Development of Art Education Management Model in the Digital Era of Private Universities in Henan Province

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Abstract

This article aims to: 1. To study the levels of art education management in the digital era of private universities in Henan Province. 2. To study the exploratory factors analysis of art education management in the digital era of private universities in Henan Province. 3. To propose the guideline for development of art education management model in the digital era of private universities in Henan Province. This study used the EFA methodology.The research design is mixed methods research. The study is framed by the concept of takes into account the policies and current situation of education development in private universities in Henan Province, and explores the development of art education models in the digital age in private universities in Henan Province. The research area explores factors for developing of art education management model in the digital era of private universities in Henan Province. for developing of art education management model in the digital era of private universities in Henan Province. Include of Learners' engagement，Industry Cooperation，Course relevance， Teacher Expertise Technical infrastructure. It examines the current state and existing cha challenges of art education management in the digital in these universities, aiming to propose countermeasures and suggestions for improvement. The target group key consists of in this research was administrators and teachers at private universities in Henan Province. This study used the EFA methodology. The survey targets art education administrators and teachers in the digital era of private universities in Henan Province, the sample group used 36 private universities in Henan Province. The researcher has assigned 14 respondents consist of 4 school administrators and 10 teachers for each private university. Therefore, there are 504 respondents of school administrators (144 respondents) and teachers (360 respondents), And the content analysis by 9 key informants. The research tools consist of five types: 1. By systematically retrieving, screening, and analyzing published academic literature, reports, policy documents, etc., we can obtain the theoretical framework, research status, methodological paradigms, and controversial focuses in the research field. 2. Through standardized question design, questionnaires are distributed to the target group to collect quantitative data for analyzing the relationships (such as correlation and difference) between variables. Conduct Cronbach's α reliability analysis ($\alpha > 0.7$ indicates reliability) and factor analysis (KMO>0.6) through pre-survey to ensure the quality of the questionnaire. 3. Quantitative data collected from the questionnaire was analyzed using SPSS software.

Descriptive statistics were used to analyze the demographic characteristics of the participants as well as the mean and standard deviation of each variable. An exploratory factor analysis was conducted to determine the factors underlying the influence of art education management in digital era on private education management and to test the reliability and validity of each factor. 4. The five-expert interviewing. Through semi-structured or unstructured dialogues, we conduct in-depth exchanges with interviewees to obtain qualitative data such as subjective experiences, behavioral motivations, and situational details. 5. The nine-expert interviewing. Through semi-structured or unstructured dialogues, we conduct in-depth exchanges. Data were analyzed using: 1. Qualitative exploration stage theoretical construction and preliminary screening of factors 2. Systematic Literature Review: Based on databases such as Web of Science Core Collection and CNKI Academic Journal Database, cross language searches were conducted using keyword combinations such as "Digital Transformation of Art Management Private Universities". 3. Delphi expert interview: Using a purposive sampling strategy, five composite experts with associate senior titles or more or more than ten years of management experience were selected (including two scholars in the field of art management, two managers from private universities, and one industry association leader). A theoretical framework for the influencing factors of digital art management mode has been preliminarily constructed. 4. Quantitative verification stage: hypothesis testing and model construction: The development of measurement tools is adapted from mature scales at home and abroad for confirmatory factor analysis to ensure the structural validity of the scales. Use SPSS for descriptive statistics and construct a standardized regression equation model. 5. Qualitative deepening stage: expert consensus verification: A second round of expert interviews was conducted, and 9 new industry experts (including art institution leaders, education information technology experts, and university teaching supervisors) were added through snowball sampling. Using a combination of focus group interviews and in-depth case analysis, multidimensional validation is conducted around the core influencing factors, action paths, and model interpretability identified through quantitative research. 6. Research on Reliability and Validity Assurance System 7. Conclusion validity: Expert cross validation and multi case comparative analysis are adopted to ensure the theoretical saturation and practical universality of the research conclusions

Research findings: 1. The findings related to the first objective indicate the current art education models in Henan Province's private universities are reasonably aligned with digital demands. 2. that the findings related to the second objective reveal that five key factors influencing art education models were identified: Course relevance, teacher Expertise, Technical Infrastructure, Industry Cooperation, and Learners engagement. 3. that the findings related to the third objective reveal that propose the guideline for developing of art education management model in the digital era of private universities in Henan Province.

