Research on the Construction of a Post-Course-Competition-Certification-Innovation Integrated Curriculum System Based on OBE Concept: A Case Study of Hotel Management

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Abstract: *With the accelerated digital transformation and diversified development of the hotel industry, the structural contradiction between talent cultivation in higher vocational hotel management programs and industry demands has become prominent. Based on the Outcome-Based Education (OBE) concept, this study explores the construction path of a five-dimensional integrated curriculum system ("Post-Course-Competition-Certification-Innovation") for hotel management programs. Through Delphi method surveys with 32 star-rated hotels, a professional competency matrix encompassing 6 core domains and 18 key competencies was established, emphasizing emerging competencies like digital operations and revenue management. A modular curriculum cluster integrating "Foundation - Core Competencies - Competition Enhancement - Certification Extension - Innovation & Entrepreneurship" was designed, incorporating WorldSkills standards, "1+X" certificate requirements, and innovation/entrepreneurship practices. Innovative implementation mechanisms like the "Trichotomous Classroom Linkage" and a "Four-Dimensional, Three-Stage" multidimensional evaluation system were developed, forming a dynamic closed-loop quality assurance mechanism. Empirical research demonstrates that this model effectively addresses issues such as lagging curriculum content and the separation of competitions from teaching, achieving precise alignment between professional competency cultivation and industry needs. It provides a replicable practical paradigm for vocational education curriculum reform.*

Keywords: *OBE Concept; Post-Course-Competition-Certification-Innovation (PCCI); Curriculum System; Hotel Management*

1. Introduction

1.1. Research Background and Significance

With the rapid development of global tourism and consumption upgrading, the hotel industry is undergoing digital transformation, service quality enhancement, and diversified business model changes, creating an urgent demand for versatile management talent. Data from the Ministry of Culture and Tourism in 2022 indicates a talent gap of 1.2 million people in China's hotel industry, with a particularly acute shortage in mid-to-senior management positions. However, significant contradictions persist in talent cultivation within hotel management programs at higher vocational colleges and applied undergraduate institutions: the industry urgently requires high-quality professionals with job competence, innovation capability, and sustainable development potential, while traditional curriculum systems suffer from insufficient job alignment precision, weak practical teaching, and loose connections with vocational qualification certifications, leading to a misalignment between talent cultivation and industry demands.

Against this backdrop, the Outcome-Based Education (OBE) concept, emphasizing the reverse design of curriculum systems based on learning outcomes, provides theoretical guidance for vocational education reform. Furthermore, the "Vocational Education Quality Enhancement Action Plan (2020-2023)" explicitly elevates the "Post-Course-Competition-Certification" comprehensive education model to a national strategic level. Taking the hotel management major as an example, this study explores the construction of a five-dimensional integrated curriculum system ("Job Demands, Curriculum System, Skills Competitions, Vocational Certificates, Innovation & Entrepreneurship") under the OBE concept. It holds significant theoretical value and practical significance for resolving

the disconnection in talent cultivation and innovating vocational education models.

1.2. Current Research Status at Home and Abroad

International research on the OBE concept began in the 1990s, with Spady and others systematically constructing the theoretical framework of Outcome-Based Education, emphasizing the shift from a "teacher-centered" to a "student-centered" education system. In recent years, the Accreditation Commission for Programs in Hospitality Administration (ACPHA) in the US has deeply integrated the OBE concept into its professional accreditation standards. By establishing competency matrix-oriented curriculum systems, it has significantly improved the industry relevance of talent cultivation. Domestic scholars have focused on the application of OBE in vocational education since 2012. Li Xiaochuan (2013)proposed the fundamental principles for reforming dynamic curriculum teaching in vocational education under the OBE concept, exploring novel approaches to establish adaptable teaching models within this framework.[1] However, further exploration is still required regarding specific pathways for reconstructing the professional curriculum system.

In the field of "Post-Course-Competition-Certification-Innovation" integrated education, Germany's "Dual System" model achieves organic integration of job demands and curriculum content through deep school-enterprise cooperation, offering valuable insights for its modular curriculum design. Domestic research often focuses on single-dimension integration. For example, Gou Pingzhang et al. (2024) explored the value coupling and development path of "Course-Certificate Integration,"[2] and Han Jing (2021) analyzed the role of skills competitions in promoting practical teaching[3]. These studies exhibit three main limitations: insufficient research on the systematic integration mechanism of the five dimensions; lack of theoretical construction under the guidance of the OBE concept; and scarcity of empirical research in hotel management, particularly concerning effective solutions for cultivating digital intelligence and innovation/entrepreneurship capabilities.

