

Innovative Application and Empirical Effectiveness Analysis of BOPPPS Teaching Model Guided by OBE Philosophy in Management Accounting Course

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Abstract: In response to emerging demands from China's "New Liberal Arts" initiative and industry transformation, management accounting courses in Chinese universities face critical challenges, including ambiguous course objectives, misalignment between curriculum and industry needs, limited student engagement, and insufficient practical relevance. To address these issues, this study systematically integrates Outcome-Based Education (OBE) philosophy with the structured BOPPPS (Bridge-in, Objective, Pre-assessment, Participatory Learning, Post-assessment, Summary) instructional model in redesigning and implementing an innovative management accounting course. Employing a competency-oriented backward design, the course objectives were comprehensively reconstructed, emphasizing integrated development of knowledge, analytical skills, practical problem-solving abilities, collaborative teamwork, and innovative thinking aligned with industry demands. Teaching content was modularly reorganized, enriched by authentic enterprise cases, industry dynamics, and digital analytical tools, within the structured instructional process provided by the BOPPPS model. Empirical data collected through pre- and post-assessments, classroom observations, questionnaires, interviews, and project outcomes demonstrated significant improvements in student engagement, professional competencies, and overall learning effectiveness. Despite positive outcomes, challenges arose regarding faculty instructional design skills, resource development, student adaptability, and evaluation mechanisms. Reflections suggested future improvements, including strengthening faculty professional development, refining formative assessments, expanding industry collaboration, and enhancing digital teaching resources. This study provides theoretical insights and practical references for curricular reform in management accounting education, contributing to the cultivation of interdisciplinary management professionals.

Keywords: Outcome-Based Education (OBE); BOPPPS teaching model; Management accounting education; Competency-based curriculum; Instructional innovation; Higher education reform; Learning outcome assessment; Industry-university collaboration.

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1 Introduction

With the rapid development of the "New Liberal

Arts" initiative and ongoing educational paradigm shifts in higher education, management accounting courses, as core components within accounting and

management disciplines, bear the crucial responsibility of cultivating high-quality, interdisciplinary management professionals. However, traditional teaching philosophies and methodologies have resulted in persistent challenges within management accounting education in Chinese universities. These challenges include ambiguous course objectives, disconnection between teaching content and industry needs, insufficient classroom interaction, and limited practical relevance. Consequently, prevailing instructional practices struggle to meet contemporary demands from economic and social development and evolving industry expectations regarding management accounting competencies (Wang, 2021; Li et al., 2020).

Outcome-Based Education (OBE) emphasizes clearly defined learning outcomes and adopts a “backward-design” approach to achieve high alignment among curriculum objectives, instructional processes, and assessment criteria. Since its inception, OBE has become a foundational educational reform framework globally, widely implemented across various fields, including engineering, medicine, and business management (Spady, 1994; Biggs & Tang, 2011). Concurrently, the BOPPPS (Bridge-in, Objective, Pre-assessment, Participatory learning, Post-assessment, Summary) instructional model, characterized by its structured, student-centered approach and comprehensive assessment throughout the teaching process, has emerged as a valuable instructional reform method in higher education (Chen, 2021).

Recent empirical studies indicate significant theoretical and practical compatibility between OBE philosophy and the BOPPPS teaching model, particularly in the areas of course objective formulation, instructional design, and competency assessment (Derntl et al., 2018; Xie, 2019). Integrating OBE and BOPPPS into management accounting

curriculum design shows promise in addressing the limitations inherent in traditional lecture-focused teaching, thereby enhancing instructional structure, practical relevance, and educational quality, ultimately supporting the goal of developing versatile and professionally competent management talents.

Given this context, the present study systematically integrates the OBE philosophy with the BOPPPS model to innovate the instructional design of a management accounting course and empirically evaluates the effectiveness of this integrated approach. This research contributes to the existing literature in three key aspects: (1) reconstructing the course objectives based on the OBE framework to emphasize competency-oriented outcomes and alignment with industry demands; (2) deeply embedding the BOPPPS instructional phases into management accounting teaching content to establish a practical and assessable instructional process; and (3) systematically assessing the practical effectiveness of instructional innovations through diversified assessment mechanisms and empirical case analysis.

