

Research on a Teaching Management Model for Design-Oriented Courses Based on the OR Platform in the Context of Conversion and Qualification Assessment

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Abstract: With the ongoing conversion of independent colleges and the implementation of the qualification assessment of undergraduate teaching, the teaching management of design-oriented courses is facing new challenges and opportunities. Taking Dianchi College as a case study, this paper explores how the “Cloud Service Platform for Network-Based Open Teaching and the Co-construction and Sharing of Massive Digital Teaching Resources” (the OR Platform) can be leveraged to optimize the teaching management model for design-oriented courses in the context of the conversion and qualification assessment. Through literature analysis, questionnaire surveys, expert consultation, and empirical research, an efficient, flexible, and highly interactive teaching management system based on the OR Platform has been constructed. The results show that this model significantly improves the teaching efficiency and quality of design-oriented courses, providing strong support for passing the conversion qualification assessment.

Keywords: Conversion qualification assessment; Design-oriented courses; Teaching management; OR Platform; Information-based teaching

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1. Introduction

1.1. Research background

In the late 1990s, in order to expand access to higher education, independent colleges emerged and developed rapidly. As these colleges continued to grow in scale and their internal problems became increasingly complex, the Ministry of Education issued a series of policies to regulate their operation and explicitly put forward the requirement of conversion. In terms of policy evolution, in 2003 the Ministry of Education issued *Several Opinions on Regulating and Strengthening the Management of Independent Colleges Established by Regular Institutions of Higher Education under New Mechanisms and Models*; in 2006 the requirement of

“conversion” was proposed for the first time; in 2008 the *Measures for the Establishment and Administration of Independent Colleges* was promulgated; and in 2020 the Ministry of Education issued the *Implementation Plan for Accelerating the Conversion of Independent Colleges*, which clarified three pathways: conversion into private institutions, conversion into public institutions, and termination of operation ^[1]. In 2023, Dianchi College was officially converted from an independent college into a private regular undergraduate institution. According to the requirements of the Ministry of Education, it must undergo the qualification assessment of undergraduate teaching within three years after conversion.

The core connotation of the qualification assessment of undergraduate teaching is summarized as “Four Promotions, Three Basics, Two Highlights, and One Guidance.” Among these, “One Guidance” refers to guiding the assessed institutions to build and continuously improve their internal quality assurance systems, so as to form a long-term mechanism for steadily raising teaching quality. As core practical courses in the cultivation of application-oriented talents, the teaching management of design-oriented courses must be scientific and standardized, which directly affects the extent to which the assessment indicators can be met ^[2].

1.2. Research objectives and significance

This study aims to construct a teaching management model for design-oriented courses based on the OR Platform so as to comprehensively improve teaching quality and efficiency. Its significance is mainly reflected in four aspects. First, it conforms to the requirements of deepening higher education reform and responds to the national strategy of digital transformation of education. Second, it meets the development needs of the institution and is of great significance for enhancing the social recognition of private universities, strengthening their attractiveness to prospective students, and improving the recognition of their graduates in the job market. Third, it satisfies the dual needs of students’ learning behavior and teaching management, since the OR Platform enables real-time monitoring and guidance of students’ learning behavior. Fourth, it promotes the intelligentization and scientification of the institution’s teaching management and facilitates the implementation of the internal quality assurance system.

1.3. Research status at home and abroad

At present, research on the teaching management of design-oriented courses and the application of information-based teaching platforms is steadily increasing. Domestic scholars have achieved fruitful results in areas such as changes in archives management models under the “Internet Plus” background, innovative models for design-oriented courses, and landscape architecture teaching management in the mobile internet era. Internationally, research on architectural education in the digital age and on innovative talent cultivation models under the big data background has also provided theoretical support for information-based teaching. However, research that specifically applies the OR Platform to the teaching management of design-oriented courses in the particular context of the conversion qualification assessment remains insufficient. This study seeks to fill this gap and explore a new pathway of assessment-oriented, information-based teaching management.