1.3. Research Objectives and Content

This study aims to construct an OBE-based "Post-Course-Competition-Certification-Innovation" integrated curriculum system for hotel management programs. The core content includes: (1) Diagnosing the alignment issues between the current curriculum system and industry demands; (2) Constructing an integration framework based on the OBE concept and the five dimensions; (3) Designing a modular curriculum cluster based on a professional competency matrix (including Foundation, Core Competencies, Competition Enhancement, Certification Extension, and Innovation & Entrepreneurship modules). The research employs literature analysis, the Delphi expert consultation method, and action research. An empirical study will be conducted in a hotel management program at an institution in Guilin to provide a replicable paradigm for vocational education curriculum reform.

2. Theoretical Foundation and Connotation

2.1. Connotation and Characteristics of the OBE Concept

Outcome-Based Education (OBE) takes the final competencies students acquire as its logical starting point. It follows a reverse design principle to reconstruct the education system, emphasizing clearly defined learning outcomes, adaptable teaching processes, and continuous feedback for improvement (Spady, 1994). Compared to traditional models, OBE has four key characteristics: Goal Orientation (deriving quantifiable competency objectives from industry needs); System Closure (forming a "Define Outcomes - Design Curriculum - Implement Teaching - Evaluate & Improve" cycle) (Liu Pei et al, 2021)[4]; Student Centricity (focusing on personalized learning and diversified development); and Dynamic Adaptability (adjusting outcome expectations dynamically with industry development). In curriculum design, OBE utilizes "outcome matrix mapping" to translate professional standards into course objectives and achieve modular reorganization, providing methodological support for reconstructing vocational education curriculum systems.

2.2. Connotation of "Post-Course-Competition-Certification-Innovation" Integrated Education

"Post-Course-Competition-Certification-Innovation" (PCCI) integrated education is an innovative practice in Chinese vocational education reform. Its essence manifests in the synergy of five dimensions: Post: Using job competency models as benchmarks, extracting typical workplace

competencies as the basis for curriculum objectives; Course: Constructing a progressive curriculum cluster of "Foundation - Job Skills - Comprehensive Literacy," emphasizing theory-practice integration; Competition: Introducing skills competition standards (e.g., WorldSkills), enhancing higher-order competencies through competition-teaching integration; Certification: Aligning with certificate systems like "1+X" to bridge academic education and vocational qualification certification; Innovation: Cultivating business acumen and innovation/entrepreneurship skills in line with new industry trends.

The five-dimensional integration follows a synergistic logic of "Demand-Driven, Platform Sharing, Resource Interconnection": Job demands guide curriculum objectives, competitions feed back content updates, certification anchors evaluation standards, and innovation/entrepreneurship expands implementation contexts, collectively building an educational ecosystem (Liu Xing, 2024)[5]. Key challenges needing resolution include fragmented elements and loose connections.

2.3. Relationship between the OBE Concept and PCCI Integration

The OBE concept and the PCCI integration model are deeply coupled in logic, forming a "Methodology-Praxis" dual-drive framework. From a theoretical guidance perspective, OBE's outcome-oriented nature provides the top-level design logic for the five-dimensional integration, constructing an outcome chain: "Job Competency Outcomes → Curriculum Module Outcomes → Competition Performance Outcomes → Certificate Acquisition Outcomes → Innovation Project Outcomes." From a practical operation perspective, PCCI represents the concrete implementation of OBE in the vocational education domain: Post defines outcome expectations, Course serves as the outcome carrier, Competition forms a reinforcement mechanism, Certification establishes verification standards, and Innovation expands the application field.

Their synergistic effect is particularly significant in hotel management: Based on OBE's reverse design, curriculum modules can be deconstructed inversely based on target job competencies. Through "Course-Certificate Integration" translating professional standards and "Competition-Course Unity" internalizing competition cases, a virtuous cycle of "Competency Output → Standard Alignment → Resource Transformation" is formed, effectively solving the disconnect between the curriculum system and vocational demands.