Contribution: The findings of this study provide new perspectives and insights into higher education theories in the digital environment. By focusing on private universities in

Henan Province, this study will expand on existing theories of private higher education management and provide a theoretical framework for specific regions and specific types of institutions. Through theories of multiple factors such as learner engagement, teacher career, and data platform, the study deeply explores how technology in the digital age affects and changes art education, providing new insights into the integration theory of educational technology.

Keywords: Art Education Management, Digital Era, Private Universities,

Introduction

In the data age, art education is facing transformative changes driven by technological advances, digital tools, and evolving educational paradigms. Central to navigating these changes successfully is the expertise of teachers. Art educators' abilities to integrate new technologies, engage students creatively, and leverage data for personalized learning are crucial in ensuring high-quality art education. (Wu, G. Y. 2024). In this article, we explore the issue of teacher expertise in art education management in the data age, focusing on areas such as technological adaptability, creativity and innovation, continuous professional development, cross-cultural understanding, and data-driven decision-making. As (Wan, 2023) point out, "The constant evolution of digital platforms and tools requires art education managers to 45 continuously update curricula, infrastructure, and teaching methodologies, creating a state of perpetual adaptation" .This constant need for updating can strain resources and create a sense of instability in educational planning. Digital era brings challenges to art education management. This era presents both opportunities and challenges for art educators and institutions, necessitating a reimagining of traditional educational models to prepare students for a digitally-driven art world.

Research Context and Target Group The researcher distributed a research questionnaire on the development of art education management mode in private colleges and universities in Henan Province in the digital age. The target population is 39 universities in Henan Province. By simple random sampling, 36universities were selected as the sample. Nine respondents were selected from each of the 36 universities, including 4 academic administrators (144 in total) and 10 teachers (360 in total). There were 504 respondents in total, equivalent to 100% of the sample. The data used to analyze the personal status of the respondents included gender, age, highest education and current position.

Category	n=504	Percentage
1.Gender		
Male	265	52.60
Female	239	47.40
2.Age		
18-25 years old	140	27.80
26-35 years old	117	23.20
36-45 years old	117	23.20
46-55 years old	109	21.60
Above 55 years old	21	4.20
3.The Highest education		
associate degree	120	23.80
bachelor's degree	134	26.60
Master's degree	135	26.80
Doctoral degree	115	22.80
4.Work Status		
administrators	130	25.80
Teachers	374	74.20

According to Table, among the 504 samples, 265 were male, accounting for 52.60%. There were 239 females, accounting for 47.40%. It can be seen that the ratio of men to women is relatively close, with slightly more men than women, but the gap is not large. The age span of the sample covers multiple stages. Among them, the 26-35 age group has the largest number of people, reaching 117, accounting for 23.20%, indicating that this age group accounts for a large proportion in the sample of this study, which may be the focus group or main participation group. 117 people aged 36-45 years old, accounting for 23.20%; 109 people aged 46-55 years old, accounting for 21.60%; There are relatively more people aged 18-25,140 people, accounting for 27.8%; there are only 21 people aged 55 and above, accounting for 4.20%. Overall, there are more young people (aged 18 to 25). In terms of educational background, the number of people with master's degree was the largest, with 135 people accounting for 26.80%, indicating that the number of people with master's degree was the largest in the sample group. 134 bachelor's degree, accounting for 26.60%; associate degree 120, accounting for 23.80%; The number of people with doctoral degree was the least, 115, accounting for 22.80%, reflecting that the overall education structure of the sample group was biased towards the middle level and above. In the classification of work status, there were 130 school administrators, accounting for 25.80%; There are 374 teachers, accounting for 74.20%. In general, the gender distribution of the sample is relatively balanced, the age is 150 concentrated in the young and middle-aged stage, the education level is mainly master's degree and bachelor's degree, and the working state of teachers accounts for a large proportion of the population.

