

AIGC-Enabled Curriculum Reform and Teaching Practice in Digital Media Art and Ethnic Culture Communication

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Abstract: With the increasing integration of digital education and excellent Chinese traditional culture, integrating AIGC-enabled digital media art and ethnic culture communication into university curricula has become an important approach to improving educational outcomes. This study takes a digital media art programme at an applied university in Yunnan as the research context and uses the course Digital Media Art and Ethnic Culture Communication as a case to explore the integration of AIGC into curriculum teaching. This approach promotes curriculum innovation, enhances students' identification with ethnic cultures, and supports cultural confidence education and value-oriented learning.

A course action research method was adopted in this study. The participants were third-year undergraduate students majoring in digital media art. The teaching practice consisted of 32 class hours over an 18-week period. A three-dimensional coupled curriculum reform framework of “cultural exploration–technology empowerment–innovative design” was developed, and a practical teaching pathway was implemented in authentic classroom contexts. Furthermore, a four-dimensional course evaluation model covering “process, outcomes, cultural value, and technology ethics” was established.

Classroom practice demonstrated that the proposed framework effectively addressed the superficial application of digital technologies in teaching, improved limitations in existing evaluation systems, and alleviated students' shallow understanding of ethnic culture. The integration of AIGC also expanded traditional teaching resources and enhanced students' creative output efficiency. Integrating AIGC-enabled digital media art and ethnic culture communication into university curricula provides a valuable pathway for curriculum innovation and the sustainable transmission of ethnic culture, offering practical references for curriculum reform in design-related higher education programmes.

Keywords: AIGC Empowerment; Curriculum Reform; Ethnic Culture; Digital Media Art Design

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1. Introduction

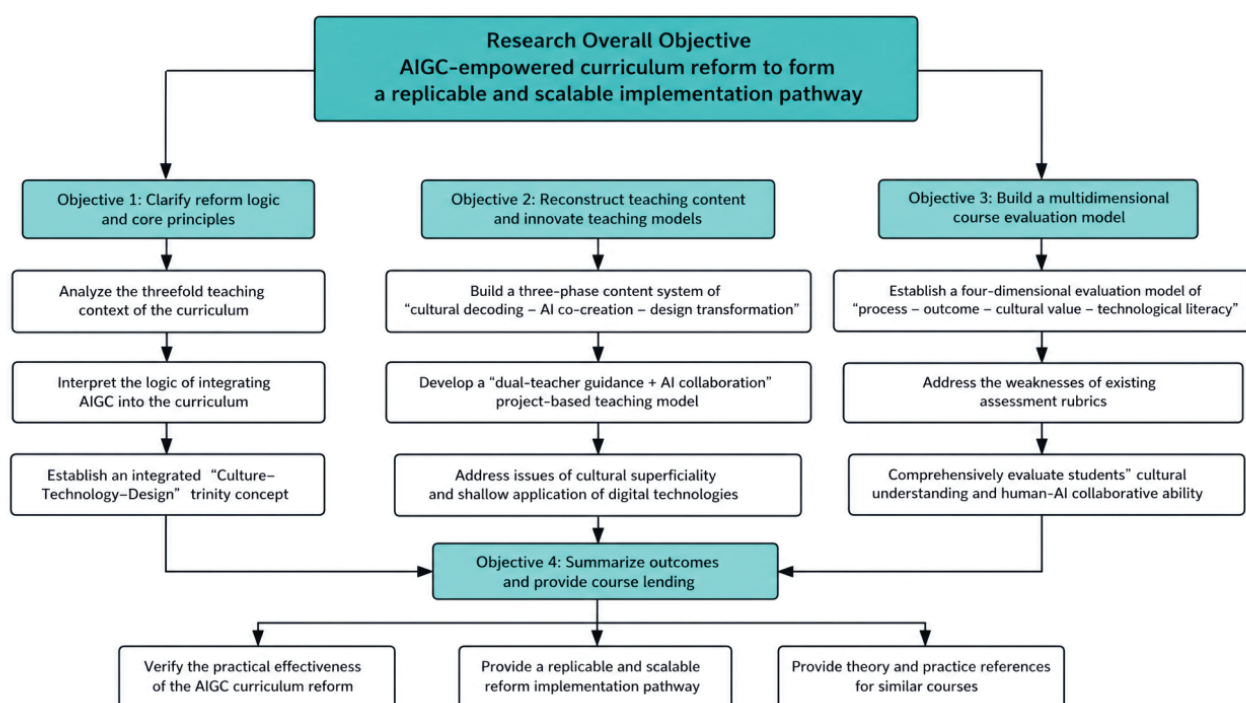
The rapid development of generative artificial intelligence (AIGC) is reshaping the concepts and practices of art and design education in higher education, driving systematic changes in teaching paradigms. AIGC has demonstrated significant educational value in expanding creative possibilities, improving teaching effectiveness, supporting personalized learning, and strengthening industry–education integration. It provides new technological foundations for the reconstruction of design curricula (Zou, 2026). In art and design education, AIGC offers multiple opportunities. It can serve as a creative tool to enrich students' design approaches and make abstract artistic concepts more interactive and accessible. Meanwhile, it can facilitate

