results on teacher management in higher vocational colleges in Guangdong Province. There is strong policy and financial support for teacher training and capacity building, and school-enterprise cooperation has been effectively implemented—consistent with the high rating of Q(14), which highlights practical training opportunities. However, teachers express anxiety about their digital competencies, aligning with the need for continued professional development noted in Q(13). While teachers largely acknowledge the fairness and scientific basis of evaluation systems (supporting Q(16) and Q(17)), the usability of digital tools like campus OA is still lacking (reflecting the lower rating in Q(15)). Additionally, teachers feel that their participation in educational decision-making is limited and not actively encouraged, which supports the relatively lower rating of Q(19) and underscores the need for more inclusive governance in the digital transformation process.

1.2.3 *Teaching management*

The analysis of teaching management based on 11 questions reveals a consistently high level of satisfaction among teachers in higher vocational colleges in Guangdong Province, with mean scores ranging from 3.697 to 3.886. The three highest-rated items are: Q(28) – the ability of digital transformation tools (e.g., Tencent Conference, online teaching models) to significantly change teaching methods and enhance teaching

effectiveness ($\bar{x}$=3.886, SD=1.116), Q(21) – supportive education policies and administrative measures for promoting digital transformation in vocational education ($\bar{x}$=3.845, SD=1.119), and Q(31) – teachers' preference for recording and live broadcast methods over static teaching material distribution ($\bar{x}$=3.845, SD=1.155). These results suggest strong policy support, technological adaptability, and teacher recognition of digital tools' impact on pedagogical quality. However, the lowest-rated item is Q(27) ($\bar{x}$=3.697, SD=1.160), indicating that despite the growing integration of digital applications like OA systems and online platforms, the overall user experience remains suboptimal. This points to a need for improving the usability and effectiveness of existing digital teaching tools to ensure smoother implementation and higher satisfaction among educators.

The interview findings align with the questionnaire results on teaching management in higher vocational colleges in Guangdong Province. While education policies and financial support are generally fair—supporting Q(21) which shows high recognition of policy effectiveness—there is a clear gap in the attention and investment toward building high-quality educational resources, echoing the lower satisfaction in Q(25) regarding the integration of current industrial digital technologies into teaching content. Additionally, although managers demonstrate scientific decision-making ability, consistent with the high scores in Q(30) and Q(31), the lag in digital campus infrastructure, inconvenient system usage, and missing functions—reflected in the lowest-rated item Q(27)—highlight ongoing challenges in digital application usability. These results emphasize the need to strengthen digital infrastructure and prioritize the development of accessible, comprehensive teaching tools to fully realize the benefits of digital transformation.

2. Guidelines for implementing digital transformation of educational management of Art Major in Vocational Colleges in Guangdong Province

Focus group discussion from nine experts to conclusion in the digital transformation of educational management for art design majors in Guangdong's higher vocational colleges should follow a clear and practical set of guidelines that reflect both policy direction and institutional realities:

(1) Overall Goal: To cultivate talent that aligns with the evolving digital economy and society; ensure that teachers acquire essential digital skills and literacy; and reconstruct the development path and strategic thinking of vocational education in the digital age.

(2) Action Plan: Highlight the unique characteristics of vocational art education; strengthen digital literacy among administrators; promote innovation in institutional structures to bridge digital capability gaps; and encourage government support for building a modern vocational education system.

(3) Policy Support: The Guangdong provincial government should explore

region-specific digital transformation models in vocational education, aiming to construct a high-quality, modern vocational education system. This includes supporting pilot programs for a multi-tiered education pathway encompassing vocational undergraduate, master's degree, and doctoral levels.

(4) Guiding Principles: Ground actions in real-world institutional contexts; implement change in stages; ensure coordination across multiple stakeholders; strengthen professional development and training; and apply scientific, system-level planning approaches.

(5) Specific Objectives: Accelerate the development of new educational infrastructure; establish personalized and flexible talent training models; promote the integration of hybrid (online and offline) teaching; build digital talent training bases; and incorporate industry product, technical, and service standards into vocational qualification certification frameworks.

Building upon the model and the nine-dimensional framework of educational digital transformation, the following focus areas are emphasized:

(1) Student Management: Improving the learning experience and outcomes for students should be a central objective. Justice and transparency must be the core principles, with the creation of a personalized, student-centered talent development system as the key implementation goal.

(2) Teacher Management: Enhancing teaching methods and elevating the strategic role of digital transformation are essential. Fairness and openness remain the primary values, while developing hybrid teaching models and strengthening teacher training and incentive systems are the practical goals.

(3) Teaching Management: De-administration and decentralization should guide reform. Specific aims include the development of robust digital tools and multifunctional platforms to support decision-making. Principles such as scientific planning, cost-effective governance, data-driven management, and phased, needs-based implementation should shape the reform trajectory.