The remainder of the paper is organized as follows: Section 2 provides a literature review on relevant theoretical foundations and prior empirical studies. Section 3 analyzes current issues and instructional practices within the management accounting curriculum. Section 4 proposes an innovative instructional design integrating the OBE philosophy and BOPPPS model. Section 5 empirically analyzes the implementation process and evaluates instructional effectiveness. Section 6 presents critical reflections and identifies challenges encountered during implementation. Finally, Section 7 summarizes the conclusions and discusses directions for future research.

2. Theoretical Foundations and Literature

Review

2.1 Outcome-Based Education (OBE): Connotation and Development

Outcome-Based Education (OBE), initially proposed by Spady (1994), emphasizes student learning outcomes and competency attainment as the core focus. Utilizing a “backward design” approach, OBE promotes high alignment among course objectives, instructional processes, and evaluation standards. Distinct from traditional knowledge-centric teaching methods, OBE requires educators to clearly define the core competencies students should acquire and design teaching content and methodologies accordingly to achieve these competencies (Biggs & Tang, 2011). In recent decades, OBE has gained widespread recognition and implementation in global higher education, establishing itself as a major theoretical foundation for curriculum accreditation, program development, and educational reform (Wang, 2021).

2.2 The BOPPPS Teaching Model: Structure and Application

The BOPPPS model comprises six structured teaching phases: Bridge-in, Objective, Pre-assessment, Participatory Learning, Post-assessment, and Summary. This instructional model advocates a student-centered orientation, utilizing structured teaching processes to enhance classroom interactivity and learning effectiveness (Chen, 2021). Since its introduction, BOPPPS has demonstrated positive outcomes across various disciplines, including medicine, engineering, and management. Empirical studies indicate that BOPPPS effectively promotes active learning, enhances student engagement, and significantly develops comprehensive competencies (Derntl et al., 2018).

2.3 Current Situation of Management Accounting

Curriculum Reform

In Chinese universities, management accounting has traditionally relied heavily on theoretical instruction, exhibiting limited practical relevance and innovation. Recently, some institutions have begun exploring goal-oriented, structured, and participatory instructional reforms, driven by the increasing adoption of OBE and BOPPPS methodologies. Existing research suggests that curriculum reconstruction based on OBE philosophy and structured integration of BOPPPS phases can effectively enhance students' abilities to apply theoretical knowledge, collaborate in teams, and think innovatively (Li et al., 2022). However, challenges remain regarding effective goal decomposition, resource development, and evaluation mechanisms, highlighting the need for continuous refinement and improvement in reform implementation (Zhang, 2023).

2.4 Theoretical Integration: Logic and Value

OBE philosophy and the BOPPPS teaching model demonstrate high theoretical and practical compatibility. While OBE emphasizes outcome-oriented curriculum design, BOPPPS provides structured instructional processes and assessment tools to realize these outcomes. Integrating both frameworks into management accounting curriculum not only optimizes course objectives but also significantly enhances instructional systematicity, interactivity, and practical relevance, thus effectively supporting the development of interdisciplinary management talents (Xie, 2019). Furthermore, this integrated innovation provides new pathways for curriculum system reform, faculty professional development, and personalized student growth in higher education institutions.

2.5 Literature Commentary and Research Positioning

Scholars worldwide have conducted extensive theoretical and empirical research on OBE, the BOPPPS model, and their integrated application. Internationally, Spady (1994) and Biggs and Tang (2011) systematically elucidated OBE's theoretical foundations and implementation frameworks, while Derntl et al. (2018) explored the practical effectiveness of BOPPPS in management-related courses. Domestically, scholars such as Wang (2021), Chen (2021), and Xie (2019) further analyzed current applications and implementation challenges of OBE and BOPPPS in higher education curriculum reforms. Collectively, existing literature provides a robust theoretical foundation for the present study. Nevertheless, systematic empirical research explicitly focusing on the innovative application and effectiveness of integrating the BOPPPS model under the guidance of OBE philosophy in management accounting courses remains relatively limited. This study aims to bridge this gap by examining concrete instructional pathways and empirical outcomes of such integration, thereby offering theoretical insights and practical references for ongoing curriculum reform and optimization of talent cultivation models.