innovative teaching models, expand diverse learning resources, promote digital and diversified design education, and support the transformation of teachers from knowledge transmitters to learning facilitators and creative collaborators (Xue, 2025). Existing studies have extensively explored the application of AIGC in design education and the integration of ethnic culture into curriculum teaching. Previous research has highlighted the potential of AIGC in transforming art and design teaching models and cultivating interdisciplinary creative talents. However, scholars such as Cui and Zhu (2025) and Yang (2024) have identified several major challenges in current ethnic culture-oriented design education. First, teaching practices often emphasize visual symbols while neglecting cultural meanings, resulting in students' insufficient understanding of the deeper values embedded in ethnic cultures. Second, traditional teaching approaches remain relatively fixed, and digital technologies are frequently applied only at a superficial level, making it difficult to establish contextualized cultural learning experiences. Third, existing curriculum evaluation systems tend to focus on final design outcomes, lacking systematic assessment criteria for cultural interpretation, design iteration processes, and ethical use of AIGC tools. These issues reveal the limitations of current teaching practices and provide a theoretical and practical foundation for further exploration.

Although existing studies have clarified the value of technology integration and identified current teaching challenges, a research gap remains. Few studies have developed practical evaluation frameworks that simultaneously consider AI ethics and cultural authenticity. Such limitations make it difficult to address potential issues caused by AIGC-generated content, including cultural misrepresentation and inappropriate technology use. They also restrict comprehensive assessment of students' cultural interpretation abilities and their capacity for responsible technological application, which cannot fully meet the requirements of digital cultural communication and high-quality design talent development (Fathoni, 2023).

Based on these research gaps and practical teaching challenges, three major problems have been identified in current curriculum practices. First, students' cultural understanding tends to remain superficial, with greater emphasis on the reproduction of cultural symbols than on the exploration of cultural meanings. Second, existing teaching models and practical mechanisms are insufficient, resulting in limited integration of digital technologies into learning processes. Third, curriculum evaluation systems remain relatively narrow and lack comprehensive assessment dimensions. Therefore, this study focuses on digital media art education in higher education and develops an AIGC-enabled teaching framework for ethnic culture communication (Figure 1). A corresponding comprehensive evaluation system is also established to address the limitations of existing research and teaching practices, providing a practical approach for integrating ethnic culture into design curriculum reform.

Figure1: AIGC-Enabled Curriculum Reform Framework for Digital Media Art and Ethnic Culture Communication.



2. Teaching Challenges in Digital Media Art and Ethnic Culture Communication Courses

2.1 Disconnection between Cultural Understanding and Design Practice

The disconnection between ethnic culture and design practice is mainly caused by the lack of a systematic framework for cultural translation within the curriculum. Ethnic cultural content is often presented through fragmented knowledge-based instruction, while students receive insufficient professional training in field investigation, symbolic analysis, and semantic transformation. As a result, the application of ethnic cultural elements tends to remain superficial. Current art and digital media courses generally place greater emphasis on software skills and aesthetic training, whereas interdisciplinary learning involving ethnography, ethnic culture interpretation, and cultural communication remains limited. Without systematic cultural decoding training, students often directly reproduce visual symbols when using ethnic cultural materials, making it difficult to explore their underlying cultural meanings. Consequently, design practices become disconnected from cultural communication goals, and the resulting works may fail to meet the requirements of the cultural and creative industries for deeper cultural expression (Zou, 2026).

In classroom practice, students often recognize only the visible features of ethnic cultures, such as patterns, totems, and colours, but have limited understanding of the differences among ethnic groups and the cultural meanings behind these symbols. They often struggle to interpret the philosophical beliefs, cultural values, and emotional significance embedded in traditional elements. Classroom observations in this course indicate that many students lack sufficient understanding of the symbolic meanings and cultural logic of selected ethnic elements. For example, in a learning task involving Dai traditional clothing patterns, some students simply searched for and reproduced existing pattern materials without exploring their cultural meanings and symbolic significance. Such superficial use of cultural symbols may lead to homogenized cultural and creative products and inaccurate cultural representation, resulting in designs with limited cultural identity and insufficient creativity.

2.2 Inadequate Teaching Models and Practical Mechanisms: Superficial Application of Digital Technologies

In many digital media art courses, the application of AIGC has fallen into a “tool-oriented” approach. Generative AI is often treated merely as a tool for image generation at the final stage of creation, with limited involvement in key learning processes such as cultural research, creative development, and design iteration. Meanwhile, traditional lecture-based teaching approaches have not fundamentally changed, and project-based and immersive learning opportunities remain insufficient. Therefore, technological integration has not been effectively transformed into students’ cultural creative abilities (Xue, 2025). Classroom observations reveal two major issues. First, teacher–student interaction is still mainly based on teacher-led questioning, with teaching dominated by theoretical instruction. Students have limited opportunities for field investigation and lack authentic learning experiences, such as demonstrations of ethnic intangible cultural heritage practices and interactive cultural activities. This makes it difficult for students to develop a deeper understanding of ethnic cultural meanings through direct experience. Second, traditional teaching approaches often separate cultural inheritance from technological application. The lack of integrated teaching processes and practical activities reduces students’ learning motivation and limits their active engagement in creative practice.

