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Original Paper

Research on the Project Management Mechanism of Art Design Teacher Training Based on Digital Technology

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Abstract

Driven by the wave of the technological revolution, digital technology is reshaping the field of art and design at an unprecedented depth. The traditional design paradigm has struggled to adapt to the rapidly evolving aesthetic demands and creative methods. The integrated development of multimedia technology and computer-aided design not only injects new vitality into artistic creation but also opens up a multi-dimensional space for artistic expression. This transformation has created new era propositions for higher art and design education. As the core base for cultivating art and design talents, the construction of the teaching staff in higher education institutions is directly related to the height and breadth of discipline development. The group of art and design teachers shoulders multiple missions: they not only have to fulfill their primary duties of imparting knowledge and skills, but also achieve breakthroughs in areas such as discipline construction, academic research, and social services. Especially during the critical period of digital transformation, the teaching staff needs to possess an interdisciplinary perspective, technological innovation capabilities, and cutting-edge aesthetic literacy, which poses a severe challenge to the traditional teacher training model. Under the background of digital transformation, universities need to re-examine their teacher development strategies and build an art-design teaching staff that adapts to the digital age through multi-dimensional measures such as institutional innovation, resource integration, and evaluation reform. This is not only a practical demand for improving teaching efficiency, but also a strategic choice for promoting the long-term development of the discipline. The competitiveness of future art and design education will largely depend on the depth and breadth of the current digital transformation of teaching staff.

Keywords

Digital technology, Art design, Teacher training, Project management

1. Introduction

Chinese art and design education is facing unprecedented development opportunities and challenges under the background of the new era. As an important component of the country's cultural soft power construction, art design not only bears the mission of professional education, but also shoulders the important responsibility of inheriting the Chinese aesthetic spirit and promoting cultural innovation. As the main battlefield for cultivating art and design talents, the educational quality of higher education institutions directly determines the future development height and innovative potential of the industry. The construction of the teaching staff has always been the core proposition for the development of art and design education in colleges and universities. An outstanding teaching team is not only the fundamental guarantee of teaching quality, but also a key force in promoting the innovative development of disciplines and achieving educational modernization. From the initial stage to the mature development stage of colleges and universities, teacher training is of strategic significance. It is not only a fundamental project to enhance the level of running schools, but also a lasting driving force for achieving the connotative development of education. At present, art and design education is facing new trends such as digital transformation and interdisciplinary integration, which puts forward higher requirements for the professional quality and innovation ability of the teaching staff. Colleges and universities need to establish a systematic and professional teacher training system. Through continuous education and training, it should constantly enhance teachers' teaching ability, research level and artistic creativity, thereby laying a solid foundation for cultivating art and design talents in the new era.

At present, the training system for university teachers in China is still mainly based on the administration-led model. This model relies on institutions such as the Education College and the Continuing Education College within universities, and integrates teaching resources through administrative affiliation to carry out training work. From the perspective of the operation mechanism, this hierarchical management model does have the advantage of large-scale implementation. It can complete the centralized training of a large number of teachers in a relatively short period of time, ensuring the planning of the training work and the efficiency of resource utilization. However, this traditional training model has obvious institutional flaws. Under the wave of digital transformation, digital technology is reshaping the educational ecosystem. From teaching methods to management models, from knowledge dissemination to ability cultivation, digital technology offers brand-new possibilities for teachers' professional development. Especially in terms of training management, the application of technologies such as big data analysis and artificial intelligence is expected to build a more precise and efficient training quality monitoring system. Therefore, how to deeply integrate digital technology into the teacher training system and establish a new intelligent and personalized training model is an important issue that urgently needs to be solved to promote the professional development of teachers. This is not only related to the improvement of training quality, but also to the strategic layout of the construction of the teaching staff in the new era.