Digital Transformation Framework for Educational Management in Art Majors at Vocational Colleges to implementation as Figure below:

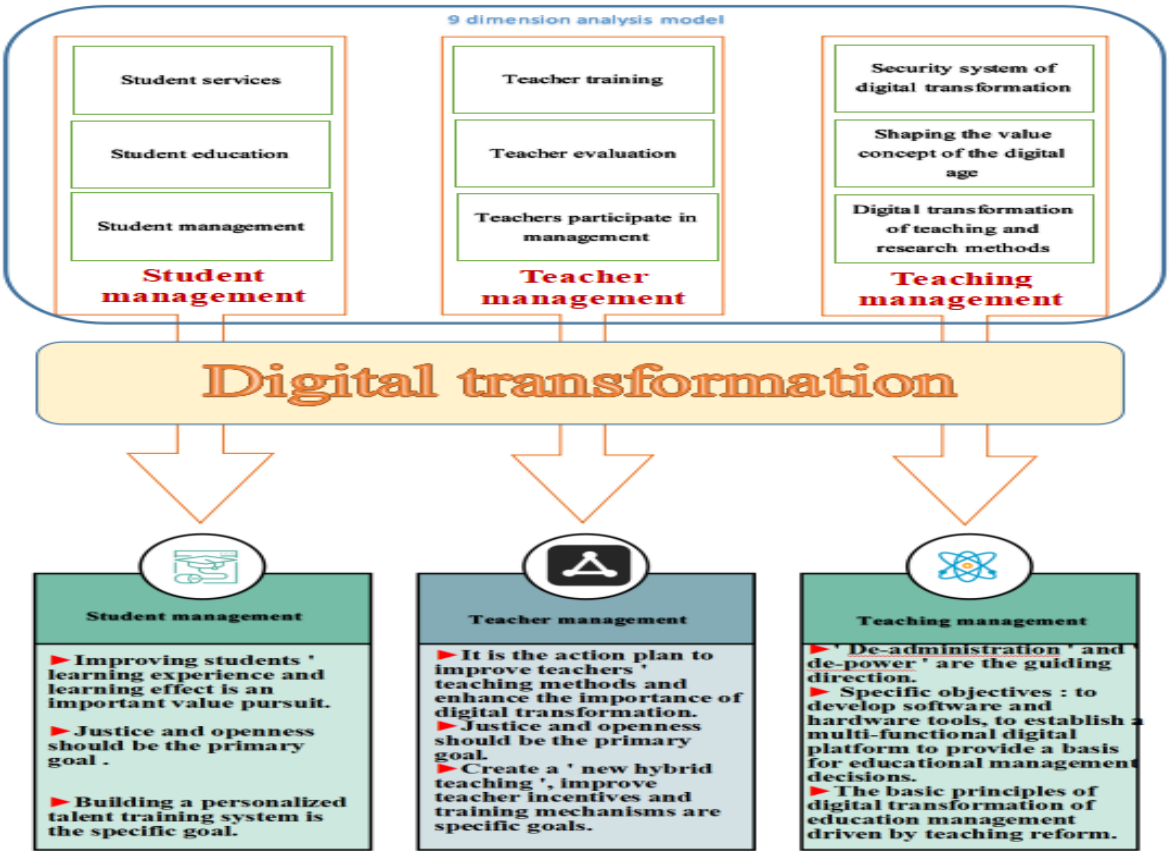

Figure 1: Digital Transformation Framework for Educational Management in Art Majors at Vocational Colleges

Discussion

1. The digital transformation of educational management of Art Major in Vocational Colleges in Guangdong Province

The results indicate that the digital transformation of educational management in art majors at vocational colleges in Guangdong Province is progressing steadily, with policy support and practical implementation in place. However, several systemic challenges remain, particularly in resource allocation, platform usability, and stakeholder participation.

1.1 Student Management. The findings demonstrate that digital tools significantly enhance student engagement, particularly through skill-oriented and interactive teaching formats. This supports previous studies that emphasize how digital learning environments can foster motivation and personalized learning pathways for vocational students (Zhao & Liu, 2020; Sun et al., 2021). However, technical shortcomings and inequities in service delivery, such as inadequate administrative digital services and lack of fairness in access, mirror concerns raised by Huang (2022), who highlights the digital divide in education services in underdeveloped areas. Tailored approaches for students with unique learning profiles—such as those in art and design—are essential for inclusive

educational governance (Geng et al., 2021).