2.3 Single-Dimensional Curriculum Evaluation and Missing Assessment Criteria

Current curriculum evaluation systems remain relatively limited, with assessment criteria often relying on teachers’ judgments or mainstream aesthetic preferences. Students’ abilities to respond to real project requirements are insufficiently evaluated. Traditional assessment approaches tend to focus excessively on final visual outcomes while neglecting indicators related to cultural interpretation, design development processes, and iterative improvement. With the introduction of AIGC into creative practices, systematic evaluation criteria for AI usage standards and human–AI collaborative creation have not yet been established, making it difficult to assess students’ actual abilities in cultural transformation and comprehensive design practice (Cui & Zhu, 2025).

Existing evaluation systems in digital media courses continue to emphasize final works, while paying limited attention to

cultural interpretation, creative process documentation, and reflective design practices. Furthermore, with the increasing use of AIGC, dimensions related to AI ethics and the quality of human–AI collaboration remain underdeveloped. These limitations prevent a comprehensive evaluation of students’ abilities in cultural communication and digital design practice (Yang, 2024). Current studies on design education in the AIGC era mainly focus on technological application, while issues such as cultural authenticity and potential cultural misinterpretation are rarely incorporated into evaluation frameworks.

3. Theoretical Logic of Integrating AIGC into Digital Media Art and Ethnic Culture Communication Courses

The integration of AIGC into digital media art and ethnic culture communication courses should not be understood as simply adding an AI tool to existing teaching practices. Instead, it requires the integration of multiple theoretical perspectives to achieve the interaction of four dimensions: technological tool logic, cognitive learning logic, cultural transformation logic, and talent development logic. These four dimensions constitute the theoretical framework of this study. They directly respond to existing challenges in ethnic culture communication courses, including superficial cultural understanding, insufficient practical mechanisms, and limited evaluation dimensions. Ultimately, they support the cultivation of interdisciplinary talents capable of creatively communicating ethnic cultures in the digital era.

3.1 Technological Tool Logic

The technological tool logic is grounded in human–AI collaboration theory (Li & Xu, 2020). Unlike traditional digital teaching tools that mainly provide one-way assistance, human–AI collaboration emphasizes the complementary relationship between artificial intelligence and human creativity. Within curriculum practice, AIGC is no longer regarded as a simple operational tool, but as a collaborative technological medium that supports teachers and students throughout the processes of creation, practice, and communication. It optimizes the entire workflow and provides the technological foundation for curriculum integration.

3.2 Cognitive Learning Logic

The cognitive learning logic is based on constructivist learning theory and scaffolding theory. Constructivism suggests that learning is not a passive process of knowledge acquisition, but an active process in which learners construct and internalize knowledge based on previous experiences (Piaget, 1981). In ethnic culture communication courses, students’ understanding of cultural symbols, artistic forms, and communication mechanisms should not rely solely on teacher instruction. Instead, AIGC can support active exploration through intelligent retrieval, content generation, and scenario simulation, enabling students to construct personalized knowledge.

Meanwhile, scaffolding theory provides practical support for this learning process (Vygotsky, 2003). AIGC can provide students with different levels of resources, creative suggestions, and technical guidance according to their learning progress. This gradually reduces cognitive barriers and helps students move from superficial recognition of cultural symbols toward deeper cultural understanding and creative thinking.

3.3 Cultural Transformation Logic

The cultural transformation logic aims to achieve the creative reinterpretation and contemporary communication of ethnic cultures through a principle of “human-led and AI-assisted” creation (Zou, 2026). Human–AI collaboration theory emphasizes that cultural understanding, aesthetic judgment, and communication objectives should remain under human control, while AIGC serves as an auxiliary tool for exploration, generation, and expansion.

After conducting cultural research and interpretation, students can use AIGC to optimize creative content, followed by human revision, reconstruction, and implementation to avoid cultural distortion caused by direct AI generation. This process establishes a transformation pathway of “cultural decoding–AI co-creation–design transformation”, connecting ethnic cultural resources with digital media works and public communication outcomes, which aligns with the principles of sustainable cultural development.

3.4 Talent Development Logic

The talent development logic focuses on cultivating interdisciplinary design and communication talents who can collaborate with AI technologies and respond to the needs of the cultural and creative industries (Cui & Zhu, 2025). As AIGC has become

increasingly integrated into creative industries, professionals are expected to understand ethnic cultural meanings, critically apply AI technologies, and possess cultural communication capabilities.