2. Theoretical foundations and policy environment

2.1. Theoretical foundations

This study is built upon three theoretical foundations. The first is teaching management theory, which

emphasizes optimizing the allocation of teaching resources and ensuring the realization of teaching objectives through the functions of planning, organizing, coordinating, and controlling ^[3]. The second is information-based teaching theory, which advocates using modern information technology to build information-based learning environments and bringing about fundamental changes in the presentation of teaching content, students' ways of learning, and the modes of interaction between teachers and students. The third is adult learning theory, which emphasizes learner-centeredness and values learners' autonomy, experience, and problem orientation. In this study, these three theories jointly guide the construction of the OR Platform-based teaching management system, ensuring that the management model complies with assessment norms while also fitting the flexible and dynamic characteristics of design-oriented courses and students' cognitive patterns ^[4].

2.2. Analysis of the policy environment

National policy documents on the conversion of independent colleges and the qualification assessment of undergraduate teaching provide clear guidance for this study. Documents such as the *Implementation Plan for Accelerating the Conversion of Independent Colleges* not only stipulate the pathways of conversion but also impose strict requirements on the operating conditions, teaching management, and teaching quality of institutions after conversion ^[5]. The qualification assessment focuses on examining the institution's basic operating conditions, basic teaching management, and basic teaching quality, as well as its ability to serve local economic and social development and its capacity to cultivate application-oriented talents. This requires that the teaching management of design-oriented courses must shift from the traditional extensive mode to a refined, data-driven, and process-oriented mode, ensuring that all teaching archives and process materials are traceable and verifiable.

3. Research design and methods

3.1. Research objectives and content

The core objective of this study is to thoroughly analyze the requirements that the conversion qualification assessment imposes on the teaching of practical courses in private universities, and to realize the information-based teaching and management of design-oriented courses through the OR Platform. The research content mainly includes: analyzing the assessment requirements and sorting out the elements for constructing the practical teaching system; exploring pathways for building a practical teaching system for design-oriented courses on the OR system, covering teaching content, teaching methods, and the management of learning outcomes; and constructing an OR-based practical teaching management system for design-oriented courses, including faculty management, teaching management mechanisms, and the quality assurance system.

3.2. Research methods

This study comprehensively employs four research methods. The first is literature analysis, systematically reviewing domestic and international literature on the conversion of independent colleges, the qualification assessment, and information-based teaching to lay the theoretical foundation. The second is the questionnaire survey, in which questionnaires were distributed to teachers and students at Dianchi College to understand the current pain points in the teaching management of design-oriented courses and the needs for using the OR Platform. The third is expert consultation, inviting experts from universities such as Kunming University

of Science and Technology to evaluate the constructed teaching management model and ensure its scientific rigor and feasibility ^[6]. The fourth is empirical research, taking the teachers and students of the School of Architectural Engineering as the sample to carry out OR Platform-based teaching management practice and to verify the effectiveness of the model through data comparison ^[5].

3.3. Technical route

This study follows the technical route of “theoretical analysis—investigation of the current situation—system construction—empirical verification.” First, research is conducted on the indicator system of the qualification assessment of undergraduate teaching to clarify the specific requirements the assessment places on design-oriented courses ^[6]. Second, a needs analysis of the teaching management of design-oriented courses at Dianchi College is carried out to identify problems in existing management. Third, the study focuses on the management problems of the OR Platform in architectural design courses, conducting in-depth analysis through data collection via literature research, case studies, and questionnaire surveys. Finally, around the core modules of managing teachers’ teaching processes, managing students’ learning processes, assignment review and outcome feedback, teachers’ and students’ preparation of pre-class materials, archiving, classification, and retrieval of outcomes by administrators, and online learning and exchange between teachers and students, an integrated “teaching—platform—assessment” teaching management model is constructed and subjected to empirical analysis and experience summarization.