Reliability analysis in this study, Cronbach's **α** coefficient was used to test the internal consistency Reliability of the questionnaire. The sample reliability analysis used 2 universities, each with 15 people, for a total of 30 people, by discovering Cronbach alpha confidence levels. This is shown in Table 2.

Cronbach's **α** coefficient	Standardize Cronbach's **α** coefficient	Terms	Sample
0.946	0.956	97	30

Table 2 Sample reliability analysis Cronbach's **α** coefficient Standardize Cronbach's **α** coefficient 0.946 0.956 Terms Sample 115 30 The Cronbach's **α** coefficient of the Sample questionnaire was 0.946, and the standardized Cronbach's **α** coefficient was also 0.956, indicating that the questionnaire had high internal consistency. This means that the items are highly correlated with each other, and the measurement tools are stable and reliable. In addition, the questionnaire contained 115 measurement items and the sample size was 30, which was sufficient to support the results of the confidence analysis. Therefore, the Sample questionnaire used in this study has a high degree of confidence in measuring relevant variables and can be used for subsequent statistical analysis.

Objectives

1. To study the levels of art education management in the digital era of private universities in Henan Province.

2. To study the exploratory factors analysis of art education management in the digital era of private universities in Henan Province.

3. To propose the guideline for development of art education management model in the digital era of private universities in Henan Province. This study used the EFA methodology.

Literature Review

The concept of art education management

Art education management refers to an educational management institution that specializes in art education. Its operational management refers to a series of organizational activities that achieve the expected results of the institution's educational activities through the reasonable allocation and coordination of resources such as organization, personnel, funds, facilities, curriculum and teaching in order to achieve educational goals. Art education management involves multiple aspects such as the determination of art professional management goals, resource allocation, establishment of management systems, and optimization of educational processes. Its core is to focus on teaching quality and cultivate students' creativity and comprehensive qualities to meet the society's demand for professional talents. (Wang, X. 2022).

Concepts and theories concerning Digital Era

At its core, the digital era is characterized by the proliferation of digital technologies and platforms that enable interactive, user-generated content and instantaneous communication. define it as "a period marked by the ubiquity of digital technologies, where information is created, shared. It is marked by media convergence, democratization of content creation, increased interactivity, transcendence of physical and temporal boundaries, data-driven approaches, and rapid technological evolution. This era presents both opportunities and challenges for art educators and institutions, necessitating a reimagining of traditional educational models to prepare students for a digitally-driven art world. (Li Juanjuan & Dai Kangxi. 2023)

Digital era brings opportunities for art education management

The advent of the digital era has ushered in a plethora of opportunities for art education management, particularly in the context of private universities in Henan Province. These opportunities span various aspects of educational administration, from curriculum design to student engagement and resource allocation.

One of the primary opportunities lies in the enhancement of curriculum flexibility and personalization. As (Hanna, D. E. 1998) point out, "digital technologies enable art education managers to develop adaptive curricula that can be tailored to individual student needs and learning paces, In the era of rapid development of in digital.This expanded access not only enhances the quality of education but also helps in bridging the resource gap often experienced by private universities in comparison to their public counterparts. (Tang Shumin. 2020)

Digital era brings challenges to art education management

While Digital era offers numerous opportunities for art education, it also presents significant challenges for education management, particularly in the context of private universities in Henan Province. These challenges span various aspects of educational administration and require careful consideration and strategic planning to address effectively. One of the primary challenges is the rapid pace of technological change. As (Wang, S. 2023, June) point out, this constant need for updating can strain resources and create a sense of instability in educational planning. Art education managers must navigate these challenges while striving to preserve the core values of artistic education and leveraging the benefits of new media technologies. By addressing these challenges proactively and strategically, art education programs can evolve to meet the demands of the digital age while maintaining their educational integrity and cultural significance.