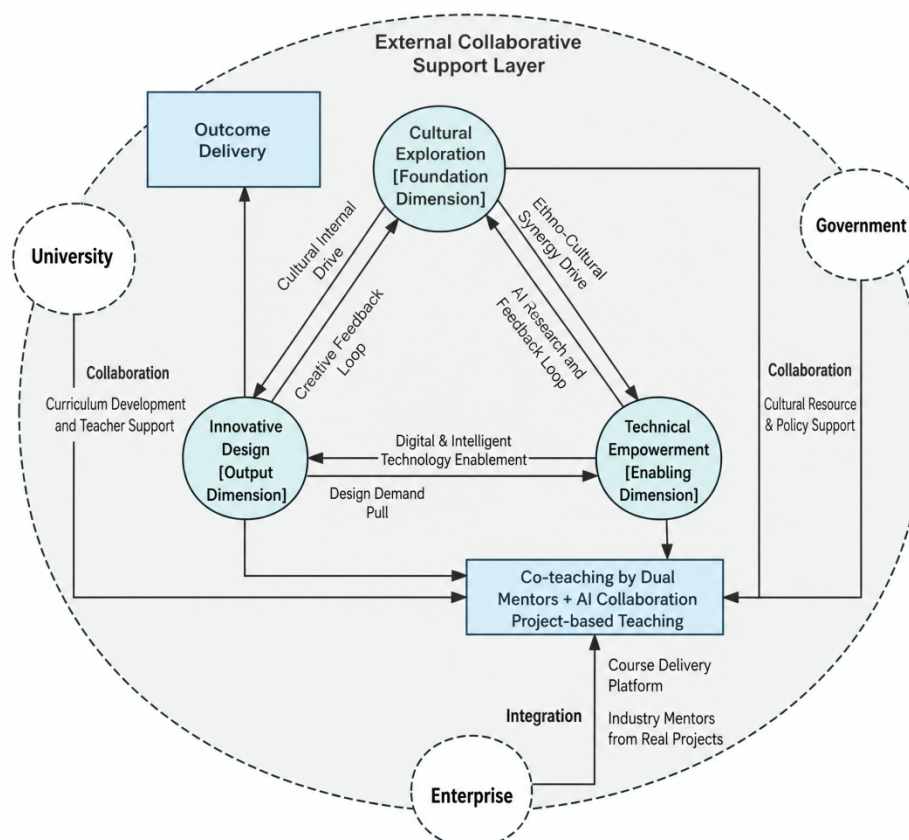
Integrating AIGC into the curriculum represents an educational response to these industry requirements. The course moves beyond traditional software-oriented training by adopting cultural decoding and AI-based critical thinking as learning approaches. Through human–AI collaborative creation and culturally grounded design practices, students develop comprehensive abilities in digital media creation, cultural transformation, and modern communication. This reform addresses the limitations of traditional courses that emphasize technical skills while neglecting cultural understanding and AI literacy, thereby reducing the gap between curriculum learning and industry needs (Chen, 2024).

4. Practical Pathways for Integrating AIGC into Curriculum Teaching

4.1 Constructing a Three-Dimensional Coupled Curriculum Reform Framework

Yang (2024) demonstrated a progressive educational logic from cultural interpretation and digital technology application to practical creative output, providing theoretical support for constructing the three-dimensional coupled curriculum reform framework of “cultural exploration–technology empowerment–innovative design” in this study. To address the three major challenges identified above—superficial cultural understanding, insufficient teaching mechanisms with limited technology integration, and incomplete evaluation systems—a three-dimensional coupled curriculum reconstruction model of “cultural exploration–technology empowerment–innovative design” was developed (see Figure 2).

Figure 2: Three-Dimensional Coupled Curriculum Redesign Framework of “Cultural Exploration–Technology Empowerment–Innovative Design”



The “Cultural Exploration–Technology Empowerment–Innovative Design” three-dimensional coupled framework serves as the core structure of AIGC-enabled curriculum reform in digital media art and ethnic culture communication. The three dimensions are interconnected and progressively developed, jointly addressing major teaching challenges, including superficial cultural understanding, limited application of digital technologies, and insufficient evaluation dimensions. At the external level, the framework relies on collaboration among universities, government agencies, and enterprises to provide teaching resources, ethnic cultural materials, and authentic cultural creative projects. At the curriculum level, the

implementation is supported by a “dual-mentor guidance + AI collaborative project-based learning” approach, which connects the three dimensions throughout the teaching process.

Cultural exploration serves as the foundation of the framework by supporting ethnic cultural decoding and investigation and reducing the superficial reproduction of cultural symbols. Technology empowerment functions as the supporting dimension by following the principle of “human-led and AI-assisted” collaboration and integrating AI co-creation into the creative process. Innovative design represents the output dimension, where students refine and develop their works through iterative design and apply a four-dimensional evaluation system covering “process, outcomes, cultural value, and technology ethics.” Through the interaction and mutual reinforcement among the three dimensions, ethnic cultural resources can be creatively transformed into contemporary digital communication works.

Cultural Exploration: The Foundation Dimension

Cultural exploration is the foundation of the reform framework and mainly addresses the problem of students’ direct reproduction of ethnic symbols while overlooking deeper cultural meanings. This stage begins with ethnic cultural resources and guides students to conduct field investigations, literature reviews, and cultural documentation. Instead of focusing only on visible elements such as patterns and colours, students are encouraged to explore the historical context, cultural values, and humanistic meanings behind traditional practices. Through this process, students complete the decoding, selection, and organization of ethnic cultural elements.

Cultural exploration provides reliable cultural resources for subsequent human–AI collaborative design and helps reduce cultural stereotypes and misrepresentation caused by AI-generated content. Meanwhile, cultural resources provide the foundation for technology application, while AI-assisted research further supports cultural exploration, forming a mutually supportive relationship between the two dimensions.

Technology Empowerment: The Supporting Dimension

Technology empowerment serves as the supporting dimension of the reform and focuses on improving the superficial application of digital technologies in classroom practice. This dimension follows the principle of “human-led and AI-assisted” collaboration. AIGC is not treated as a simple image-generation tool but is integrated throughout the teaching and creative process.

