

# The Package Course Construction and Research of the Book Binding Design Project of Shengjing Intangible Cultural Heritage

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## Abstract

Driven by digital publishing and cultural tourism integration, the deep integration of intangible cultural heritage inheritance and university design education has become an important direction of applied undergraduate curriculum reform. Based on the practice of Liaoning Media College's "Shengjing Intangible Cultural Heritage" book design project, this study addresses issues such as cultural fragmentation, disconnection from practice, and single evaluation in traditional courses by constructing a "technology-creativity-practice" three-dimensional competency training system. The technical dimension focuses on digital translation of intangible cultural heritage and intelligent design tool applications, the creative dimension emphasizes decoding cultural genes and critical innovation, while the practical dimension prioritizes real-world project implementation and industrial collaboration. Through the multidimensional approaches of curriculum restructuring, platform construction, faculty empowerment, and evaluation innovation, this study explores a new model for cultivating intangible cultural heritage design talents under the background of industry-education integration, providing a practical paradigm for regional cultural inheritance and applied design education reform.

## Keywords

Intangible cultural heritage, bookbinding, 3D skills, industry-education integration, project-based curriculum.

## 1. Introduction

At present, cultural inheritance and innovation have become an important part of the national development strategy. In the field of book design, intangible cultural heritage is transitioning from museum display cases to classroom settings, transforming from memory symbols into innovative motifs, thereby achieving comprehensive integration across the entire process from cultural preservation and educational inheritance to industrial transformation. The value of paper books is shifting from 'information containers' to 'cultural rituals', becoming a 'slow medium' to counter fragmented reading and a portable 'miniature cultural altar'. However, there are still many problems in the existing book design education: the curriculum setting emphasizes skills but neglects culture, the teaching methods are relatively traditional, the evaluation system is single, and the systematic integration of intangible cultural heritage is not explored enough. This training model results in graduates experiencing 'spiritual disorientation' and cultural disorientation, failing to meet the cultural tourism industry's demand for interdisciplinary design professionals [1].

As an important media art university in northeast China, Liaoning Communication University has been actively developing in the field of cultural heritage and design education in recent years. In 2024, the college launched a university-level key teaching reform project titled 'Research and Development of Shengjing Intangible Cultural Heritage Book Design Course Packages.' This initiative aims to cultivate high-quality applied talents through intangible

cultural heritage empowerment, equipping them with digital design tools, innovative cultural thinking, and industry-ready skills. This study is based on the practical reflection and theoretical refinement of the project.

## **2. Analysis of the Ability Demand of the Talents in the Integration of Intangible Cultural Heritage into Book Design**

### **2.1. Industrial Transformation Drives the Transformation of the Capability Structure**

Based on policy documents including the "14th Five-Year Plan for Cultural Development" and the "Liaoning Province Intangible Cultural Heritage Protection Regulations", as well as industry research, the integration of culture and tourism, digital publishing, and the revitalization of intangible cultural heritage have become the primary directions for industrial upgrading. The demand for talents in enterprises has three new features:

**Digital technology proficiency:** Proficient in using AI vector generation, 3D scanning, AR interaction and other digital tools for extracting and translating intangible cultural heritage elements; understanding the semantic structure of cultural symbols and principles of visual storytelling; applying intelligent technologies for market analysis and user insights.

**The innovative thinking model:** Intangible Cultural Heritage (ICH) challenges the traditional linear design process by requiring designers to critically evaluate cultural elements and maintain creative leadership in human-machine collaboration. This kind of thinking is not a simple pattern collage, but the organic unity of cultural understanding, artistic aesthetic power and business insight.

**New collaborative practice capabilities:** requires understanding the end-to-end process from design to publication, including smart printing processes, digital twin validation, and supply chain coordination. The enterprise expects designers to participate in the whole process of cultural positioning, technical realization and user experience optimization.

### **2.2. Theoretical Construction of Three-dimensional Capability Model**

Based on Bloom's taxonomy of educational objectives and industry demand mapping, this study constructs a "technology-creativity-practice" three-dimensional competency model [2].

The technical dimension includes the skills of digital tools for intangible cultural heritage, the ability of intelligent extraction of cultural symbols, and the ability of data-driven decision-making. This dimension emphasizes instrumental rationality, which addresses how to efficiently utilize technology for cultural translation.

The creative dimension includes the ability of design thinking iteration, interdisciplinary knowledge integration and critical cultural innovation. This dimension emphasizes value rationality, and solves the problem of why and how to innovate.

The practical dimension includes the ability to transform real projects, the ability to collaborate and communicate with the team, and the sense of cultural and ethical responsibility. This dimension emphasizes practical rationality, addressing how to implement and for whom to serve.