2. Project Management Theory and Its Application in Teacher Training

2.1 Basic Contents of Project Management Theory

According to the internationally recognized framework of project management standards, the modern project management life cycle can usually be divided into five key links: the initiation stage, the planning stage, the implementation stage, the control stage and the conclusion stage (Lu Hai, 2002). These five stages form a complete project management closed-loop system, with each link having its specific management focus and output results. During the initiation stage, the project team needs to clarify the project goals, scope and feasibility. The planning stage focuses on formulating a detailed project execution blueprint. The implementation stage is the core process for the project to land. The control stage runs through the entire process to ensure that the project does not deviate from the track. The conclusion conclusion stage involves completing the project acceptance and summarizing the experience. This stage division reflects the systematic and scientific nature of project management and provides methodological guidance for the successful implementation of various projects.

The project management life cycle is composed of five interrelated key links, forming a rigorous working closed loop. After the project is officially initiated and launched, a systematic implementation plan needs to be formulated. Through strict execution control, the project's progress should be ensured, and ultimately the project evaluation and experience accumulation should be completed. The various stages present a progressive connection relationship, maintaining the continuity in sequence while also having necessary intersections and overlaps, jointly building a complete management system for the project from concept to delivery.

2.2 The Importance of Applying Project Management Theory to the Training of Art Design Teachers

At present, the teacher training system in our country has achieved institutionalized operation, but in terms of the implementation mechanism, it still shows a significant administrative dominance feature. This policy-driven training model, by establishing a clearly hierarchical administrative management system, emphasizes organizational efficiency and implementation intensity. From the perspective of the management system, this top-down operation mode does indeed have advantages such as convenient management and efficient organization. At the specific implementation level, most training programs adopt a school-like class management mechanism, with full-time class teachers assigned to be responsible for daily management work. This micro-management model usually includes standardized processes such as establishing temporary class committees, implementing attendance systems, and assigning and collecting homework. However, this mechanized management approach often leads to training activities becoming mere formalities in practice; professional development activities are alienated into administrative tasks; due to the lack of a scientific and effective quality assessment and supervision mechanism, it is difficult to effectively guarantee the effectiveness of training. The drawbacks of this operation mode are increasingly evident. The training content is disconnected from the actual needs, and it is difficult for teachers to obtain truly valuable professional improvement. The stylized management approach has seriously dampened teachers' enthusiasm for participation, resulting

in the training activities falling into a vicious circle of "passive participation and poor effect". A deeper impact is that this model neglects the initiative of teachers as the main body of professional learning, making it difficult for training to achieve the fundamental purpose of promoting teachers' professional development.

At present, educational institutions generally have problems of hierarchical redundancy and low efficiency in their management systems. The traditional pyramid-shaped vertical management model leads to persistently high administrative costs, severe information barriers among various departments, and the absence of a collaborative mechanism, which seriously restricts the orderly development of educational work. Especially in the field of teacher training, various departments often formulate training plans based on parotivism, lacking systematic planning. This not only leads to misallocation of resources but also neglects the individualized development needs of teachers. Introducing a project management mechanism can effectively break through this predicament. By adopting a flat management structure, the decision-making chain can be compressed, the response speed can be enhanced, scattered resources can be integrated to form a synergy effect, and a scientific training and evaluation system can be established to ensure a quality closed loop. This innovative management model not only conforms to the development trend of modern educational governance, but also can achieve a win-win situation of organizational effectiveness and teachers' professional growth, and has important practical value for promoting high-quality development of education.