Art education management in the digital age for private universities

For private universities to thrive in this complex environment, they must leverage both internal and external factors. This may include aligning programs with government initiatives, adapting to economic realities, embracing technological innovation, creatively addressing demographic challenges, leveraging changing cultural attitudes, and building international

connections. In doing so, Henan's private universities can develop strong and innovative models of arts education that both meet the demands of the in digital era age and are rooted in the region's unique cultural and educational context. (Ambarwangi, S., & Rachman, M. 2015).

Research Methodology

Research Design

This study adopted a mixed-methods research design, combining quantitative and qualitative research methods. The quantitative research was conducted through a questionnaire survey to collect data on teacher motivation and related factors, and the qualitative research was carried out by in-depth interviews with experts to gain in-depth understanding and validation of the research findings.

Participants

15 administrators and 10 teachers were selected as subjects for in-depth interviews. These participants should be representative and effectively reflect the views and experiences of their groups.

Data Collection Tools

1. Questionnaire

The questionnaire consisted of five parts: Demographic data of the Respondents, Current Situation of Educational administration, and explores the five influencing factors of student participation, industry cooperation, curriculum relevance, teacher expertise, and technical infrastructure. The items in the questionnaire were measured using a 5-point Likert scale, ranging from "strongly disagree" to "strongly agree". The content validity of the questionnaire was ensured through literature review and expert consultation, and the reliability was tested using Cronbach's alpha coefficient, which was found to be above 0.7, indicating good reliability.

2. Interview

A semi-structured interview guide was developed to conduct in-depth interviews with the experts. The interview questions were mainly related to the experts' views on the current situation of art education in private education management, the influencing factors of development of ate education management in the digital era idea in education management, and so on. The interviews were conducted online and each interview lasted about 20 minutes. Interview data were recorded and transcribed for subsequent analysis.

Data Analysis Methods

1. Quantitative Data Analysis

Quantitative data collected from the questionnaire was analyzed using SPSS software. Descriptive statistics were used to analyze the demographic characteristics of the participants as well as the mean and standard deviation of each variable. An exploratory factor analysis was conducted to determine the factors underlying the influence of art education

management in digital era on private education management and to test the reliability and validity of each factor.

2. Qualitative Data Analysis

This study uses a semi-structured interview method to deeply explore The Development of Art Education Management Model in the Digital Era of Private Universities in Henan Province. The interviewees include managers, teachers and relevant education experts to ensure that management experience and practical views at different levels can be presented. Before the interview, the researcher designed an open-ended question framework covering topics such as educational management concepts, governance practices, policy implementation, and teacher-student interaction. During the interview, the researcher flexibly adjusted the order of questions according to the interviewees' answers and encouraged them to share their true thoughts and personal experiences. This method can not only ensure the systematic nature of the interview content, but also tap into deep insights, providing rich qualitative data for the research to support in-depth analysis and optimization suggestions for the education management model of private universities.
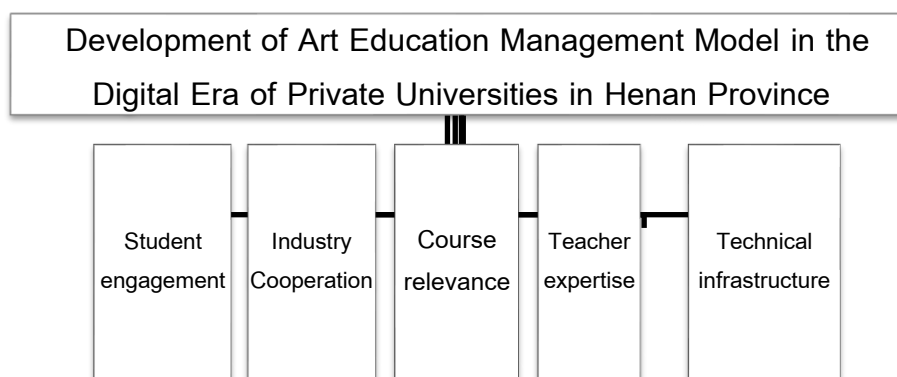
Results

1. **Findings related to Objective 1** revealed that art education models in Henan Province's private universities are reasonably aligned with digital demands.

