

Reconstruction of PBL-Based Curriculum System for Visual Communication Design in the Context of Government-Industry-University-Research-Application Collaboration

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Abstract

Deepening collaborative education between government, industry, academia, research, and application is the core path for application-oriented universities to enhance talent cultivation quality and serve local industrial development. Currently, the curriculum system of visual communication design in private universities generally faces issues such as insufficient industry adaptability, superficial project-based teaching, loose collaboration among stakeholders, and a single evaluation dimension, making it difficult to meet the demand for composite design talents in local cultural and creative industries. Based on the teaching practice of visual communication design at Liaoning University of Media and Communications, this paper takes PBL (Problem-Based Learning) project-based teaching as the core carrier and explores the systematic reconstruction path of the project-based curriculum system from the perspective of collaboration between government, industry, academia, research, and application. It focuses on four dimensions: curriculum goal reconstruction, modular project content construction, collaborative teaching implementation, and diversified evaluation system construction. The research shows that the PBL curriculum system built on real local projects can break down the barriers between classroom teaching and industrial practice, achieve collaborative improvement in talent cultivation quality, local service capabilities, and teachers' practical levels, and provide a practical paradigm for reference in the reform of design-related courses in private universities.

Keywords

Government-industry-university-research-application, PBL teaching, curriculum system reconstruction, Integration of industry and education.

1. Introduction

The report of the 20th National Congress of the Communist Party of China explicitly stated the need to "promote the integration of industry and education, and the convergence of science and education," thereby indicating the core direction for talent cultivation reform in application-oriented universities in the new era. With the rapid development of the digital cultural and creative industry, the visual communication design industry has raised higher requirements for talents' practical abilities, collaborative skills, and adaptability to local services. Traditional curriculum systems centered on knowledge impartation have become difficult to match the needs of industrial development. Collaborative education involving government, industry, academia, research, and application serves as a core path to bridge the education chain, talent chain, and industry chain. It can integrate resources from multiple parties, including government, enterprises, universities, research institutions, and users, providing systematic support for the reform of design-related courses.

As an important platform for cultivating applied design talents, private universities generally face common issues such as the disconnection between course content and industry, and the dilution of practical teaching. Project-Based Learning (PBL), driven by real-world problems and centered around students, can effectively enhance students' problem-solving abilities and comprehensive qualities. It serves as a crucial teaching vehicle for deepening the integration of industry and education. However, currently, PBL teaching in most institutions remains at the superficial level of single courses, without forming a deep coupling with the government-industry-university-research-application talent cultivation system. The project carriers lack authenticity and systematicness, making it difficult to fully unleash the educational potential [1].

The Visual Communication Design program at Liaoning University of Media and Communications is rooted in the development needs of Liaoning's local cultural and creative industries. Leveraging years of cooperation between government, industry, academia, research, and application, it deeply integrates Project-Based Learning (PBL) with curriculum system reform, exploring the construction of a multi-party collaborative project-based curriculum system. This article systematically examines the current practical dilemmas of the visual communication design curriculum system, and from the perspective of collaboration between government, industry, academia, research, and application, proposes a specific reconstruction path for the PBL curriculum system. It aims to provide practical reference for the reform of design-related courses in private universities and contribute to the high-quality development of local cultural and creative industries.

2. The Realistic Dilemma of the Visual Communication Design Curriculum System

2.1. The Course Content is Disconnected from Industry Needs, and the Adaptability to Local Services is Insufficient

The traditional visual communication design curriculum system is based on knowledge points as the logical main line, with content updates lagging behind the pace of industrial technology iteration. There is insufficient integration of cutting-edge content from industries such as AIGC creative design and digital visual communication, resulting in a mismatch between curriculum knowledge and job demands. Most of the course practical training projects are virtual propositions formulated by teachers, lacking connection to real industrial needs such as local cultural and creative industries, rural brand upgrading, and industrial heritage revitalization in Liaoning. Students' design works often remain at the conceptual level, lacking feasibility for implementation. This curriculum setting, which is detached from local scenarios, not only fails to enable students to establish real market cognition but also makes it difficult for universities to fulfill their function of serving local development. Talent cultivation and industrial needs become "two separate entities" [2].

2.2. The Application of PBL Teaching is Superficial, and the Value of Project-based Education Has Not been Fully Unleashed

Existing PBL (Problem-Based Learning) teaching is mostly confined to the localized application of a single course, merely replacing traditional assignments with small projects, without forming a project-based curriculum system that spans the entire professional training process. The project implementation process is often simplified to a linear flow of "task assignment - submission of work - teacher grading", omitting complete industrial links such as demand research, scheme iteration, user feedback, and final delivery, making it difficult for students to establish a full-process project mindset. The project topics lack real-world scenario support, and students do not need to deal with real-life demand conflicts, cost constraints, and market

standards, which greatly diminishes the exploratory learning value of PBL and fails to fully exercise students' problem-solving abilities and professional qualities [3].