4. Analysis of the teaching requirements for design-oriented courses under the conversion qualification assessment

4.1. Interpretation of the assessment indicator system

Within the indicator system of the qualification assessment of undergraduate teaching, the core elements closely related to design-oriented courses include the faculty, teaching conditions, teaching processes, and teaching outcomes. The assessment requires that design-oriented courses be equipped with double-qualified (dual-competence) faculty and possess premises and equipment that meet the needs of practical teaching; that teaching processes be standardized, with complete teaching archives such as syllabi, lesson plans, and guidance manuals; and that teaching outcomes be reflected in students’ innovative practical abilities and high-quality design works ^[7]. In addition, the assessment highly emphasizes the operation of the internal quality assurance system, requiring that teaching processes be traceable and monitorable.

4.2. Analysis of the current situation of teaching in design-oriented courses

Taking Dianchi College as an example, the following problems exist in the current teaching management of design-oriented courses. First, teaching resources are dispersed: drawings, models, and courseware of all kinds lack a unified digital storage and sharing platform, making them difficult to access. Second, teaching methods are relatively monotonous: traditional lecturing and offline tutoring can hardly meet the needs of individualized guidance, and there is no effective means for process-based assessment. Third, the teaching feedback mechanism is imperfect: assignment review cycles are long, communication channels between teachers and students are blocked, and the traditional paper-based archives management is monotonous and constrained by time and space, requiring heavy manual classification and offering low utilization rates.

4.3. Gap analysis

Measured against the qualification assessment indicator system, the teaching management of design-oriented courses at Dianchi College shows gaps in the following aspects: the integration and digital management of teaching resources urgently need to be strengthened, and a “cloud assignment bank” suited to actual learning conditions needs to be established; teaching methods need to be innovated and the implementation of process-based assessment needs to be reinforced; and the teaching feedback and quality monitoring mechanisms must be improved so that real-time guidance of students’ learning behavior can be realized. These gaps are precisely the core pain points that this project seeks to resolve through the OR Platform.

5. Construction of the OR Platform-based teaching management system for design-oriented courses

5.1. Functions of the OR Platform and its current application

The OR Platform (the Cloud Service Platform for Network-Based Open Teaching and the Co-construction and Sharing of Massive Digital Teaching Resources) provides core functions such as online assignment submission, interactive teacher-student review, and sharing of teaching resources. Its cloud-based nature gives the system good scalability and supports the online transfer of multimedia formats including voice, text, images, charts, and video ^[7]. At present, universities such as Guilin University of Technology and Kunming University of Science and Technology have already achieved notable results using this platform, providing a mature practical foundation for this study.

5.2. Framework design of the teaching management system

Based on the OR Platform, this study constructs a teaching management system comprising four modules. The first is the faculty management module, which digitizes the allocation of teaching tasks, the accounting of workloads, and teaching evaluation. The second is the teaching management mechanism module, which standardizes the processes of pre-class material preparation, in-class interaction, and after-class tutoring. The third is the quality assurance system module, which relies on platform data to dynamically monitor teaching progress and assignment quality. The fourth is the teaching feedback mechanism module, which establishes a closed-loop channel for online teacher-student exchange and for administrators to archive, classify, and retrieve outcomes ^[8].

5.3. Innovation in the teaching model and methods

Relying on the OR Platform, design-oriented courses have fully adopted the blended teaching model. Before class, students obtain learning materials and task briefs through the platform. During class, the flipped classroom and project-based learning (PBL) are adopted: teachers provide centralized guidance on common problems, and students carry out collaborative design in groups. After class, students submit stage sketches, intermediate deliverables, and final outcomes on time. The platform’s administration console sets reminders according to time milestones and monitors students’ learning processes in real time. This model effectively resolves the problems that lower-year students find it hard to turn their innovative ideas into reality and that plagiarism is frequent among higher-year students, thereby enhancing the teaching management effectiveness of course instructors.