3. Existing problems in the Management Mechanism of the Art Design Teacher Training Project

Digital technology is profoundly reshaping the ecological pattern of art and design education, and its application has permeated every link of the entire teaching process. In the dimension of knowledge imparting, virtual reality (VR) technology has completely revolutionized the teaching mode of art history. Learners can cross the boundaries of time and space and appreciate the masterpieces passed down through the ages at zero distance in the virtual exhibition hall. Augmented reality (AR) technology endows graphic design with new vitality. With the help of innovative platforms such as Adobe Aero, static visual works can be transformed into interactive dynamic art installations. In terms of innovation in teaching tools, digital painting software Procreate and Adobe Fresco, with their powerful feature sets, are redefining the boundaries of creative media, while cloud collaboration tools such as Figma have completely broken the geographical limitations of design teams and achieved seamless creative collaboration across time zones. However, the educational community is confronted with severe challenges in capacity transformation. Most teachers still remain at the superficial application of technological tools and have failed to establish a teaching system that deeply integrates digital technology with art education. This directly leads to the difficulty in effectively incorporating cutting-edge fields such as generative AI art and algorithm-driven design into the curriculum system. The current teacher professional development mechanism has structural flaws: the training content is disconnected from the actual teaching needs, technological updates lag behind the industry

development, and the evaluation system fails to keep pace with the times. These systemic obstacles ultimately restrict the overall improvement of the quality of art and design education. To break through this predicament, it is necessary to establish an innovative ecosystem where technology empowers education, including systematic solutions such as reconstructing the standards for teachers' capabilities, developing dynamic training courses, and building a collaborative platform between schools and enterprises.

At present, the training system for art design teachers is facing severe structural challenges and urgently needs systematic reform. From the perspective of training content, the problem of lagging update of the curriculum system is particularly prominent. Research data shows that over 60% of training programs still adhere to the traditional teaching content framework and have insufficient coverage of cutting-edge fields such as artificial intelligence-assisted design and real-time rendering technology. At the level of resource construction, there is a distinct fragmented feature. High-quality teaching resources are scattered across multiple independent platforms, lacking an intelligent resource integration and recommendation mechanism. The actual invocation rate has long been lower than the industry average.

From the perspective of management efficiency, the process of digital transformation and upgrading is slow. An intelligent management platform has not yet been established for art design training. Basic tasks such as student management and performance evaluation still rely on manual operations, which not only leads to low efficiency but also poses a risk of data inaccuracy. There are significant deficiencies in the evaluation mechanism. It overly relies on one-time assessment and fails to establish a full-process evaluation system covering dimensions such as teaching design, technology application, and achievement transformation.

The innovation of art design training models is insufficient. Offline centralized teaching still holds an absolute dominant position, which seriously restricts the flexibility of teachers' autonomous learning. The lack of a mechanism for the transformation of training outcomes has led to more than one-third of the participating teachers having difficulty effectively transferring the skills they have learned to actual teaching scenarios. If these deep-seated contradictions cannot be resolved in time, it will seriously hinder the process of digital transformation in art and design education.

4. Design of the Project Management Process for Art Design Teacher Training

Based on the content and process of project management and in combination with the inherent laws of teacher training, this paper designs the management model and process of art design teacher training based on project management theory as follows:

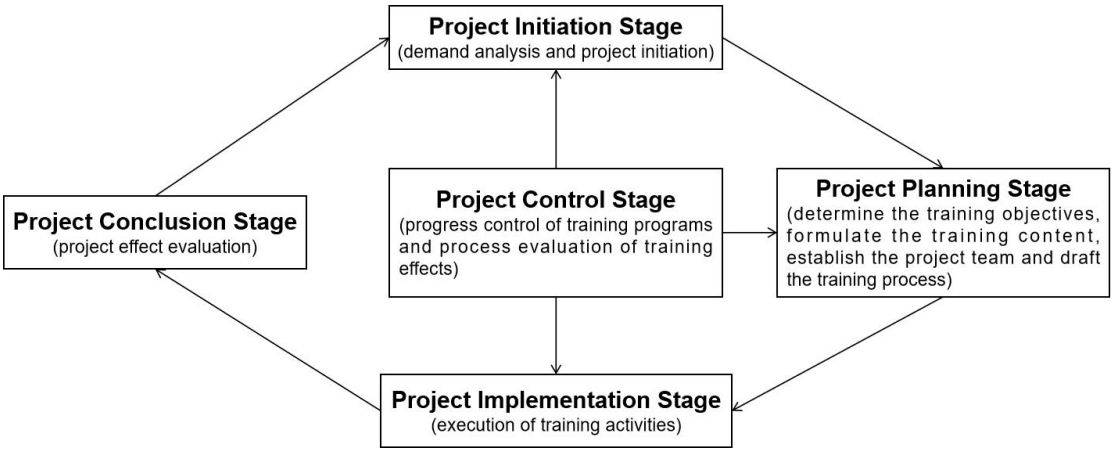

Figure 1. Flowchart of Training Project Management

4.1 The Initiation Stage of the Training Project

The main steps in the initiation stage of the training project are conducting demand analysis and project initiation. Among them, demand analysis is also a very important part in the entire training project process. Training needs analysis is a process in which aspects such as training objectives and trainees should be systematically identified before planning the training (Sun et al., 2013). Training needs analysis is the process of analyzing the causes of the gap. It is also the prerequisite for confirming training goals and designing training plans, and the basis for evaluating the training effect. Through demand analysis, the gaps existing among teachers are identified, and a teacher training plan is formed to enable teacher training to be "targeted".

The core link in the start-up stage of the training project lies in the scientific and rigorous demand analysis and project initiation argumentation. Among them, requirement analysis, as a key node in the entire project process, its importance cannot be ignored. Systematic training needs analysis should be the first step in project planning, and professional evaluations should be conducted on multiple dimensions such as the characteristics of the trainees, organizational strategic goals, and capability gaps. This analysis process is essentially a diagnostic study of the root causes of the ability gap, and its results will directly affect three key links: establishing a precise training objective system, constructing a scientific training course framework, and establishing an effective training evaluation mechanism. By adopting standardized analysis tools and scientific methodologies, it is possible to systematically identify the professional development bottlenecks of the teacher group, thereby formulating targeted ability improvement plans to ensure the maximization of the input-output ratio of training resources. Professional demand analysis should include three progressive levels: objective diagnosis of the current situation, definition of ideal standards, and in-depth analysis of the causes of the gap. This structured analysis method can fundamentally ensure the strategic matching degree and practical operability of the training program, and avoid the training activities falling into the trap of formalism.

4.2 Training Project Planning Stage

The tasks that need to be accomplished in the planning stage of the training project include: determining the training objectives, formulating the training content, establishing the project team, and drafting the training process.

(1) Set training goals

Digital technology is undergoing revolutionary changes in the field of art and design education. At present, virtual reality technology has enabled immersive teaching of 3D modeling, artificial intelligence-assisted design tools have significantly enhanced creative efficiency, and cloud computing platforms have broken through the limitations of time and space, making collaborative design the norm. Art design teachers still remain at the level of traditional software operation and have insufficient mastery of emerging technologies such as parametric design and generative art. This ability gap seriously restricts the cultivation of innovative talents. Therefore, the current training objective needs to enhance teachers' mastery of digital technology on the basis of the original training content.

(2) Develop the training content

When formulating an enterprise training program, scientifically determining the training needs and goals is only the first step. What is more crucial is how to precisely screen the training content based on the established goals. This stage is directly related to the ultimate effectiveness of the training program and requires systematic consideration from two dimensions: Firstly, it is necessary to systematically sort out the core knowledge system and key skill points required to achieve the training goals; Secondly, it is necessary to carefully evaluate and select the training implementation mode that best matches the actual situation of the enterprise. The selection of training content should not only take into account the current business needs, but also focus on the organization's future strategic development direction to ensure that the training investment can generate continuous value returns.

The prominent problems in the content of the art design training program are manifested as ambiguous target positioning and lagging content update. Most training institutions still adopt a one-size-fits-all standardized curriculum and fail to set differentiated training paths for teachers at different levels. The training program lacks a systematic digital capability assessment system, and the content of the training courses is disconnected from the actual needs of teachers. Training resources are scattered across multiple platforms and lack effective digital integration methods. The content of art design training is disconnected from the technological development of the industry. Currently, few training courses cover cutting-edge fields such as metaverse design. The allocation of resources shows a "Matthew effect", with high-quality teachers concentrated in training institutions in first-tier cities. The application of digital tools in the management process remains at the basic level such as attendance records, lacking in-depth mining of teaching behavior data, resulting in the lack of quantitative basis for the evaluation of training effects. The content of art design training should address the above-mentioned issues.