2.3. The Collaboration among Government, Industry, Academia, Research, and Application Entities is Loose, and the Joint Force for Talent Cultivation Has Not Yet been Formed

Currently, the cooperation among various entities in politics, industry, academia, research, and application mostly remains at the superficial level, such as listing on the surface and expert lectures, without deeply embedding into the entire process of curriculum system construction. The government's industrial policies and talent orientation have not been translated into specific curriculum objectives. Enterprises only provide scattered internship positions rather than systematic project carriers. The technological achievements of scientific research institutions have not been transformed into teaching resources, and the real needs of end users have not been involved in curriculum evaluation. The boundaries of responsibilities and rights among various entities are blurred, and there is a lack of normalized collaborative mechanisms and interest connections, leading to weak sustainability of cooperation projects, limited effectiveness in talent cultivation, and difficulty in forming a joint force of "resource sharing, complementary advantages, and collaborative talent cultivation".

2.4. The Evaluation System Has a Single Dimension, Lacking Sufficient Consideration of Comprehensive Abilities

Traditional course evaluation centers on the visual effects of the final design work as the core criterion, emphasizing students' technical expression ability while neglecting the process evaluation of comprehensive abilities such as project research, creative deduction, team collaboration, communication, and expression. The evaluation is primarily conducted by course instructors, lacking the participation of multiple stakeholders such as industry enterprises and end users, resulting in a disconnect between evaluation criteria and real industry needs. A single evaluation system cannot comprehensively measure students' professional qualities and growth potential, nor can it provide effective feedback for optimizing course content and adjusting teaching modes. The improvement of course quality lacks closed-loop support [4].

3. Reconstruction Path of PBL Project-based Curriculum System in the Context of Government-Industry-University-Research-Application Collaboration

3.1. Collaborate with Multiple Parties to Anchor Goals and Establish a Three-dimensional Curriculum Objective System

Led by the government's cultural tourism and industry and information technology departments, in collaboration with industry associations, key cultural and creative enterprises, scientific research institutions, and universities, we jointly develop talent cultivation standards for visual communication design majors. We establish a three-dimensional curriculum objective system encompassing "professional knowledge, practical ability, and professional ethics" to ensure that the curriculum direction aligns with local industry needs.

Knowledge dimension: Consolidate the basic theories of visual communication design, master core knowledge such as brand design, packaging design, and digital visual design; become familiar with the operational processes and norms of collaborative projects involving government, industry, academia, research, and application; understand the characteristics of Liaoning's regional culture and the development patterns of the cultural and creative industry, and supplement with cutting-edge technical knowledge such as AIGC creative design.

Capability dimension: Possess the ability to independently complete the entire process of a real design project, accurately align with user needs, conduct cultural research, complete creative design, and facilitate the implementation of the plan; proficiently use intelligent design tools to enhance creative efficiency; possess good team collaboration, cross-domain communication, and problem-solving skills.

Literacy dimension: Establish a sense of responsibility for serving local development, cultivate a consciousness of cultural inheritance and craftsmanship spirit; form rigorous professional norms and an innovative spirit, be able to adapt to the rapidly iterative industry environment of the cultural and creative industry, and achieve the unity of knowledge impartation, ability cultivation, and value guidance.

3.2. Build Project Carriers in Layers and Reconstruct Modular Course Content

Using real design projects from Liaoning as the core carrier, and following the progression of student abilities, we have constructed a three-tier PBL project module: "Basic Cognition - Comprehensive Improvement - Practical Implementation". We have broken down knowledge points and integrated them into projects at each level, thereby reconstructing a modularized course content system.

The basic-level projects are aligned with professional basic courses, using small public welfare and cultural micro-projects as carriers, such as urban civilization propaganda poster design, Liaoning intangible cultural heritage visual element extraction practice, etc. Basic knowledge points such as layout design and color composition are embedded into project tasks, guiding students to master core knowledge in the process of completing the projects, while establishing preliminary cognition of local culture, laying the foundation for subsequent advanced learning [5].

The enhancement layer projects are aligned with professional core courses, utilizing medium-sized development projects collaboratively undertaken by schools and enterprises as platforms. These projects encompass visual upgrades for local time-honored brands, conceptual designs for cultural museums and cultural and creative industries, and packaging design schemes for rural agricultural products. In these projects, both in-school teachers and enterprise mentors jointly break down project tasks, covering core course content such as brand design, packaging design, and digital communication. This approach trains students in comprehensive project design logic and team collaboration skills, facilitating the transformation of theoretical knowledge into practical abilities.

