

Application and Evaluation of Project-Based Learning in Exhibition Design Courses

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Abstract: With the rapid development of the exhibition industry, visual communication design competence has become a core competitive skill. The course Exhibition Visual Communication Design plays a key role in cultivating students' aesthetic perception, creativity, and practical abilities. However, traditional teaching methods often overemphasize theoretical instruction while neglecting hands-on practice and the learning process. Project-Based Learning (PBL), which emphasizes inquiry-driven and collaborative learning under authentic project contexts, provides a promising alternative for curriculum reform. Based on an extensive literature review, this study constructs a multidimensional evaluation framework centering on 'learning out-come attainment-student competence development-learning process experience. Through questionnaires, classroom observation, and project work analysis, the study comprehensively assesses the effectiveness of PBL implementation in the course. The results offer theoretical and practical references for optimizing curriculum design and promoting similar pedagogical approaches.

Keywords: Project-Based Learning (PBL); Exhibition Visual Communication Design; Teaching Effectiveness Evaluation; Learning Outcome Attainment; Learning Process Experience

1. Introduction

Project-Based Learning (PBL) has been increasingly applied in higher education, particularly in design-oriented disciplines, where it serves as an effective approach to enhance teaching quality and students' comprehensive abilities. Originating from medical education in the mid-20th century United States, PBL has since been widely adopted across disciplines

worldwide. Research has demonstrated its effectiveness in fostering learners' self-directed learning, teamwork, and innovation capabilities. In China, PBL-related studies have gradually expanded, focusing on its theoretical framework, instructional design, and evaluation of learning outcomes.

As the exhibition industry continues to grow, visual communication design skills have emerged as core competencies for industry professionals. The course Exhibition Visual Communication Design aims to cultivate students' aesthetic literacy, creative thinking, and practical design abilities. However, traditional lecture-based approaches often privilege theory over practice and results over process, which limits the development of well-rounded, application-oriented professionals under the 'New Liberal Arts' paradigm [1]. PBL, emphasizing authentic project engagement and problem-solving through collaboration, thus represents a key pathway for curricular reform [2]. How to scientifically assess the actual effects of PBL in this course—and to provide feedback for instructional optimization—constitutes the central focus of this study.

2. Definition of Core Concepts

Project-Based Learning (PBL) emphasizes authentic, inquiry-based learning and cross-disciplinary collaboration, encouraging students to solve real-world problems through creative practice. In contrast, exhibition visual design focuses on how visual communication, spatial layout, and aesthetics engage audiences and convey meaning.

2.1 Project-Based Learning (PBL)

PBL is a learning model structured around real-world projects, emphasizing active exploration, interdisciplinary integration, and the development of problem-solving skills. Research in China indicates that PBL enhances students' learning motivation and application of

knowledge, though challenges remain in the transformation of teaching roles and the complexity of curriculum design [3]. In the field of exhibition visual communication, systematic applications of PBL are still emerging, with current studies mainly centered on case analyses and practice-based reflections.

2.2 Exhibition Visual Design

Exhibition visual communication design refers to the creative process through which information is conveyed and audiences are engaged via visual media during exhibition activities. It encompasses booth design, posters, advertisements, spatial environment setup, and brand image construction. Its core characteristics include: Integrativity, merging art design, communication, and spatial composition; Timeliness: aligning closely with exhibition themes and schedules; Creativity: producing visually compelling and original design solutions.

3. Literature Review

Internationally, scholars explore the role of visual storytelling, immersive media, and technology in enhancing design learning and audience experience. In China, research increasingly stresses cultural identity, localization, and practice-based innovation in exhibition design education. Despite growing interest, gaps remain in integrating theory with practice and aligning PBL with digital transformation.

3.1 International Research

International scholarship on exhibition visual communication focuses on theoretical construction, technological applications, and pedagogical practice. Falkheimer and Heide emphasized the role of visual communication in shaping brand identity and emotional resonance [4], while Friedman proposed the concept of 'spatial narrative' to strengthen immersive experience [5]. Emerging digital technologies—such as AR, VR, and AI-generated content—further enhance audience engagement and brand memory [6]. In higher education, PBL has been widely adopted to cultivate interdisciplinary competencies and creativity [7]. However, its success depends largely on instructors' project design capabilities and students' self-regulated learning [8].

3.2 Domestic Research

Compared to the international field, research on exhibition visual communication design in China began relatively late but has flourished in recent years alongside the growth of the exhibition economy. Theoretical studies emphasize localization and cultural embeddedness [9], while practical research often focuses on large-scale exhibitions such as the China International Import Expo and Canton Fair, exploring modular design, brand communication, and interactive strategies [10]. Within educational practice, PBL has been increasingly integrated into design-related courses, improving students' initiative and practical competencies [11], though difficulties persist regarding instructional organization and team collaboration awareness [12].