3. Analysis of Current Teaching Practices in Management Accounting Courses

3.1 Course Objectives and Teaching Content

Management accounting, as a foundational subject within accounting and management disciplines, significantly shapes students' professional competencies and qualities. Currently, course objectives in Chinese universities predominantly emphasize theoretical knowledge transmission and basic skill acquisition, highlighting students' mastery of fundamental management accounting concepts, methods, and tools. However, such objectives tend to be overly broad, lacking explicit requirements for

cultivating comprehensive competencies such as critical thinking, data analysis, communication, collaboration, and innovation. Consequently, there exists a noticeable disconnect between educational outcomes and industry expectations regarding professional competency requirements.

Regarding teaching content, existing curricula largely revolve around traditional modules such as cost calculation, budgeting management, and performance evaluation, with relatively slow content updates and insufficient integration of emerging theories, industry developments, and digital analytical tools. Although some institutions have introduced case-based and project-driven teaching approaches, the overall level of practical relevance and systematic design remains limited^[1].

3.2 Instructional Methods and Classroom Organization

Presently, traditional lecture-based methods predominate in management accounting courses, characterized by teacher-centered instruction, passive student participation, and limited classroom interaction. While some universities have implemented instructional activities such as case analyses, group discussions, and coursework assignments, these activities often suffer from inadequate systematic design and ineffective evaluation mechanisms, thereby failing to significantly enhance students' active engagement and motivation. Furthermore, the integration of information technologies in teaching—such as blended online-offline learning models and intelligent educational tools—remains underutilized and requires deeper and broader adoption^[2].

Regarding classroom organization, conventional instructor-led lecturing (“chalk-and-talk”) remains prevalent, offering monotonous pacing and

insufficiently stimulating student interest or innovative thinking. Although institutions have begun experimenting with flipped classroom and participatory learning approaches, substantial challenges persist in terms of resource preparation, faculty training, and evaluation mechanisms, limiting widespread implementation and effectiveness^[3].

3.3 Student Competency Development and Learning Outcome Assessment

In terms of student competency development, current management accounting courses effectively consolidate theoretical foundations but inadequately foster key competencies such as data analysis, practical problem-solving, teamwork, communication skills, and information technology proficiency. Students frequently report that instructional content is overly abstract and weakly related to real-world business contexts, limiting its practical relevance for future employment and career advancement.

Assessment practices predominantly rely on final examinations, emphasizing theoretical knowledge while neglecting comprehensive evaluations of competencies and professional qualities. Formative assessment mechanisms—including classroom performance assessments, practical assignments, project reports, and peer evaluations—remain underdeveloped, thus inadequately capturing the full range of students' learning processes and competency advancements.

3.4 Key Issues and Improvement Needs

In summary, current management accounting education faces multiple challenges in course objective formulation, content structure, instructional methods, classroom organization, and assessment models, specifically:

(1) Objectives are misaligned with industry competency requirements and lack differentiated,

competency-based orientations.

(2) Teaching content lacks forward-thinking and practical relevance, compounded by insufficient availability of authentic cases and project resources.

(3) Instructional methods and classroom organization exhibit limited innovation, resulting in low student engagement and motivation for autonomous learning.

(4) Learning outcome assessments are narrow, largely theoretical, and insufficiently reflective of students' comprehensive competencies and professional qualities.

Therefore, it is essential to systematically reconstruct course objectives, optimize instructional content and methods, innovate classroom organization strategies, and establish multifaceted assessment mechanisms guided by Outcome-Based Education (OBE) philosophy and integrated with the structured BOPPPS teaching model. Such reforms will significantly enhance the educational quality and societal relevance of management accounting curricula^[5].

4. Innovative Instructional Design of Management Accounting Course Integrating BOPPPS Model under OBE Philosophy

4.1 Reconstruction and Decomposition of Course Objectives

Guided by Outcome-Based Education (OBE), the instructional objectives of the management accounting course are redesigned with a clear focus on students' core competencies. A three-dimensional objective framework integrating knowledge, skills, and professional qualities is established, emphasizing not only mastery of fundamental theories and methodologies but also competencies in data analysis, problem-solving, communication, collaboration, and innovation. Specific learning objectives are

systematically decomposed into course modules, such as cost calculation, budget management, and performance evaluation, with clearly defined knowledge points, skill requirements, and professional attributes. This structured decomposition ensures effective alignment between course objectives, professional accreditation standards, and industry job requirements.