The practical layer project integration training and graduation design are based on real-world projects commissioned by the government and purchased by enterprises, such as the development of cultural and creative products for the Shenyang Forbidden City, the design of visual systems for county-level public brands, and the visual enhancement of industrial heritage cultural tourism. Students participate in the entire process of demand alignment, field research, scheme iteration, result delivery, and market feedback as project teams, completing the tempering of comprehensive abilities in real industrial scenarios and achieving seamless connection between teaching and employment.

3.3. Innovate Teaching Implementation Models and Deepen the Mechanism of Diversified Collaborative Education

Establish a composite teaching implementation model featuring "flipped preview - classroom discussion - project practice - dual-teacher guidance", break classroom boundaries, integrate resources from government, industry, academia, research, and application, and achieve full-chain integration of educational scenarios.

Before class, project background information, theoretical knowledge points, and research tasks are released on the online teaching platform to guide students to complete pre-learning and

preliminary research independently. This cultivates their ability to learn autonomously and integrate information, leaving time for in-depth discussion in class. Classroom teaching is student-centered, adopting forms such as group presentations, scheme deduction, and centralized feedback, focusing on solving difficult problems in project advancement. Teachers shift from being knowledge impartors to project facilitators, emphasizing the inspiration of students' design thinking and problem-solving approaches.

Establish a dual-teacher collaborative teaching mechanism, introduce enterprise designers, intangible cultural heritage inheritors, and industry experts into the classroom, participate in project guidance and scheme review, and integrate front-line industry experience, market standards, and traditional skills into the teaching process. Rely on the cultural and creative training base jointly established by schools and enterprises, local cultural and museum venues, and rural revitalization practice sites to carry out offline project practice, allowing students to complete design practice in real work scenarios, achieving the educational effect of "learning by doing and understanding through learning".

3.4. Establish Diversified Value-added Evaluations and Improve the Closed-loop System for Course Quality

Break the single-work evaluation model and establish a diversified value-added evaluation system that combines "process evaluation + outcome evaluation + multi-party evaluation" to comprehensively measure students' comprehensive growth and the effectiveness of curriculum education.

Process evaluation accounts for 40%, encompassing dimensions such as the depth of project research, the number of scheme iterations, team collaboration performance, and communication and expression skills. It focuses on students' growth and changes during the project progression, rather than solely determining excellence or inferiority based on the final results, guiding students to value the accumulation in the practical process.

The proportion of outcome-based evaluation is 40%. Design outcomes are evaluated from four dimensions: creativity, feasibility, cultural adaptability, and market value. Visual aesthetics are no longer the sole criterion for evaluation. Instead, the practicality and social value orientation of the works are emphasized, aligning with the real evaluation logic of the industry.

The evaluation from multiple stakeholders accounts for 20%. We introduce enterprise mentors, user representatives, and industry experts to participate in the evaluation of outcomes, incorporating industry standards and user needs into the evaluation process to enhance the objectivity and industry adaptability of the evaluation. At the same time, we establish an evaluation feedback mechanism to regularly sort out issues identified in the evaluation, dynamically adjust course project settings, teaching content, and implementation methods, and form a closed loop of "implementation-evaluation-optimization" for improving course quality.

4. Conclusion and Prospects

The reconstruction of the PBL project-based curriculum system in the context of collaborative government-industry-university-research-application is an effective path for visual communication design majors in application-oriented private universities to address the problem of the disconnect between industry and education and improve the quality of talent cultivation. This system takes real local projects as the core link, integrates resources from multiple parties including the government, enterprises, universities, research institutions, and users, and breaks down the barriers between classroom teaching and industrial practice through systematic design involving three-dimensional goal anchoring, hierarchical project construction, diversified teaching implementation, and closed-loop evaluation optimization. It achieves synergistic gains in talent cultivation, industrial service, and teaching reform.

Preliminary teaching practice indicates that the project-based curriculum system can significantly enhance students' practical abilities and professional qualities, improve the adaptability of the curriculum to serve local industries, and simultaneously promote the simultaneous improvement of teachers' practical abilities. It possesses strong feasibility and promotional value. The number of awards won by students in pilot classes increased by 35% year-on-year, and six sets of student design proposals were adopted and implemented by partner enterprises, directly empowering the development of Liaoning's local cultural and creative industries, thus verifying the practical effectiveness of the system.

Future research can be continuously deepened from two directions: First, further expanding the depth and breadth of collaboration among government, industry, academia, research, and application, establishing a normalized project resource sharing platform, enriching local project reserves, and improving the multi-party interest connection mechanism; second, establishing a long-term tracking and evaluation system for course effectiveness, continuously optimizing project settings and teaching methods, promoting the radiation of the curriculum system to more design-related majors, better serving the high-quality development of local cultural and creative industries, and contributing more high-quality applied design talents to the comprehensive revitalization of Liaoning.

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