2. **Findings related to Objective 2** five key factors influencing art education models were identified: Course relevance, teacher Expertise, Technical Infrastructure, Industry Cooperation, and Learners engagement.

3. **Findings related to Objective 3** propose the guideline for developing of art education management model in the digital era of private universities in Henan Province.

New Knowledge Generated from the Research

From the results of the development analysis of art education management mode in the digital era of private colleges and universities in Henan Province, there are five factors, which are summarized as follows:

This section identifies the body of knowledge that emerges from the research findings. five key factors influencing art education models were identified: Course relevance, teacher

Expertise, Technical Infrastructure, Industry Cooperation, and Learners engagement. Development model of art education management mode of private universities in the digital era in Henan Province based on exploratory factor analysis (EFA) and principal factor Analysis (PCA).

Recommendations

Based on the research findings, the researcher offers the following recommendations:

Findings from Objective 1 revealed that art education models in Henan Province's private universities are reasonably aligned with digital demands. Therefore, relevant agencies should consider implementing developing Art Education Models in Response to Digital Needs.

Findings from Objective 2 indicated that five key factors influencing art education models were identified: Course relevance, teacher Expertise, Technical Infrastructure, Industry Cooperation, and Learners engagement.

Therefore, relevant agencies should consider implementing the following:

1. Student engagement

The research results show that enhancing student engagement is crucial for improving the quality of art education and promoting the growth of students. It is not only beneficial for students' academic achievements but also for their future careers in the art field. This will contribute to the cultivation of more outstanding art talents and the sustainable development of art education in private universities in Henan Province in the digital age.

2. Industry Cooperation

Industry cooperation has a profound and positive impact on art education. By recognizing these challenges and taking proactive measures to overcome them, private universities in Henan Province can strengthen their position in the art education landscape. They can better meet the needs of the digital age and the art industry, As the digital era continues to evolve, the importance of industry cooperation in art education will only become more pronounced, and it is crucial for all stakeholders to work together to unlock its full potential.

3. Course relevance

As the digital era continues to reshape the art industry, private universities must remain vigilant and proactive in adapting their art curricula. By strengthening the connection between courses and industry needs, they can cultivate a new generation of art professionals who are well - versed in both traditional art skills and the latest digital technologies. This will not only meet the demands of the local art industry in Henan Province but also contribute to the broader development of the art field in the digital age. In the long run, continuous improvement in course relevance will be a key factor in the success of art education in private universities, ensuring that students are well - prepared for the challenges and opportunities that lie ahead.

4. Teacher expertise

Teacher expertise is fundamental for delivering high - quality art education, from guiding students' learning to shaping relevant curricula. Despite the challenges, by recognizing the importance of teacher expertise and taking proactive measures to enhance it, private universities can improve the overall quality of their art education. This will ultimately lead to the cultivation of more talented art students who are well - equipped to thrive in the digital - age art industry.

5. Technical infrastructure

Technical infrastructure is not only a facilitator of art creation and learning but also a determinant of the competitiveness of art education programs. Despite the existing challenges, by investing in infrastructure development, Strengthen the technical infrastructure. universities can create a more conducive learning environment for students.

Findings from Objective 3 showed that propose the guideline for developing of art education management model in the digital era of private universities in Henan Province. Therefore, relevant agencies should consider implementing the following:

Recommendations for Future Research

This study discovered new knowledge regarding Development of Art Education Management Model in the Digital Era of Private Universities in Henan Province. The key insight is that five key factors influencing art education models were identified: Course relevance, teacher Expertise, Technical Infrastructure, Industry Cooperation, and Learner's engagement. This can be applied to Universities It is recommended that future studies place greater emphasis on Art Education Management. For future research.

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