4.2 Modular Development of Teaching Content and Resources

The course content is modularly reorganized around competency development, structured into thematic modules including cost management, budgeting and control, performance evaluation, and strategic management accounting. Each module integrates authentic enterprise cases, industry trends, and emerging technologies, thereby bridging theoretical concepts with practical applications. Diversified teaching resources are developed, encompassing comprehensive case repositories, project databases, and online learning platforms. Additionally, partnerships between faculty teams and industry stakeholders are fostered to build practical training platforms, providing students with abundant experiential learning opportunities and an open learning environment.

4.3 Application of the BOPPPS Model in Teaching Practice

The structured BOPPPS teaching model-comprising Bridge-in, Objective, Pre-assessment, Participatory Learning, Post-assessment, and Summary-is systematically embedded into teaching practice. At the Bridge-in stage, contextual scenarios, industry hot topics, or representative cases are introduced to stimulate students' interest and activate prior knowledge. In the Objective phase, instructors explicitly communicate

learning goals at the beginning of each lesson, detailing specific knowledge points, skill targets, and quality indicators to guide students' learning expectations and outcomes.

Pre-assessments, such as quizzes, knowledge reviews, or problem-based discussions, are conducted at module commencement to diagnose students' existing knowledge and learning needs, facilitating targeted instructional adjustments. Participatory Learning forms the core of classroom activities, employing diverse interactive pedagogies such as case analysis, team projects, brainstorming sessions, role-playing, and simulations, thereby enhancing students' skills in communication, collaboration, and innovation through authentic problem-solving experiences.

Post-assessments are administered at the conclusion of each instructional unit, utilizing methods such as quizzes, case reports, or classroom presentations to assess students' mastery of content and competencies. Feedback obtained enables students to identify learning gaps and refine their strategies, while providing instructors with insights for subsequent instructional optimization. Finally, in the Summary phase, key knowledge points and competencies are consolidated, and students are encouraged to reflect on learning experiences, promoting systematic knowledge integration and preparation for future learning modules.

4.4 Innovation in Teaching Evaluation and Feedback Mechanisms

The course employs a comprehensive evaluation system integrating formative and summative assessments, emphasizing process-oriented management and competency-based outcomes. Formative assessments occur throughout the instructional cycle-including classroom participation,

case analyses, project assignments, teamwork activities, and peer evaluations-providing continuous feedback on students' learning progress. Summative assessments encompass final examinations, project presentations, and comprehensive evaluations, focusing on knowledge application, data analysis, innovative thinking, and collaborative competencies. Evaluation results are promptly communicated to students and serve as critical inputs for continuous instructional improvement.

Additionally, a two-way feedback mechanism between teachers and students is established to strengthen instructional effectiveness. Instructors dynamically adjust teaching strategies based on student performance indicators and feedback, while students enhance autonomous learning capabilities through self-assessment and peer review. This reciprocal feedback structure facilitates a productive cycle aligning course objectives, instructional processes, and learning outcomes.

5. Implementation Process and Effectiveness Analysis

5.1 Participants and Data Collection Methods

The instructional innovation practice was conducted in a management accounting course during the 2024–2025 academic year at a university in China, involving 110 undergraduate students in their sophomore and junior years majoring in accounting, financial management, and related disciplines. The students were divided into four parallel teaching classes. To comprehensively evaluate the effectiveness of the instructional reform, multiple data collection methods were employed, including pre- and post-course assessments, classroom observations, student questionnaires, semi-structured interviews, and analyses of assignments and project outcomes.