(3) Establish a project team

Based on the content of the training program, it should establish a project team and assign individuals at different levels to manage the project. The highest level in the entire project team is the principal or the vice principal in charge of the project as a whole. He is responsible for the overall control of the training project, including the training expenses. Under this, a project leader is established. The project leader is directly accountable to the principal. The job contents include: formulating training plans based on training needs and goals; formulating the training process; Designating the organizers for each specific training content, designating the trainers (both external and internal), and designating the communicators for the training projects. Among them, the organizer is responsible for the organization and supervision and control of specific training activities, the trainers are responsible for the implementation of specific training courses, and the communicators are responsible for the coordination of various training activities, the collection of documents and the release of information.

(4) Formulate the training process

After clarifying the training goals and contents, the next very important task is to formulate the training process. The work of formulating the training process includes formulating the training plan and even the design and development of the training courses. This activity is carried out by the person in charge of the training project. An important task in formulating the training process is to break down the training programs.

WBS is a very important method in the process of decomposing the work structure in project management. It basically involves grouping project elements, focusing on deliverables, defining and summarizing the entire scope of work, and the number of reduced layers represents a more detailed definition of project work. WBS is an important basic tool, which plays a very significant role in aspects such as resource requirements and planning formulation. At the same time, it is also conducive to project changes. The use of WBS can link the entire project and refine it, facilitating the decomposition of the project into various feasible, easy-to-operate and relatively short-term tasks.

4.3 The Implementation Stage of the Training Project

The implementation of a training program is the process of carrying out various activities within the program in accordance with its expectations and plans. The following two points should be noted in the process of implementing the training program:

First, summarize the training programs regularly. During the implementation of the training program, regular meetings or reports are held. The contents include summarizing the completed training tasks, analyzing the problems that have emerged in the ongoing training tasks and the input of human resources or financial resources, arranging and predicting the upcoming training tasks, and releasing information on changes to the training program.

Second, implement project guarantees. The smooth progress of a project cannot be achieved without good project support. Project support includes the supply of training locations, the preparation of training materials, the maintenance and preparation of relevant training facilities, daily services during

the project implementation process, and the handling of emergencies. Detailed and meticulous arrangements should be made for the necessary conditions during the project implementation process in accordance with the project plan.

Art design training requires the selection of digital tools that match the characteristics of art design teaching. The principle of dynamic adaptability emphasizes updating the training content according to the technological iteration cycle. The principle of collaborative construction advocates that schools and enterprises jointly build digital resource libraries. In the goal-setting stage, a three-dimensional indicator system should be established: the technical literacy dimension includes hard indicators such as the operation of AR/VR tools; the teaching transformation dimension assesses the ability to integrate digital technology into teaching plan design; and the innovation dimension focuses on the development of interdisciplinary courses empowered by technology.

4.4 Training Project Control Stage

Project control plays a crucial role in modern management systems and runs through all stages of the project life cycle. From the very beginning of the project planning, managers need to scientifically predict and dynamically control key elements such as the project scope, time nodes, cost budget, communication mechanism and procurement process. During the project execution stage, quality control requires systematic monitoring methods to ensure the achievement of the expected goals. Take the teacher training program as an example. Its quality control system needs to carry out all-round supervision around the training objectives, course contents and implementation processes. Specifically, it is necessary to continuously track key indicators such as the learning outcomes of the participating teachers, the teaching quality of the instructors, the project progress, management efficiency, and the use of funds, to ensure that the training activities are strictly carried out in accordance with the established plan. At present, the research results on teacher training evaluation at home and abroad are quite abundant. After an in-depth analysis of various evaluation models, it can be found that a high-quality evaluation mechanism should run through the entire training process. It can not only scientifically demonstrate the necessity and feasibility of the training project, but also provide real-time monitoring for the implementation of the training.