5.4. Construction of the teaching evaluation system

The study constructs a diversified evaluation system that comprehensively considers learning outcomes, participation in the process, and the efficiency of resource utilization. The OR Platform's "Internet Plus" archives management function plays a key role here: the system automatically classifies and archives students' assignments according to assignment scores, replacing traditional manual classification and reducing the risk of damage to or loss of archives. Meanwhile, the platform integrates excellent design works, videos, and courseware into a material bank and a question bank, forming a "cloud assignment bank." By grasping students' learning needs through big data analysis, it not only realizes efficient and continuous whole-process monitoring and management, but also provides data support for formulating targeted teaching plans^[9].

6. Empirical research and effect analysis

6.1. Design of the empirical research

To verify the effectiveness of the OR Platform-based teaching management model, this study selected the teachers and students of the School of Architectural Engineering at Dianchi College as the empirical sample. The research adopts a combination of questionnaire surveys, in-depth interviews, and analysis of the platform's backend data, comparing changes in teaching efficiency, student engagement, and teaching quality before and after the implementation of the model.

6.2. Process of the empirical research

During the empirical process, the research team first provided training to participating teachers and students on operating the OR Platform and clarified the norms for using the platform. Subsequently, the new model was fully implemented in core courses such as Architectural Design. Teachers released tasks, reviewed assignments, and provided voice, text, and image feedback through the platform; students submitted their design outcomes at each stage through the platform and participated in peer review; and teaching administrators regularly retrieved teaching archives through the backend to monitor teaching progress. During the research period, more than 200 valid questionnaires were collected, more than 20 teacher and student interviews were conducted, and various behavioral data generated during the platform's operation were exported.

6.3. Effect analysis

The empirical results show that the OR Platform-based teaching management model has achieved remarkable results. First, teaching efficiency has improved substantially: on average, the time teachers spend on reviewing assignments and giving feedback has been reduced by 40%, and the organization of teaching archives has been automated. Second, students' enthusiasm and engagement have increased significantly: platform data show that students' login frequency, resource downloads, and on-time assignment submission rates are all clearly better than those of traditional teaching classes. Finally, teaching quality has been effectively guaranteed: the completeness and accuracy of process-based assessment data fully meet the requirements of the qualification assessment, and the originality and innovativeness of students' design works have also been enhanced. This proves the positive role of the model in strengthening teaching management effectiveness and improving the quality of application-oriented talent cultivation.

7. Conclusion and prospects

7.1. Research conclusions

This study confirms that, in the context of the conversion qualification assessment, constructing an OR Platform-based teaching management model for design-oriented courses is both feasible and efficient. The model effectively resolves the problems of dispersed resources, delayed feedback, and difficult archives management in traditional teaching, realizes the digitization^[10], standardization, and visualization of teaching processes, and provides solid internal quality assurance for private universities to pass the qualification assessment smoothly.

7.2. Research contributions

The innovations and contributions of this study are mainly reflected in three aspects. First, innovation in the research background: it focuses on the intersection of converting institutions, assessment pressure, and the difficulties in teaching management of design-oriented courses. Second, innovation in the course management model: it has genuinely established a management model centered on student development, student learning, and learning outcomes. Third, innovation in the teaching management model: through “Internet Plus” digital archives management, it has promoted the reform of information-based management of practical teaching within the university, providing a reference paradigm for similar institutions.

7.3. Research limitations and future prospects

Although this study has achieved phased results, certain limitations remain. For example, the normative supervision mechanism for the use of the OR Platform still needs to be further refined in practice, and strategies for in-depth guidance of students’ learning behavior await further elaboration. Future research will be devoted to deepening the mining and analysis of platform data, exploring the application of artificial intelligence technology in the teaching evaluation of design-oriented courses, and continuously optimizing the integrated “teaching—platform—assessment” ecosystem, so as to contribute more theoretical and practical wisdom to the digital transformation of higher education.

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Disclosure statement

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