The three dimensions form a spiral upward relationship: technology provides the means to realize creativity, creativity guides the direction of practice, and practice feedback promotes technological iteration, forming a closed-loop ecosystem for capability development.

### **3. Construction of Three-dimensional Ability Training System of "Technology-Creativity-Practice"**

#### **3.1. Technical Dimension: Constructing Three-level Capability Chain**

The basic layer focuses on the cognition of tools and the collection of cultural data. In the first academic year, the digitalization module of intangible cultural heritage is embedded in the basic course of design software, and basic operations such as 3D scanning, vector tracing and topology simplification are taught. The task-driven approach was adopted to design localized intangible cultural heritage research projects, requiring students to extract multiple cultural symbol schemes using AI tools before screening and optimizing them. The stage focuses on cultivating basic skills such as cultural element recognition, parameter adjustment and style control, and establishing technical intuition through sufficient field training.

The theory of entering the class emphasizes the understanding and integration of the application of the principle. In the second academic year, the core course of bookbinding introduces theoretical knowledge such as cultural semiotics and color semantics, and opens a special topic on intelligent algorithm-assisted design. The program incorporates a real-world intangible cultural heritage database from partner organizations, enabling students to complete the entire process—from cultural research to proposal evaluation—using digital tools. The emphasis is on human-machine collaborative decision-making, in which students are responsible for proposing design strategies, screening optimization schemes, and verifying cultural feasibility, so as to avoid becoming technical appendages.

The high level is committed to technology development and innovation. We will establish innovation workshops for outstanding students to encourage secondary development of intangible cultural heritage resources, such as designing templates tailored to regional cultural characteristics or developing intelligent evaluation systems for cultural programs. The outcome forms include technical reports, software prototypes, etc. The goal is to cultivate leading talents who can both use and create tools.

#### **3.2. Creative Dimension: Implementation of Three-dimensional Expansion**

The iterative training of design thinking adopts the Stanford University design thinking model, and sets up five stages of empathy, definition, conception, prototype and testing. During the conceptualization phase, students are required to utilize multiple digital tools to generate proposals and conduct cross-review, thereby cultivating diverse perspectives. This process breaks the dependence on a single culture, facilitates cognitive leaps, and enables students to maintain critical and leading perspectives with technological support [3].

The interdisciplinary knowledge map construction draws on the integrated teaching concept to build a "book design+" knowledge module: the integration of books and material science (application of eco-friendly handmade paper), the integration of books and marketing (user portrait analysis), and the integration of books and information technology (AR interactive design). We regularly invite cross-disciplinary experts, including intangible cultural heritage inheritors, publishing house editors, and museum curators, to co-teach, fostering a dynamic exchange of creative ideas.

In order to solve the problems of copyright dispute and cultural misreading caused by the digitalization of intangible cultural heritage, a special seminar on design ethics is set up. The case teaching method is introduced to discuss the copyright ownership of AI-generated content and cultural stereotypes caused by algorithmic bias. Through debate and role-playing, students cultivate their value judgment of cultural benevolence, thus becoming responsible practitioners of intangible cultural heritage design.

### **3.3. Practice Dimension: Building a Three-level Progressive Platform**

The simulation layer uses digital tools to build a virtual training system to simulate the real business environment. The system features a built-in virtual intangible cultural heritage project repository, covering multiple categories with each project containing cultural background, craft parameters, user profiles, and other details. After students place an order online, the AI acts as a customer to discuss requirements, while the system evaluates the proposal's cultural relevance, innovation, and other key aspects. This platform addresses the shortage of real-world projects, enabling students to complete extensive virtual project training during their academic years [4].

The Real Layer introduces business projects from cooperative enterprises every semester and implements a dual-mentor system. The corporate mentor is responsible for requirement communication and cultural review, while the school teacher provides theoretical guidance and process management. Upon project completion, students must submit a review report analyzing digital tool efficiency, cultural contributions, and collaboration bottlenecks, thereby completing the learning-by-doing cycle.

The transformation layer introduces a design incubation phase in the third academic year, where outstanding projects may apply for innovation and entrepreneurship funding to pursue patent applications, prototype development, and market promotion. Co-host a press conference on achievements with industrial parks, inviting enterprises and investment institutions to participate. Encourage students to participate in competitions like the Challenge Cup, showcasing the digital design process of intangible cultural heritage as an innovative highlight to boost its public visibility.

## **4. Implementation Strategy of Three-dimensional Ability Training Path**

### **4.1. Curriculum System Reconstruction: From Parallel to Integration**

Break the traditional linear curriculum structure and construct a three-dimensional immersive curriculum matrix. The semester schedule features parallel delivery of technical, creative, and practical courses, with an integrated comprehensive project implemented annually.