With the support of AIGC, students can conduct concept development, design exploration, material generation, and assisted modelling, reducing repetitive technical tasks and allowing more attention to cultural interpretation and creative thinking. Meanwhile, students develop abilities in prompt design, evaluation of AI-generated outputs, and identification of potential cultural biases in AI content. Through this process, AIGC is transformed from a demonstration tool into a creative partner embedded in the teaching process. Digital technologies stimulate innovative design, while design requirements further promote the effective application of technology.

Innovative Design: The Output Dimension

Innovative design represents the output dimension of the reform framework and undertakes the task of transforming ethnic culture into contemporary digital expressions. Based on previous cultural exploration and AIGC-supported creation, students complete the reconstruction, refinement, and practical development of digital media works.

The design outcomes are expected to follow the principles of digital media art while maintaining the cultural value of ethnic communication. Meanwhile, the four-dimensional evaluation framework is applied to assess creative processes, final outcomes, depth of cultural interpretation, and ethical use of AI technologies. Through this approach, students produce digital media works suitable for contemporary communication contexts and achieve the creative transformation of ethnic cultural resources into communicative design outcomes.

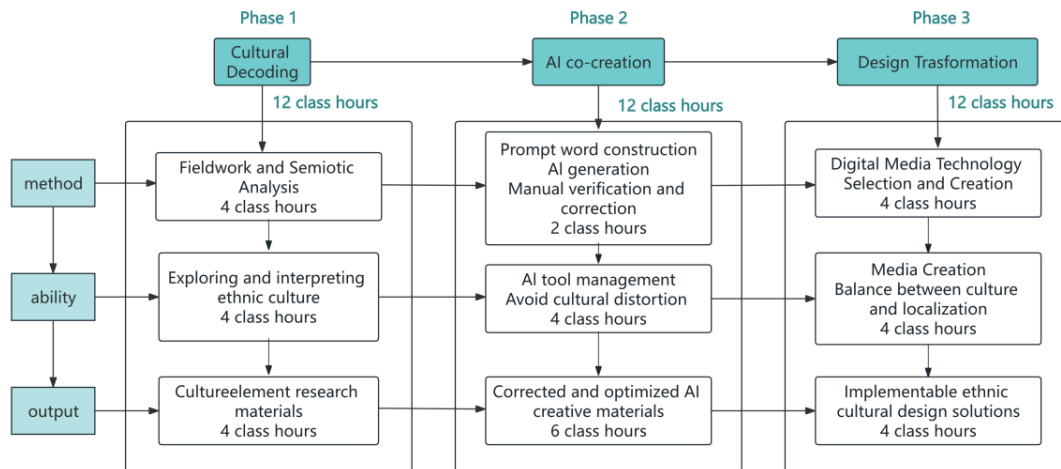
Cultural understanding supports innovative design, while design practices further promote cultural exploration, forming a continuous cycle between cultural interpretation and creative transformation.

4.2 Developing a Three-Stage Design Process of “Cultural Decoding–AI Co-Creation–Design Transformation”

Based on the three-dimensional coupled framework, a three-stage design process of “Cultural Decoding–AI Co-Creation–

Design Transformation” was developed. Each stage defines specific methods, core competencies, and expected outcomes, enabling the deep integration of cultural understanding, AI generation, and creative design.

Figure 3: Three-Stage Design Process of “Cultural Decoding–AI Co-Creation–Design Transformation”



Stage 1: Cultural Decoding (12 class hours)

In this stage, students first acquire relevant theoretical knowledge and identify the core elements of regional ethnic cultures. Anthropological field research methods and semiotic analysis approaches are introduced to guide students in conducting field investigations in ethnic cultural communities. Through direct observation and research, students explore the historical development, cultural meanings, and spiritual values of ethnic traditions, thereby enhancing their interest and understanding of ethnic cultures. The main output of this stage is a collection of cultural element research materials.

Stage 2: AI Co-Creation (12 class hours)

After completing cultural investigation and interpretation, students transform the collected ethnic cultural resources into a structured material database and use these materials as prompts for AIGC-assisted content generation. AI-generated outcomes are further revised and reconstructed by students to reduce potential cultural distortion caused by direct AI generation. The output of this stage is a set of refined and culturally validated AI-generated creative materials.

During classroom practice, a standardized cultural evaluation process is established. First, students compare AI-generated works with field research materials, traditional pattern standards, and cultural documentation, examining elements such as forms, colours, compositions, and cultural meanings. Second, students are guided to identify common problems in AI-generated content, including distorted patterns, inappropriate combinations of cultural forms, misuse of cultural symbols, and deviations in colour systems. Finally, through group discussions, peer evaluation, and instructor feedback, students develop a critical evaluation process of “cultural material verification–AI output identification–human revision and reconstruction.”

Stage 3: Design Transformation (12 class hours)

Based on the AI co-created materials, students apply digital media art techniques to develop practical design outcomes, including 3D character modelling, AR-based dynamic presentation, and dynamic information visualization design. This stage focuses on transforming AI-generated visual outputs into feasible design solutions while maintaining both cultural interpretation and professional design requirements. The final outcome is a practical design proposal for ethnic cultural communication.

