Exploring an AI-Empowered OBE-Oriented Training Model for Applied Nursing English Talents in Vocational Undergraduate Education

Na Sun

Department of College English Teaching, Hainan Vocational University of Science and Technology, Haikou, Hainan 571126

Abstract: English teaching for nursing majors in vocational undergraduate universities is currently confronted with prominent challenges, including the disconnection between learning and practice, students' low learning motivation, and the lack of diversified evaluation methods. The rapid development of artificial intelligence (AI) brings new opportunities by enabling intelligent, personalized, and contextualized learning. Meanwhile, Outcome-Based Education (OBE) provides clear guidance for cultivating applied talents by emphasizing learning outcomes. Against this background, this study aims to construct a novel nursing English teaching model that integrates OBE principles with AI empowerment to enhance students' comprehensive English competence and professional competence. The study concludes that the "OBE + AI" integrated model is an effective pathway for cultivating high-quality applied nursing talents and offers valuable insights for the reform of vocational undergraduate foreign language education.

Keywords: OBE; Artificial Intelligence (AI); Nursing English; Applied Talents; Training Model; Teaching Reform

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1.Introduction

Amid the "Healthy China 2030" strategy and globalization, nursing education faces both opportunities and challenges. Nurses are increasingly expected to possess not only solid clinical skills but also strong English communication abilities for patient interaction, teamwork with foreign professionals, and international collaboration. Vocational undergraduate education plays a unique role in China's higher education system, focusing on practical competence and applied knowledge rather than academic research. Nursing, as a highly application-oriented discipline, reflects this mission. Yet, nursing English teaching in many vocational undergraduate institutions remains inadequate. Content is often disconnected from clinical practice, with textbooks centered on grammar and translation instead of authentic cases and intercultural contexts. Teaching remains lecture-based, with little space for active learning or immersive experience. Assessment systems rely heavily on written exams, overlooking oral communication, clinical discourse, and intercultural adaptability. These issues contribute to a "learning-application gap," where students acquire theoretical knowledge but lack practical competence and motivation. The rapid development of Artificial Intelligence (AI) offers opportunities to address these problems, while Outcome-Based Education (OBE) provides a theoretical framework for competence-driven reform. Integrating OBE with AI creates a synergistic model that strengthens curriculum design, teaching, and assessment. This study therefore argues that exploring an OBE-oriented, AI-empowered model for nursing English is both timely and significant.

2.Literature Review

In recent years, the integration of Outcome-Based Education (OBE) into English language teaching has gained increasing attention. Scholars have explored how OBE can inform curriculum design, teaching models, and assessment practices in order to enhance instructional quality and student performance. At the same time, the rapid

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development of artificial intelligence (AI) has led to the emergence of AI-assisted pedagogies, which are gradually being incorporated into outcome-based approaches. Qin (2023) examined the construction of a college English curriculum informed by both OBE and AI, adopting backward design to redefine objectives, modules, and evaluation, and embedding AI tools to support learning and continuous improvement. Shi et al. (2023) focused on English courses in vocational undergraduate institutions, highlighting problems such as insufficient needs analysis, weak faculty structures, and outdated pedagogy, and suggested OBE-based training programs with stratified instruction. Dong (2023) investigated a blended listening and speaking model integrating AI, OBE, and classroom teaching, demonstrating that AI can improve efficiency without sacrificing learning effectiveness. Similarly, Jiang (2023) assessed OBE-based classroom practices at a vocational institution, finding that the approach enhanced student motivation and communicative competence. More recently, Qian et al. (2024) applied OBE to business-oriented programs, showing its potential for improving students' applied English abilities and overall competencies.

Collectively, these studies affirm the value of OBE in aligning goals, curricula, and assessment with student outcomes, and they highlight the potential of AI to strengthen such reforms. However, current research has concentrated largely on general English or business-related ESP contexts. The integration of OBE principles with AI technologies in vocational undergraduate nursing English education remains absent, representing a critical gap that this study seeks to address.