5.2 Implementation Procedure and Key

Instructional Phases

Adhering to the integrated OBE philosophy and BOPPPS teaching model, the instructional team systematically designed and implemented each teaching module following the structured six-phase process. (1) Bridge-in: Stimulated student interest and engagement by introducing real-world business cases, industry hot topics, and authentic scenarios. (2) Objective: Clearly articulated specific learning objectives encompassing knowledge acquisition, skills development, and professional attributes, presenting these explicitly to students at the beginning of each session. (3) Pre-assessment: Conducted brief quizzes and knowledge reviews to diagnose students' existing knowledge, enabling differentiated and tailored teaching strategies. (4) Participatory Learning: Implemented diverse active-learning activities, including case analyses, team projects, role-playing simulations, and interactive discussions to enhance practical problem-solving skills and classroom interactivity. (5) Post-assessment: Utilized periodic quizzes, project presentations, and case reports to assess student learning outcomes, providing timely feedback for subsequent instructional adjustments. (6) Summary: Jointly reviewed key knowledge points and competencies with students, reinforcing learning effectiveness and encouraging reflective practice.

Throughout the implementation process, instructional content and resources were dynamically updated, incorporating authentic enterprise cases and digital analytical tools to enhance the practicality and relevance of the curriculum.

5.3 Analysis of Student Learning Outcomes

Comparative analysis of pre- and post-assessment results indicated substantial improvement in students' mastery of core management accounting knowledge, data analysis competencies, and real-world

problem-solving abilities. Questionnaire and interview responses revealed that the majority of students perceived the course structure as clear and coherent, resulting in increased participation, motivation, and autonomous learning. High-quality outcomes of team projects and case-based assignments demonstrated notable advances in students' communication, collaborative skills, innovative thinking, and presentation capabilities.

Additionally, student feedback highlighted that modularized content and practical activities effectively facilitated the application of theoretical knowledge to authentic contexts, enhancing their understanding and recognition of professional competencies in management accounting. Students also positively endorsed the diversified assessment methods and timely feedback mechanisms, acknowledging their value in fostering self-reflection and continuous improvement.

5.4 Feedback from Instructors and Employers

Faculty members generally affirmed that integrating OBE philosophy with the BOPPPS model significantly optimized instructional processes, improved classroom management efficiency, and enhanced teaching innovation capacity. Through frequent interactions with students, instructors were able to monitor student learning outcomes effectively and respond promptly to emerging issues. Furthermore, collaborative practices such as joint lesson planning and collective case development strengthened teamwork and curriculum development capacities among instructors.

Participating employers, involved in project assessments and practical internships, positively evaluated students' practical skills, teamwork, communication abilities, and overall professional qualities. Employers particularly noted graduates'

improved adaptability, innovation awareness, and alignment with industry needs, affirming that the instructional reform effectively addressed corporate competency requirements.

5.5 Overall Reform Effectiveness and Exemplary Case Analysis

The implemented instructional reform successfully integrated outcome-oriented objectives and process-oriented instructional management, aligning student competency development closely with industry demands. An exemplary case, "Enterprise Budget Preparation and Dynamic Adjustment Project," required students to collaboratively conduct field research, perform data analysis, and present comprehensive budget proposals, significantly enhancing their comprehensive professional competencies.

Overall, the instructional innovation demonstrated substantial positive impacts, notably increasing students' active engagement and professional competencies, while simultaneously driving faculty professional growth and continuous curriculum improvement. Empirical results confirm that the deep integration of OBE philosophy and the structured BOPPPS teaching model provides a feasible and robust approach to management accounting curriculum reform, ensuring sustainable improvements in educational outcomes.

6. Challenges, Reflections, and Directions for Improvement

6.1 Challenges in Instructional Design and Implementation

Despite positive outcomes from integrating the OBE philosophy with the BOPPPS teaching model, several challenges emerged during implementation. Firstly, effective decomposition and realization of course objectives require robust instructional design

competencies among faculty. Some instructors experienced difficulties in accurately delineating competency levels and developmental stages, leading to deviations in achieving module-specific objectives. Secondly, continuous development and updating of high-quality teaching resources posed significant pressures. Limited availability of authentic case studies and practical projects, coupled with faculty members' insufficient understanding and integration of real business contexts, hindered comprehensive curriculum implementation.