4.5 The Conclusion Stage of the Training Program

The content of training project management at the end of the project is the evaluation of the training effect.

Under the background of digital technology empowering the training of art design teachers, establishing a scientific evaluation and feedback mechanism is a key link to ensure the quality of training. The evaluation of training effects generally has problems such as a single index system and lagging data collection. It is urgent to construct a dynamic evaluation system based on digital technology. By deploying the learning analysis system, multi-dimensional indicators such as the online learning behavior data, work creation trajectories, and interactive participation of the participating teachers can be collected in real time. Combined with artificial intelligence algorithms, learning

effectiveness prediction and abnormal behavior early warning can be carried out. In terms of the feedback mechanism, a two-way closed-loop system should be established: On the one hand, personalized learning diagnosis reports should be generated by using data visualization technology to provide teachers with precise suggestions for ability improvement; On the other hand, feedback from trainees is collected through intelligent questionnaires and sentiment analysis tools, and a heat map for training quality improvement is automatically generated. The practice of a provincial teacher development center shows that the training outcome evaluation system with blockchain technology for evidence storage has improved the efficiency of credit certification. Meanwhile, the iterative optimization mechanism based on big data analysis has shortened the course update cycle to one-third of the traditional model. In the future, it is necessary to focus on breaking through the standardized integration of multi-source heterogeneous data, develop an intelligent evaluation model that suits the characteristics of the art design discipline, and establish a long-term incentive mechanism that links the training effect with the professional title evaluation.

5. Conclusions

Based on digital technology and drawing on the five-stage basic process in project management, this paper integrates the training tasks of teachers into project goals according to the training needs. After formulating a detailed plan, the project is implemented. During the project implementation process, necessary supervision and adjustment of the project are carried out through project progress control and training evaluation. At the end stage of the training project, the training results are evaluated. In this way, the process of project management is unified with the process of teacher training, forming a management model for art design teacher training that is clear and complete in thinking, highly operational and ensures the quality of training.

References

Chen, H. Q. (2012). *The Application and Development of Digital Technology in Environmental Art Design*. Anhui Polytechnic University.

Chen, W. J. (2012). *Research on the Application of Project Management Methods in the Training of Young Teachers in College A*. Zhejiang University of Technology.

Huang, L. (2013). Perceptual Thinking and Rational Thinking in Digital Media Art Design. *Art Education*, (12), 173.

Li, X. (2025). The Interactive Integration of Digital Technology and Paper Media in Advertising Art Design. *China Paper Industry*, *46*(05), 139-141.

Lu, H. (2002). A Comprehensive Guide to Project Management (Vol. 84). Beijing: World Publishing House.

Shi, H. Y., & Yue, M. H. (2025). Image Design in the Digital Age: Design Aesthetics, Technological Innovation and Artistic Renewal. *Footwear Technology and Design*, *5*(06), 72-74.

Song, J. H. (2014). *Research on the Training Performance of Educational Technology Competence for Primary and Secondary School Teachers Based on Project Management*. Hebei Normal University.

Sun, B. Y., & Qi, F. H. (2013). *Human Resources Development and Management in the Public Sector* (Vol. 209). Beijing: China Renmin University Press.

Wu, X. L. (2025). Discussion on the Cultivation of Art Design Professionals in the Digital Age. *Xinmeiyu*, (02), 119-121.

Xu, T. (2014). *Research on Teacher Training Management in Secondary Vocational Schools from the Perspective of Project Management Theory*. Shanghai Normal University.

Yang, Y. (2024). Analysis on the Digital Transformation of Art Design Professional Course Teaching in Higher Vocational Education. *Journal of Zhangjiakou Polytechnic*, *37*(03), 78-80.

Zheng, K. X. (2025). The Significant Value and Application of Digital Technology in Contemporary Environmental Art Design. *Literature and Art Weekly*, (08), 91-93.