3.The Coupling Relationship between OBE and AI Empowerment

The core of OBE is encapsulated in three principles: student-centeredness, outcome orientation, and continuous improvement. AI, as a transformative educational technology, provides strong technical support for implementing OBE. The relationship between OBE and AI is not additive but symbiotic. OBE provides the direction and rationale for AI's application, while AI provides the tools and pathways for OBE's realization. The adoption of AI in nursing English education can develop cross-cultural communication skills, enhancing clinical English competence, and improving professional readiness. From the perspective of implementation, AI answers the question of "How to achieve outcomes?". Therefore, OBE and AI form a coupling mechanism of "goal–pathway alignment." OBE sets the overarching educational objectives, and AI provides feasible means for achieving them. Together, they foster a shift in nursing English education from knowledge transmission to competency cultivation, ensuring that learners not only acquire linguistic knowledge but also develop the ability to apply it effectively in real-world clinical contexts.

4.Exploring an AI-Empowered, OBE-Oriented Training Model for Applied Nursing English Talents: Reverse Design and Forward Implementation

Within the framework of Outcome-Based Education (OBE), curriculum and pedagogy begin with explicit learning outcomes, then move backward to define competencies, content, methods, and assessment. Artificial Intelligence (AI) provides the technological infrastructure to operationalize this process. By embedding AI throughout the teaching cycle, nursing English can shift from fragmented knowledge transmission to systematic competence cultivation. The proposed model integrates four core components: defining outcomes, backward designing curriculum, implementing AI-supported processes, and establishing dynamic evaluation.

4.1 Defining Clear Learning Outcomes (Outcomes)

For nursing English, outcomes extend beyond linguistic knowledge to professional and intercultural competence. Drawing on international nursing standards, four key abilities are defined:

Ability 1: communicate effectively with patients in English;

Ability 2: read and write nursing documentation accurately;

Ability 3: retrieve, interpret, and critically appraise international medical literature;

Ability 4: collaborate in multicultural healthcare teams.

These outcomes convert abstract goals into measurable competencies, forming the foundation for curriculum

design and assessment.

4.2 Backward Design of Curriculum and Teaching (Design)

Traditional curricula often overemphasize grammar and translation, disconnected from clinical practice. A modular structure is therefore proposed: a Patient Communication Module (Ability1), Nursing Documentation Module (Ability2), Medical Literature Module (Ability3), and Intercultural Collaboration Module (Ability4). Each module integrates AI activities: dialogue with AI patient simulators (Ability1), AI-assisted writing support (Ability2), AI-driven summarization and translation for literature tasks (Ability3), and virtual teamwork simulations (Ability4). This outcome-driven and technology-enabled design ensures coherence between goals, activities, and practice.

4.3 Implementing the AI-Empowered Teaching Process (Implement)

Effective implementation requires embedding AI tools into all phases of learning—before, during, and after class—so that backward design principles are carried out in forward practice. In pre-class stage, AI platforms deliver personalized pre-class materials tailored to each student's needs and generate diagnostic tests to assess prerequisite knowledge; during class, the teacher transitions from a transmitter of knowledge to a designer of learning environments and facilitator of inquiry. Students engage actively with AI tools in structured scenarios, for instance, in Ability 3 activities, students critically appraise AI-assisted literature summaries, guided by instructor-led discussion; after class, AI platforms extend learning through advanced tasks and individualized practice. All student interactions are recorded, forming comprehensive learning portfolios. This pre–in–post class cycle ensures continuity and coherence, transforming isolated activities into sustained, outcome-driven learning pathways.

4.4 Establishing a Multi-Dimensional Dynamic Evaluation System (Evaluate)

The assessment for this study involves multiple agents: teacher evaluations for professional judgment, AI-generated assessments for objective quantification, and student self- and peer evaluations for reflective learning. Meanwhile, unlike traditional exams, AI platforms record and analyze every interaction—dialogues with AI patients, writing submissions, team collaborations—providing longitudinal data for formative assessment; finally, teachers adjust course design based on collective data, while students adapt their learning strategies based on personal profiles. Thus, evaluation feeds directly into feedback and improvement, embodying the OBE principle of continuous enhancement.

5.Conclusion

This study constructed an integrated "OBE + AI" teaching model tailored to vocational undergraduate nursing English education. Rooted in the principles of Outcome-Based Education, the model emphasizes student-centeredness, outcome orientation, and continuous improvement, while leveraging Artificial Intelligence technologies for contextualization, personalization, intelligent assessment, and real-time feedback.By doing so, nursing English teaching moves beyond knowledge transmission and focuses on cultivating core professional abilities, including patient communication, nursing documentation, literature retrieval and critique, and intercultural collaboration. The study aligns with the mission of vocational undergraduate education to prepare students for employment and professional practice, thereby supporting the "Healthy China" strategy and the internationalization of nursing talents.

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