3. Analysis of the Current Curriculum System in Hotel Management Programs

3.1. Current Status of Hotel Management Curriculum Systems

Current curriculum systems in higher vocational hotel management programs generally adopt a three-tier structure: "General Education + Professional Core Courses + Practical Teaching." Professional core courses focus on traditional areas (e.g., Front Office, Housekeeping, F&B Operations), while practical components often concentrate on basic service skills training. However, curriculum content lacks sufficient coverage of digital transformation (e.g., Revenue Management, Digital System Application) and new business model needs (e.g., Sustainable Management, Customer Experience Design), lagging behind the latest industry professional standards.

3.2. Analysis of Core Problems

The structural disconnect between curriculum content and job demands is the primary contradiction. Teaching resources are overly concentrated on traditional skills like room service and table setting, while systematic curriculum systems for digital intelligence competencies urgently needed for digital transformation (e.g., data analysis tool application, dynamic pricing strategies) are lacking. Curriculum standard updates lag behind industry technology iteration cycles, leading to a mismatch between student skills and actual job requirements.

Weak practical teaching and innovation capability cultivation constitute the second layer of deficiencies. On-campus training often remains at the level of replicating standardized procedures (e.g., bed making), lacking comprehensive training in real scenarios like escalated guest complaints or cross-departmental collaboration. Resources from national skills competitions (e.g., "Hotel Digital Operations") are not effectively converted into regular teaching content, with low integration of new technology standards like advanced PMS functions. Innovation/entrepreneurship education is detached from new industry models (e.g., themed homestay operations), and theoretical courses like business plan writing struggle to cultivate practical abilities.

Deficient evaluation mechanisms and quality closure form a systemic barrier. Assessments overly rely on written tests and procedure replication (>60%), inadequately evaluating job execution quality like guest satisfaction strategy design. "1+X" certificate requirements (e.g., revenue analysis modules) are often validated only by written tests, lacking diversified evaluation methods like simulation system operation. A graduate career tracking mechanism is absent, leaving curriculum adjustments reliant on subjective teacher experience, hindering timely responses to industry changes.

3.3. Diagnosis of Root Causes

The root problems stem from three structural constraints: First, insufficient depth of school-enterprise collaboration: Enterprise participation often remains at superficial levels like providing internships or sending lecturers, with limited involvement in core areas like jointly setting competency standards or co-building digital teaching resource databases. Second, delayed faculty capability updates: Some professional teachers are long detached from industry frontlines, lacking proficiency in new tools like revenue management systems and CRM platforms, constraining the forward-looking nature of teaching content. Third, absence of a supporting institutional system: The update cycle for professional teaching standards significantly lags behind industry technology iteration speeds, and there is a lack of a comprehensive PDCA quality monitoring mechanism covering the entire curriculum development, implementation, and evaluation process.

4. Construction of the OBE-Based "Post-Course-Competition-Certification-Innovation" Integrated Curriculum System

4.1. Construction Principles and Pathways

Following the reverse design logic of OBE and considering hotel industry digital transformation needs, this curriculum system construction adheres to three principles: Demand Orientation, Outcome Mapping, and Dynamic Iteration. Specific implementation pathways include: (1) Determining expected learning outcomes through industry research and job competency analysis; (2) Constructing a "Five-Dimensional Integration" professional competency matrix; (3) Developing a modular curriculum cluster; (4) Establishing a "Dual-Loop" quality assurance system. This pathway fully integrates OBE theory and the PCCI integration mechanism, enabling the formation of a curriculum ecosystem with distinctive hotel management features.

4.2. Construction of an Outcome-Oriented Professional Competency Matrix

Based on the New Hotel Management Professional Competency Standards (2023) and WorldSkills Hotel Reception requirements, Delphi method surveys were conducted with 32 star-rated hotels to analyze job competencies. This resulted in a professional competency matrix comprising 6 core domains and 18 key competencies (Table 1). This matrix emphasizes digital transformation capability cultivation, elevating the weight of emerging competencies like "Revenue Management Data Analysis" and "Digital System Operation" to 30%. It also strengthens indicators like "Business Plan Feasibility Demonstration" and "Digital Marketing Planning" within the Innovation & Entrepreneurship module. Through matrix mapping of competency elements to curriculum modules, each learning outcome is ensured to have at least 3 supporting course points.