4.3 Implementing a “Dual-Mentor Guidance + AI Collaboration” Project-Based Teaching Model

4.3.1 Project-Based Learning Model

Project-based learning provides an effective approach for practical education in digital media art courses (Hu, 2023). Supported by a dual-mentor teaching structure, university instructors are responsible for theoretical instruction and AI ethics guidance, while industry professionals provide feedback based on authentic project requirements. This approach helps bridge the gap between classroom creativity and industrial practice (Cui & Zhu, 2025).

The dual-mentor team consists of university teachers and intangible cultural heritage experts. Through project-based practice,

they jointly supervise the entire process, including cultural authenticity, technology application, and practical implementation, thereby reducing potential cultural misinterpretation caused by AIGC-generated content (Davis & Cho, 2023). Previous studies have demonstrated the potential of combining dual-mentor guidance with AIGC-supported project-based learning to improve teaching effectiveness.

4.3.2 Dual-Mentor Collaborative Mechanism

Within this mechanism, AI functions as a creative assistant responsible for repetitive tasks such as material generation and conceptual sketch development, allowing students to focus more on cultural interpretation and creative thinking. University instructors provide guidance on AIGC operation and technology ethics, helping students use AI appropriately and move beyond simple AI application toward deeper technological integration and creative refinement.

Through project-based learning, authentic projects are introduced into the curriculum. University instructors incorporate enterprise collaborative projects and guide students in applying AIGC tools to animation production (Figure 4), enabling AI technologies to support cultural storytelling and visual communication in real project contexts. Industry mentors contribute practical perspectives by introducing market requirements into classroom activities. This approach addresses the limitation that traditional course outcomes are often restricted to classroom demonstrations and lack practical applicability. It enables students to complete a full-cycle learning process from cultural research and AI co-creation to design transformation (see Figure 5).

Figure 4: Classroom Practice of Project-Based Learning Guided by University Mentors



Figure 5: Project-Based Learning Practice Guided by Industry Mentors



4.3.3 AIGC-Assisted Co-Creation Practice

The course adopts authentic ethnic cultural and intangible cultural heritage themes as project tasks, including the design of the Yunnan Sanqi Spirit digital IP image and the digital design of Dai brocade patterns. Each project follows a complete workflow from cultural research to design implementation.

During the cultural research stage, students conduct classification studies of Dai brocade patterns and review relevant literature to establish a categorized research database of Dai brocade patterns (Figure 6). Subsequently, students use AIGC tools to generate and critically evaluate pattern variations (Figure 7), select appropriate design solutions (Figure 8), and

further refine the architectural pattern designs derived from Dai brocade elements (Figure 9). Finally, students present and communicate their completed design outcomes.

The course practice results indicate that AIGC-supported project-based learning can effectively enhance students’ cultural understanding, improve the completeness of design outcomes, and strengthen their ability to apply intelligent design tools, thereby promoting the overall development of professional competencies (Huang, 2025).

Figure 6: Classification Research Chart of Dai Brocade Patterns

Type	Brocade with Elephant-Carrying-Peacock Motif, Xishuangbanna, Yunnan	Brocade with Elephant-Carrying-Peacock Motif, Xishuangbanna, Yunnan	Brocade with Elephant Trunk Motif, Dehong, Yunnan	Brocade with Double-Bird & Bodhi Motif of Dai Ethnic Group, Dehong, Yunnan
Dai Brocade				
Reference Source	Semiotic Deconstruction and Modern Design Transcoding of Yunnan Dai Brocade Motifs, <i>Journal of Culturology</i> , Issue 01, 2026	Semiotic Deconstruction and Modern Design Transcoding of Yunnan Dai Brocade Motifs, <i>Journal of Culturology</i> , Issue 01, 2026	Exploration on Cross-border Digital Communication of Ethnic Costumes in Dehong Prefecture under China-Myanmar Border Context: A Case Study of the Dai and Jingpo Ethnic Groups	Art and Intellect, China Academy of Art Press, 2015

Figure 7: AI Generation and Critical Evaluation of Dai Brocade Patterns

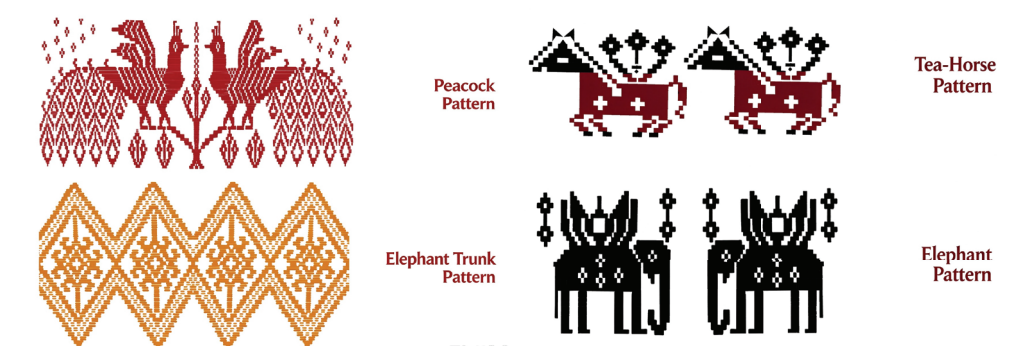


Figure 8: Selection of Dai Brocade Pattern Design Solutions



Figure 9: Design Refinement of Architectural Patterns Derived from Dai Brocade



4.4 Developing a Multidimensional Curriculum Evaluation Model

The dual-mentor team conducts process-based evaluation from four dimensions: depth of cultural interpretation, level of technological application, AI ethics, and practical value of design solutions, thereby establishing a four-dimensional evaluation model (Table 1). Unlike traditional evaluation approaches that focus primarily on the visual quality of final works, this model incorporates the creative process, cultural value, and technological ethics into the assessment framework. It aligns with the requirements of the three-dimensional coupled curriculum framework and addresses the limitations of existing evaluation systems. The weighting of each dimension was determined based on teaching experience and further refined through expert interviews with industry professionals.