The measures include: developing a "Intangible Cultural Heritage + Books" module by integrating digital cultural elements into bookbinding courses; establishing a dynamic case library with real-time updates of ICH-assisted design examples for students' pre-class self-study; implementing a credit recognition reform that allows awards from competitions and corporate project completion to be converted into practical credits, thereby motivating students' initiative. Through the deep integration of the curriculum system, it achieves the organic unity of knowledge transmission, ability cultivation, and quality enhancement [5].

The course adopts a "2-6-2" spiral progression framework: The theoretical module (20%) centers on decoding Shengjing's intangible cultural heritage genes, structured into three units—"historical lineage, symbolic semantics, and translation strategies." The practical module (60%) features a seven-level task chain designed around "the birth of a book." The extension module (20%) utilizes a "culture + business + technology" cross-disciplinary workshop to transform course projects into market-ready products.

### **4.2. Practice Platform Building: From Single to Ecology**

The campus intangible cultural heritage design workshop has upgraded its facilities by investing in project funds to install high-performance graphics workstations, professional software, and a localized digital resource environment. The workshop operates on an open reservation system, allowing students to use it independently. The system automatically records usage data to provide a basis for formative assessment.

Off-campus industry-education integration base: Leveraging the industry resources of partner enterprises, this base establishes a research, education, and production hub for intangible cultural heritage (ICH) book design. Its functions include on-site guidance by ICH inheritors, on-site design for real projects, new technology training, and industry standard discussions. The agreement stipulates that enterprises shall provide internship positions, with priority given to outstanding trainees.

Cloud Collaborative Innovation Platform: A remote school-enterprise system built with online collaboration tools. Corporate mentors can provide real-time feedback on student proposals, while the AI system captures key comments to generate a student competency growth map. This visualizes three-dimensional skill progression curves, enabling personalized guidance.

### **4.3. Empowerment of Teachers: From Single Type to Dual Teachers and Dual Abilities**

The Teacher's Intangible Cultural Heritage Literacy Enhancement Program: Regularly organize digital technology sharing sessions and invite intangible cultural heritage inheritors for training. Select key teachers to attend advanced training courses and obtain technical certifications. Establish a cultural practice archive for teachers, requiring the completion of an intangible cultural heritage (ICH) auxiliary design enterprise project annually to ensure synchronization between teaching and industry.

The development of teaching competence for enterprise mentors: providing pedagogical training for mentors assigned to partner enterprises, covering curriculum design, classroom discussion facilitation, and academic assessment. To address the challenge of intangible cultural heritage (ICH) experts who 'can do but not teach', corporate mentors must submit teaching design proposals for school review before delivering instruction.

Innovation in dual-mentor collaboration mechanism: Establish a collaborative model where school teachers and corporate mentors jointly guide student teams, with clearly defined responsibilities. School teachers focus on theoretical depth and academic standards, while corporate mentors emphasize cultural feasibility and market adaptability. Regular joint teaching and research meetings are held to share student progress and adjust strategies promptly.

### **4.4. Evaluation System Innovation: From Result-oriented to Value-added-oriented**

Construct a three-dimensional evaluation matrix: The technical dimension evaluates tool proficiency, generation efficiency, report quality, and development capability; The creative dimension assesses mental agility, cultural application, innovation value, and semantic depth; The practical dimension evaluates project completion, collaboration performance, market satisfaction, and conversion potential.

Introduce multiple evaluation subjects to replace the single scoring model by teachers, and establish a mechanism for teachers, enterprise mentors, AI systems and students to participate in mutual evaluation. The AI system analyzes student proposals and provides multi-dimensional quantitative scores as supplementary references.

The value-added evaluation system not only assesses the final product but also focuses on students' competency growth. By comparing baseline tests with project-end assessments, it calculates a competency growth index. Students who show significant improvement receive incentives, encouraging self-transcendence.

The system employs a four-weighted evaluation model: cultural recognition (30%), design innovation (25%), craftsmanship completion (20%), and market conversion rate (25%). It is complemented by the WeChat mini-program "Liaoyun Scoring", enabling real-time data collection and radar chart visualization.

## 5. Conclusion

This study constructs a three-dimensional ability training path of "technology-creativity-practice" for the integration of intangible cultural heritage into book design. Through the school-enterprise collaborative practice of Liaoning Communication University, the effectiveness of this system in improving the training quality and shortening the gap between supply and demand is verified. The core contributions are as follows: Theoretical dimension-A three-dimensional competency synergy model was proposed, enriching the theoretical framework for cultivating design talents in the era of cultural heritage. Practical dimension-A replicable industry-education integration paradigm was established, crystallizing a framework of "three-stage six-level micro-courses + seven-level task chains + dual-dimensional evaluation", providing reference for peer institutions. Institutional dimension-Innovative multi-dimensional evaluation tools were developed to advance educational assessment reform.

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