Table 1 Hotel Management Professional Competency Matrix

Core Domain	Competency Item	Competency Description	Corresponding Curriculum Module	Source of Competency	Competency Level	Weight
Digital Transformation	Digital System Operation	Proficiently operate Opera PMS, CRS, etc. to complete room status management, reservation processing, and other digital operations.	Core Competencies	Industry Standard / 1+X Certificate	Intermediate	14%
Digital Transformation	Data Analysis Tool Application	Use Excel for revenue data analysis and creating visual reports.	Foundation	Competition Standard / Industry Research	Advanced	10%
Digital Transformation	Dynamic Pricing Strategy Formulation	Develop dynamic room pricing schemes based on market data to optimize RevPAR.	Core Competencies	Industry Standard / Innovation Project	Advanced	6%
Operational Management	Standard Service Procedure Execution	Accurately execute SOPs for front desk reception, housekeeping cleaning,	Core Competencies	Industry Standard / Vocational Cert.	Basic	6%

		restaurant service, etc.				
Operational Management	Emergency Incident Handling	Handle guest complaints, equipment failures, etc., and formulate crisis management plans.	Competition Enhancement	Competition Standard / Enterprise Case	Intermediate	9%
Operational Management	Quality Control & Optimization	Implement service quality monitoring and use PDCA cycles to improve service processes.	Certification Extension	1+X Certificate / Industry Standard	Intermediate	7%
Customer Service	Personalized Service Design	Design customized service solutions based on guest profiles to enhance CX.	Innovation & Entrepreneurship	Industry Report / Competition Requirement	Advanced	9%
Customer Service	Cross-cultural Communication	Conduct business reception using multiple languages and resolve service conflicts arising from cultural differences.	Foundation	WorldSkills Standard	Intermediate	6%
Customer Service	Customer Relationship Maintenance	Establish guest loyalty programs and implement CRM-based precision marketing.	Core Competencies	Industry Standard / Innovation Project	Advanced	4%
Innovation & Entrepreneurship	Business Plan Feasibility Demonstration	Complete business plans (e.g., for themed B&Bs/short-term rentals) including ROI calculations.	Innovation & Entrepreneurship	Innovation Competition Requirement	Advanced	6%
Innovation & Entrepreneurship	Digital Marketing Planning	Plan and execute social media marketing campaigns and monitor ROI metrics.	Innovation & Entrepreneurship	Industry Research / Competition Case	Intermediate	5%
Innovation & Entrepreneurship	Service Scene Innovation/Optimization	Design intelligent hotel service products and optimize service scenes/processes based on user feedback.	Competition Enhancement	New Industry Trends	Advanced	4%
Professional Literacy	Ethics & Legal Compliance	Adhere to hotel industry ethics and understand relevant provisions of the Tourism Law.	Foundation	Vocational Cert. Standard	Basic	4%
Professional Literacy	Teamwork & Leadership	Organize cross-departmental projects and use OKR for team goal management.	Competition Enhancement	Enterprise Research / Competition Std.	Intermediate	3%
Professional Literacy	Continuous Learning & Self-Development	Develop Individual Development Plans (IDPs) and complete MOOCs.	Certification Extension	1+X Certificate / Industry Report	Intermediate	3%
Specialized Competencies	Green Hotel Management	Implement energy consumption monitoring and formulate carbon neutrality plans.	Certification Extension	New Industry Standards / Policies	Advanced	3%
Specialized Competencies	MICE Event Planning	Manage MICE projects comprehensively, including basic budgeting and risk control.	Core Competencies	Industry Research / 1+X Certificate	Advanced	2%
Specialized Competencies	Wine Tasting & Service	Master WSET Level 2 tasting skills and perform full wine service procedures.	Competition Enhancement	WorldSkills Standard	Intermediate	2%

Note: Competency Level: Basic: Standardized operation execution; Intermediate: Complex problem solving; Advanced: Innovative decision-making.

4.3. Design of Five-Dimensional Integrated Curriculum Modules

4.3.1. Foundation Module

A dual-track curriculum group combining "General Foundation + Industry Awareness" is constructed, emphasizing digital literacy. Beyond traditional Introduction to Hospitality courses, courses like Business Data Processing & Analysis and Digital Business Communication Skills are added, embedding content such as Excel data analysis and visualization design tool application into foundational courses. An "Industry Digital Transformation Case Library" is co-developed with enterprises, using SPOC teaching models to achieve theory-practice integration.

4.3.2. Core Competencies Module

Based on Work Process Systematization theory, traditional modules (Front Office, Housekeeping, F&B) are restructured to integrate emerging courses like Revenue Management and Customer Experience Design. For example, the traditional Front Office Service course is upgraded to Smart Front Office Operations, incorporating PMS operation and dynamic pricing strategies. A "Dual-Mentorship" practical teaching system is implemented, where enterprise mentors remotely guide real projects via online platforms, ensuring dynamic synchronization of teaching with job standards.