1.2 Teacher Management. Survey and interview results show strong institutional support for teacher development through school-enterprise cooperation and fair evaluation systems, aligning with the conclusions of Chen et al. (2020), who argue that real-world practice integration is key to digital readiness among vocational educators. Nevertheless, issues such as digital anxiety and low involvement in policy-making reflect broader structural governance gaps, which Wu and Zhang (2021) identify as barriers to empowering teachers during digital reforms. The underperformance of campus OA systems, noted both in question no.15 and interview comments, underscores the finding by Li and Shen (2023) that technological design flaws hinder the adoption of digital administration systems in vocational institutions.

2. Teaching Management. The teaching management domain reflects high satisfaction with digital tools' impact on pedagogy, consistent with the research of Wang and Huang (2021), who found that hybrid teaching and interactive platforms increase teacher efficacy. The high recognition of favorable policy environments was also consistent with national initiatives outlined by the Ministry of Education (MOE, 2021), promoting the integration of smart education systems. However, the relatively low score reflects frustrations with digital system usability, echoing concerns raised by Tang and Yuan (2020), who argue that superficial digital infrastructure without functional support impedes transformation success.

3. Guidelines for Implementing Digital Transformation in Educational Management of Art Majors in Vocational Colleges

The development of a structured, actionable guideline for digital transformation in educational management among art majors in Guangdong's vocational colleges aligns with both national policy direction and institutional necessities. The focus group conclusions clearly emphasize the importance of cultivating digital talent, advancing educational infrastructure, and ensuring fairness and inclusivity across student, teacher, and teaching management domains.

In *student management*, the guidelines stress creating a personalized, student-centered talent development system rooted in justice and transparency. This is supported by Sun, Zhang, and Liu (2021), who found that digital learning environments can significantly improve engagement when tailored to students' cognitive and emotional traits—particularly relevant for art students who often exhibit high levels of creativity and emotional sensitivity. Additionally, Geng, Wang, and Li (2021) argue that personalized learning models are essential in vocational art education due to the diversity of learner profiles and professional outcomes. The current guidelines propose segment-based

implementation and phased planning to ensure the practicality of reforms in enhancing students' digital learning experience and outcomes.

Regarding *teacher management*, the focus is on improving digital literacy, hybrid teaching capability, and fair evaluation systems. Chen, Liu, and Xu (2020) emphasize that vocational colleges must embed digital skills training into continuous professional development to overcome teachers' anxiety about technological competence. This aligns with findings in the present study that call for increased support in digital upskilling and innovation-driven organizational, Wang and Huang (2021) highlight that blended teaching models are highly effective in vocational settings, where practical and theoretical learning must coexist. However, Wu and Zhang (2021) stress that teacher participation in institutional governance remains limited during digital reforms—a concern reflected in this study and addressed in the guideline through the call for inclusive decision-making mechanisms and strengthened incentive systems.

In the domain of *teaching management*, the guidelines advocate for decentralization, integration of industry standards into teaching, and the development of multifunctional digital platforms to inform decision-making. Tang and Yuan (2020) argue that educational digital transformation must be driven by the dual pillars of infrastructure readiness and managerial innovation. While digital tools like online platforms and campus OA are increasingly adopted, Li and Shen (2023) note that usability and system integration issues remain barriers to optimal use—highlighting the need for user-centered platform design, as also underscored in the present research. Moreover, Zhao and Liu (2020) affirm that aligning vocational education with real-world industry standards—both in content and certification—is essential for bridging the education-to-employment gap, a principle clearly embedded in the guideline's proposed framework.

Collectively, these guidelines represent a practical and research-informed blueprint for the digital transformation of educational management in vocational art programs. By anchoring reform efforts in systemic planning, policy alignment, and real institutional needs—as also emphasized by the Ministry of Education (2021)—this approach supports sustainable, scalable, and inclusive innovation in vocational education.

Recommendation

1. Recommendation for policy level

1.1 Develop region-specific digital transformation policies that address the unique needs of vocational art education.

1.2 Increase provincial investment in digital infrastructure and high-quality educational resources.

1.3 Mandate teacher participation in institutional governance to improve fairness in management decisions.

1.4 Integrate industry certification standards into vocational education policy frameworks.

1.5 Support multi-tier vocational education(undergraduate–doctoral) through national and provincial pilot programs.

2. Recommendation for practical applications

2.1 Enhance the usability and functionality of digital platforms (e.g., OA systems) for teaching and communication.

2.2 Provide continuous digital training for teachers and administrative staff to close capability gaps.

2.3 Establish hybrid teaching models that blend online interactivity with hands-on instruction.

2.4 Strengthen mechanisms for teacher feedback and participation in rule-making and performance evaluation.

2.5 Use data-driven decision-making tools to support transparent and responsive education governance.

3. Recommendations for future research

3.1 Explore the impact of digital transformation on student learning outcomes across various art disciplines.

3.2 Investigate the long-term effectiveness of hybrid teaching models in vocational colleges.

3.3 Examine how institutional culture affects the success of digital governance in educational management.

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