Table 1. Multidimensional Curriculum Evaluation Model

Evaluation Dimensions	Weight	Score	Evaluation criteria
Cultural Interpretation Depth	35%	35 points	Exploring the connotation of national culture and rejecting the accumulation of superficial symbols; The integrity of cultural research data; the logical rationality of cultural narratives.
Technology application level	30%	30points	Digital media tools, AIGC prompt word design and human-machine collaborative creation capabilities; design iteration, picture completion and artistic expression effects.
AI Ethics	15%	15 points	AI usage instructions are complete, and AI-generated content is marked; cultural distortion caused by AI is eliminated; copyright is strictly adhered to, AI output content is not directly plagiarized, and human leadership is reflected.
Value of the solution	20%	20 points	Feasibility of the design solution; adaptable to practical application scenarios of cultural tourism and digital communication; innovation and communication application potential.
total	100%	100 points	

5. Effectiveness of Curriculum Reform Practice

This course implemented teaching reform practices based on the three-dimensional coupled framework of “Cultural Exploration–Technology Empowerment–Innovative Design”, combined with the “Dual-Mentor Guidance + AI Collaboration” project-based teaching model and the multidimensional curriculum evaluation system. The reform achieved positive educational outcomes.

At the level of cultural literacy, systematic cultural decoding and field research training effectively addressed students’ previous tendency to apply ethnic cultural symbols superficially. Students demonstrated deeper understanding of the historical contexts, cultural meanings, and aesthetic characteristics of regional ethnic cultures. Their abilities in cultural reflection and creative transformation were enhanced, and they gradually developed an awareness of using digital technologies for ethnic cultural transmission.

Through human–AI collaborative creation supported by AIGC, students designed the Yunnan Sanqi Spirit digital IP character sketches (Figure 10), three-view designs and emoji designs of the Yunnan Sanqi Spirit digital IP character (Figure 11), and animation production of the Yunnan Sanqi Spirit digital IP character (Figure 12). After completing the course, most students were able to establish human–AI collaborative design workflows and continued to apply AIGC in subsequent courses for creative inspiration, concept generation, and material optimization.

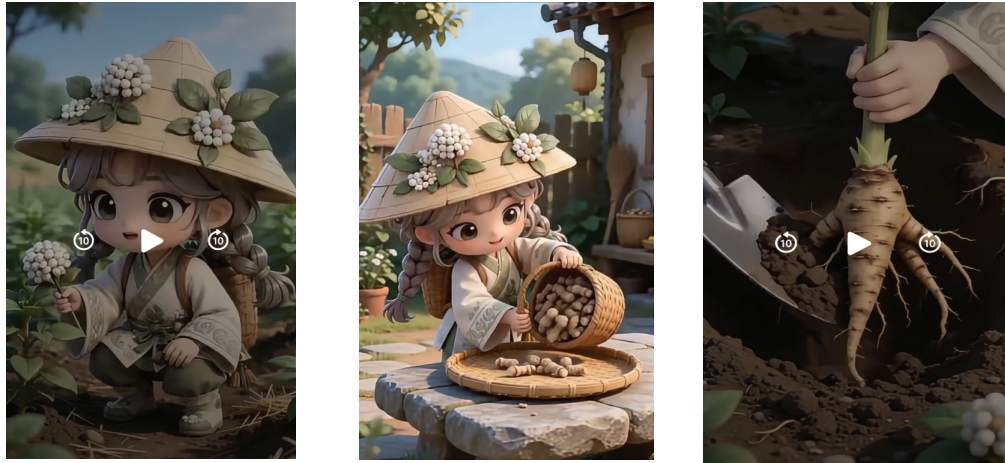
Figure 10: Sketch Design of the Yunnan Sanqi Spirit Digital IP Character



Figure 11: Three-View Design and Emoji Design of the Yunnan Sanqi Spirit Digital IP Character



Figure 12: Selected Screenshots from the Animation Production of the Yunnan Sanqi Spirit Digital IP Character



5.1 Improvement in Technological Application

At the level of technological application, the human–AI collaborative creation mechanism supported by AIGC helped students overcome the efficiency limitations of traditional design processes. Students gradually mastered key skills, including prompt optimization, AI-generated material evaluation, and iterative digital media design. They moved beyond passive and superficial use of AI tools and improved their practical ability to apply digital technologies in cultural and creative design.

5.2 Improvement in Comprehensive Competencies and Ethical Awareness

At the level of comprehensive competencies and professional standards, the course incorporated AI ethics assessment into the evaluation system. This helped students develop stronger awareness of copyright protection in AI-assisted creation and cultivate the ability to identify and correct cultural inaccuracies. As a result, students established a scientific creative approach characterized by “human-led creation, AI-assisted production, and cultural priority.”