4.3.3. Competition Enhancement Module

A "Three-Tier Competition Education System" is established: Foundation Tier (Institutional Skills Competitions) - Enhancement Tier (Provincial Industry Competitions) - Elite Tier (National Vocational Skills Competitions). The 22 scoring criteria from the WorldSkills "Hotel Reception" module are transformed into teaching projects. Digital teaching resources like "VR Guest Complaint Handling System" and "Hotel Digital Operations Management Simulation Game System" are co-developed with enterprises. A "Competition Credit Bank" system is implemented, converting competition achievements into professional elective credits.

4.3.4. Certification Extension Module

A "1+X + Industry Certification" certificate system is built. The standards of the Hotel Operations Management (Intermediate) certificate are decomposed into 48 competency points and integrated into course assessments. Course-Certificate integration handbooks are designed, clearly mapping each teaching module to corresponding certificate assessment requirements. For instance, the Hotel Revenue Management course aligns with competency points like "Dynamic Pricing Strategy Application" and "Data Visualization Report Creation" in the certificate assessment, implemented through a three-stage cultivation process: "Course Learning - Simulation Assessment - Certification Coaching."

4.3.5. Innovation & Entrepreneurship Module

A "Three-Stage Progressive" innovation cultivation model is created: Cognition Stage (Innovation Thinking Training) - Practice Stage (Micro-venture Project Incubation) - Enhancement Stage (Business Plan Roadshow). "Homestay Operation Simulation Platforms" are co-developed with partners like Wentrip/Ctrip. Students manage real accounts for full-process operations like revenue optimization and digital marketing. An "Innovation Achievement Conversion Points" system is introduced, incorporating student participation in digital innovation projects into the course evaluation system.

4.4. Curriculum Implementation and Evaluation System

4.4.1. Implementation Pathway Innovation

A "Trichotomous Classroom Linkage" mechanism is adopted: First Classroom (Theoretical Teaching): Undergoes project-based transformation, converting real industry cases into teaching projects. Second Classroom (Practical Teaching): Conducts job competency training through virtual simulation platforms, operational sandboxes, etc. Third Classroom (Enterprise Classroom): Relies on industry colleges for internship practice. A "Hotel Digital Operations Teaching Platform" is developed, integrating enterprise-grade software like Opera PMS training modules and Power BI data analysis tools, enabling seamless connection between teaching environments and work scenarios.

4.4.2. Multidimensional Evaluation System

A "Four-Dimensional, Three-Stage" evaluation model is constructed: A matrix is established across Competency Dimensions (Knowledge, Skills, Literacy), Subject Dimensions (Teacher, Enterprise, Student), Process Dimensions (Diagnostic-Formative-Summative), and Evidence Dimensions (Artifacts, Certificates, Competition Results). Big data technology is used to create student competency growth portfolios, comprehensively recording performance data in scenarios like virtual simulation operations and enterprise project practice. A graduate career development tracking system is established, continuously optimizing the curriculum system through alumni surveys and analysis.

4.4.3. Quality Assurance Mechanism

A "Dual-Loop" improvement system is created: Inner Loop (Teaching Implementation Loop): Drives monthly teaching improvements based on peer, supervisor, and student course evaluation data. Outer Loop (Talent Cultivation Loop): Implements annual curriculum adjustments based on industry research data. A Curriculum Development Committee composed of enterprise experts and education researchers is formed, convening annual meetings for curriculum standard updates.

5. Conclusion

This study, based on the OBE educational concept, systematically constructed a five-dimensional "Post-Course-Competition-Certification-Innovation" integrated curriculum system for hotel management programs. Through competency matrix deconstruction, modular curriculum cluster design,

and innovative dynamic evaluation mechanisms, it explored pathways for precise alignment between vocational education and industry needs. The research shows that the outcome-oriented professional competency matrix constructed based on OBE's reverse design principle effectively resolves the problem of disconnection between traditional curriculum systems and dynamic industry demands, making talent cultivation goals concrete into observable and assessable competency indicators. The synergistic design of the five-dimensional curriculum modules ("Foundation - Core Competencies - Competition Enhancement - Certification Extension - Innovation & Entrepreneurship") forms an educational ecosystem integrating theoretical teaching, practical training, and career development, demonstrating significant innovative value, particularly in digital competency cultivation and innovation literacy enhancement.

Acknowledgement

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