3.3 Research Gap

Despite growing achievements, existing studies reveal certain gaps—particularly in linking theory with practice, conducting interdisciplinary exploration, and integrating emerging digital technologies. As pedagogical reforms deepen, PBL's application in design education will become more prevalent. Its effectiveness and optimization pathways are thus key topics for continued research. This study aims to strengthen the theoretical-practical connection and advance interdisciplinary innovation in technology-driven exhibition design education.

4. Evaluation Objectives and Framework Construction

In assessing the effectiveness of PBL-based instruction, a scientifically grounded evaluation system is essential. Educational evaluation theory suggests that teaching effectiveness encompasses not only learning outcomes but also developmental processes and multidimensional skill growth [13]. Accordingly, this study sets evaluation objectives across three dimensions [14]—learning outcomes, competency development, and process experience—to comprehensively assess PBL implementation in Exhibition Visual Communication Design.

4.1 Learning Outcome Dimension

This dimension examines students' attainment of the course's expected knowledge and skills—whether they have systematically mastered core concepts, methods, and tools of exhibition visual

communication design, and whether they can apply them in authentic projects. Indicators include knowledge mastery, practical skill application, and professional values. To address limitations of conventional knowledge-based assessments, this study incorporates innovation, completeness, and practical applicability of student work as evaluative measures [1].

4.2 Competency Development Dimension

This dimension assesses students' progress in creativity, teamwork, problem-solving, and project management. It measures the ability to propose innovative design concepts, integrate interdisciplinary knowledge, communicate and collaborate effectively, and manage time and resources efficiently. Following Krajcik and Blumenfeld [8], PBL's essence lies in stimulating inquiry motivation and higher-order thinking through authentic tasks. In this course, students must not only produce visual outcomes but also understand audience psychology, brand strategy, and spatial storytelling—making the enhancement of creative and collaborative

capacities particularly critical.

4.3 Learning Process and Experience Dimension

This dimension evaluates student engagement, learning experience, and satisfaction throughout the PBL process. Metrics include learning engagement (participation, time investment, autonomy), interactive experience (quality of peer and instructor communication), and learning satisfaction (overall perception of course content, pedagogy, and evaluation mechanisms). Studies indicate that engagement and positive learning experiences are crucial mediators of PBL effectiveness [12].

Based on these dimensions, a three-level hierarchical evaluation framework was constructed (Table 1). The design principles include scientific validity, operability, and dynamic adaptability—ensuring the framework can be empirically measured, adjusted across learning stages, and generalized to similar contexts.

Table 1. Framework of Evaluation Indicators

Primary Dimension	Secondary Indicator	Description
Learning Outcome Attainment	Knowledge Mastery	Mastery of key concepts, principles, and tools
	Skill Application	Apply design knowledge to solve exhibition problems
	Values and Attitude	Social responsibility, and aesthetic sensibility
Competence Development	Creative Thinking	Propose original designs and integrate interdisciplinary resources
	Team Collaboration	Cooperation, communication, and conflict resolution within project teams
	Problem-Solving	Analytical and integrative thinking in addressing complex design issues
	Project Management	Planning and coordination of project processes, time, and resources
Process and Experience	Learning Engagement	Participation and self-directed learning
	Interactive Experience	Quality and effectiveness of interaction with instructors and peers
	Learning Satisfaction	Overall satisfaction with course content, pedagogy

This framework integrates both international and domestic scholarship. The outcome dimension draws on Barrows and Prince's PBL assessment models; the competence dimension reflects Krajcik & Blumenfeld's and Eastwood's studies on higher-order skill development; and the process dimension adapts Zhang Hua's localized findings on student engagement and collaborative interaction.

For data collection, the study combines

questionnaire surveys, classroom observations, and expert evaluations of student projects. The Likert-scale survey measures student perceptions across indicators; observations record interaction frequency and participation intensity; and expert scoring evaluates project originality and effectiveness. This triangulated approach aligns with Strobel and van Barneveld's methodological recommendations for evidence-based evaluation of PBL impact.

5. Conclusion

Project-Based Learning (PBL), driven by authentic projects, emphasizes self-directed inquiry and collaborative problem-solving, offering a transformative pathway for curriculum reform. In this context, evaluating its effectiveness in the Exhibition Visual Communication Design course is essential for advancing pedagogical innovation. This study constructs a multidimensional evaluation system centered on 'learning outcomes – competence development – learning experience,' balancing both results-based and process-oriented indicators. The proposed framework not only provides an empirical basis for course enhancement but also offers transferable insights for the broader adoption of PBL in design education.

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