Meanwhile, supported by a collaborative education platform involving universities, government agencies, and enterprises, as well as the dual-mentor project guidance mechanism, students’ design outcomes were no longer limited to classroom demonstrations. The practicality, contextual adaptability, and cultural tourism communication value of their works were significantly improved. This process enabled the transformation from randomly AI-generated images to professional and applicable digital design solutions.

Overall, the teaching practice demonstrated that the proposed curriculum reform enhanced students’ comprehensive professional competencies in cultural interpretation, technological application, ethical awareness, and creative implementation. It effectively addressed common problems in traditional courses, including the disconnection between teaching and practice, limited application value of outcomes, and insufficient diversity of competencies. The reform also aligns with the requirements for cultivating digital talents capable of supporting ethnic cultural communication in the intelligent era. Previous studies have emphasized that the integration of AIGC into art education should balance technological advancement with cultural value guidance (Bozkurt & Karakus, 2022), and the present practice further supports existing curriculum reform studies (Li & Chen, 2025).

5.3 Transferability and Broader Educational Implications

Previous research suggests that modular reform approaches integrating digital technologies into cultural design education have potential for cross-course application. A unified teaching logic that combines cultural interpretation, intelligent creation, and iterative implementation can effectively address common limitations in traditional digital media courses, including excessive emphasis on technical skills while neglecting cultural understanding and quality development (Cui & Zhu, 2025).

Furthermore, the dual-mentor project-based learning model has been demonstrated to be applicable to various courses involving intangible cultural heritage digitization and cultural creative design. It can enhance students’ abilities in cultural interpretation, digital creation, and practical design implementation (Zhou, 2024; Smith, 2021). International research also indicates that a closed-loop teaching framework based on “cultural understanding–AI collaborative creation–applicable

design output” can be extended to digital art education contexts such as illustration, animation, motion graphics, and interaction design (Li et al., 2025).

Therefore, the teaching reform model developed in this study can be adapted to various practice-oriented courses in digital media art education. When applied to courses such as 3D animation, new media video, IP design, and interaction design, only the corresponding technological tools and output requirements need to be adjusted, while the underlying three-dimensional coupled teaching logic remains unchanged. This provides practical references for implementing “ethnic culture + AIGC” curriculum reform in related disciplines.

6. Limitations and Future Directions

6.1 Research Limitations

This study conducted curriculum reform and teaching practice based on the course AIGC-Enabled Digital Media Art and Ethnic Culture Communication. A three-dimensional coupled teaching framework of “Cultural Decoding–AI Collaborative Creation–Design Implementation” was developed and achieved positive educational outcomes. However, several limitations remain due to the constraints of teaching duration, experimental conditions, and differences among student groups.

First, the teaching sample and research period were limited. The reform practice was conducted within a single semester and involved only one class. The implementation lasted 18 weeks with 32 class hours. Therefore, long-term effectiveness and generalizability require further validation through multi-cohort studies and comparisons among students with different learning backgrounds.

Second, limitations remain regarding the application of AIGC technologies. The course mainly relied on general-purpose AIGC tools for creative assistance. Specialized AI models for accurate generation of specific ethnic patterns, standardized reproduction of intangible cultural heritage forms, and region-specific cultural semantic recognition remain insufficiently developed. Therefore, some high-precision cultural design tasks still require substantial human modification, limiting the full potential of AI assistance.

Third, the curriculum evaluation system requires further refinement. Although the four-dimensional evaluation model considers cultural value, technological application, ethics, and practical implementation, quantitative assessment of students’ AI critical thinking, depth of cultural transformation, and human–AI collaborative creativity remains relatively limited. A higher proportion of subjective evaluation also indicates the need for more refined and data-driven assessment mechanisms.

6.2 Future Directions

Based on the limitations identified above and considering future trends in digital media art education and digital cultural communication, further research and reform can be developed in three directions.

First, expanding teaching practice and promoting cross-course application.

Future studies can continue to apply the three-dimensional coupled teaching framework developed in this research to other practice-oriented digital media art courses. According to the characteristics of courses such as 3D animation, new media short video, ethnic IP design, and interaction design, specific task modules and technical standards can be adjusted while maintaining the core educational principles. This will support the development of a replicable and transferable “Ethnic Culture + AIGC” modular teaching system.

Second, developing precise AI-supported teaching resources.

Future research can combine local intangible cultural heritage and ethnic cultural resources to establish specialized AIGC prompt libraries, standardized material databases, and cultural error-correction case repositories. These resources can help reduce cultural distortion and inappropriate symbol usage caused by general AI models. Meanwhile, collaboration with enterprise projects can further connect classroom learning with practical production and enhance students’ human–AI collaborative abilities in authentic design contexts.

Third, improving intelligent and multidimensional evaluation systems.

Future research should incorporate multiple data sources, including AI creation process records, students’ reflective learning logs, and project implementation feedback. A comprehensive evaluation mechanism combining process-based and outcome-based assessment, as well as quantitative and qualitative approaches, can be developed to better measure students’ cultural

innovation abilities and AI critical thinking skills. This will further improve talent cultivation models for digital media art education in the AIGC era and support the development of digital design professionals with cultural knowledge, technological competence, innovative thinking, and professional ethics.

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Conflict of Interests

The authors declare that there is no conflict of interest regarding the publication of this paper.

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