6.2 Limitations in Faculty Competencies and Team Collaboration

The innovative instructional approach demands advanced competencies from faculty, including interdisciplinary integration, case study development, project management, and proficiency in digital instructional tools. However, some instructors exhibited limited understanding of the deep integration between OBE principles and BOPPPS phases, and demonstrated insufficient motivation for instructional innovation and collaborative engagement. Additionally, barriers persisted in collective lesson planning, resource sharing, and reflective interactions among faculty teams, adversely affecting overall reform effectiveness and efficiency.

6.3 Variability in Student Adaptation and Autonomous Learning Capabilities

Although the majority of students actively engaged in the reformed instructional practices, a subset faced challenges adapting to participatory learning and project-driven methodologies due to entrenched learning habits or foundational gaps. These students demonstrated uneven development in autonomous learning and collaborative skills and expressed reservations regarding diversified assessment methods, resulting in fluctuating

motivation and limited emphasis on formative evaluation processes. Such variability underscores the need for more tailored instructional support to foster individualized student development.

6.4 Areas for Enhancement in Evaluation and Feedback Mechanisms

Although the course evaluation system integrated diversified assessment approaches, quantitative criteria and operational guidelines for formative assessments require further refinement. Variations in perceptions between teachers and students regarding evaluation standards and feedback utilization limited the effectiveness of formative assessments. Furthermore, some students demonstrated low engagement in feedback interpretation and self-reflection activities, thereby reducing the positive impact of evaluation on learning behaviors. Enhancing timeliness, interactivity, and personalized support within the feedback mechanisms remains an essential area for improvement.

6.5 Sustainability and Scalability of Instructional Reform

Ensuring the sustainability and scalability of curricular reforms presents external and internal challenges. Factors such as insufficient depth of university-industry collaboration, resource investments, and incentive mechanisms for instructional reform constrain continuous optimization and large-scale dissemination. Additionally, extending successful experiences from the management accounting course to other curricular areas, fostering comprehensive professional development, and enhancing talent cultivation quality represent critical considerations for future exploration.

6.6 Reflections and Future Improvement Directions

In summary, instructional reform of the management accounting course constitutes a complex systemic endeavor, encompassing outcome-oriented objectives, process innovation, faculty development, individualized student support, and evaluation refinement. Future improvements should prioritize faculty training and collaboration, systematically develop practical case repositories and resource systems, refine formative evaluation frameworks, and actively encourage student engagement and continuous improvement. Additionally, deepening industry-university partnerships will further enhance the effectiveness and broader impact of curricular reforms.

7. Conclusions and Future Prospects

7.1 Main Conclusions

This study systematically explored the innovative integration of Outcome-Based Education (OBE) and the structured BOPPPS teaching model within the management accounting curriculum through theoretical analysis and empirical practice. Key conclusions are as follows: Firstly, competency-oriented reconstruction of course objectives effectively enhanced the targeted and systematic nature of talent cultivation in management accounting, achieving coherent integration of knowledge, skills, and professional qualities. Secondly, the structured application of the BOPPPS model significantly increased classroom interactivity and student agency, substantially advancing students' practical capabilities, collaborative teamwork, and innovative thinking. Thirdly, establishing a diversified evaluation system strengthened process-oriented management and feedback mechanisms, providing robust support for individualized student growth and

continuous improvements. Finally, continuous development of industry collaborations and authentic case resources infused vitality into instructional reform, enhancing curriculum relevance and practicality.

7.2 Limitations of the Study

Certain limitations exist within the current reform implementation. Faculty team competencies and resource integration capabilities require further enhancement. Variability persists in students' autonomous learning capacities and adaptability to innovative instructional approaches. Additionally, certain evaluation criteria within specific instructional phases remain incomplete. Further longitudinal tracking of reform effectiveness and validation across diverse institutional contexts are necessary in future research.

7.3 Prospects and Recommendations

Future research should deepen the integration and innovation of OBE principles with the BOPPPS teaching model, emphasizing faculty professional development, team collaboration, and the expansion of practical case repositories and experiential learning platforms. It is recommended to continuously refine formative evaluation mechanisms, address individual student differences, and explore the application of intelligent educational tools, thereby advancing the digitalization and individualization of management accounting instruction. Moreover, promoting interdisciplinary communication and experience-sharing will facilitate broader dissemination and application of successful curricular innovations, contributing to the high-quality development of higher education and cultivation of versatile management talents.

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