

Construction and Application of a High-Quality Online Open Course on Postpartum Recovery Based on the OBE Philosophy and the “1+X” Certificate System

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Abstract: Guided by the outcome-based education (OBE) philosophy and integrated with the “1+X” certificate system, this study constructed a high-quality online open course on postpartum recovery, aiming to address the pressing demand for skilled professionals in the health service sector. Through literature review and industry needs analysis, the course objectives were defined, instructional content was designed, and teaching resources were developed. The course was implemented through a combination of online teaching organization, offline practical instruction, and learning support services. Course development encompassed the construction of a knowledge framework, the design of skill training projects, and the creation of multimedia resources and case libraries. Preliminary teaching feedback indicates that students have made significant progress in knowledge acquisition, practical competence, and professional ethics. This study provides a viable pathway for cultivating postpartum recovery professionals and holds both theoretical value and practical significance.

Keywords: OBE philosophy; “1+X” certificate system; Postpartum recovery; High-quality online open course

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1. Introduction

1.1. Research background

With the implementation of the three-child policy and the growing awareness of women’s health, the postpartum recovery industry has experienced rapid development. Market demand for services such as pelvic floor rehabilitation, diastasis recti correction, and postpartum psychological support continues to expand, and the industry’s need for professionally trained technical talents is becoming increasingly urgent.

In 2019, the *National Vocational Education Reform Implementation Plan* proposed launching a

pilot program for the “1+X” certificate system in vocational institutions. Subsequently, the Postpartum Recovery Vocational Skill Level Certificate was included in the pilot list and gradually incorporated into the curriculum systems of higher vocational programs in midwifery and nursing, providing a policy foundation for curriculum–certificate integration. Against the backdrop of the full implementation of the “1+X” certificate system and the expansion of higher vocational enrollment, building online open courses based on the outcome-based education (OBE) philosophy has been regarded as an important pathway to enhance the effectiveness of curriculum–certificate integration^[1]. The OBE philosophy, characterized by outcome orientation and learner-centeredness, advocates for the reverse design of teaching objectives based on industry needs and ensures that students achieve expected learning outcomes through systematic instructional design and evaluation mechanisms. Its application in vocational education curriculum reform has become increasingly widespread^[1,2].

1.2. Problem statement

Current higher vocational postpartum recovery courses generally suffer from several deficiencies: course content is disconnected from actual job requirements, with textbooks focusing primarily on basic theories and failing to fully cover the assessment items of the “1+X” certificate; practical teaching conditions are limited, leaving students without sufficient systematic operational training; and online course resources lag behind, lacking skill demonstration videos and cases aligned with certificate standards. These issues result in prolonged adaptation periods for graduates entering the workforce and hinder improvements in certificate pass rates.

1.3. Research objectives

The specific objectives of this study are: (1) to establish three-dimensional course objectives encompassing knowledge, skills, and professional ethics based on industry analysis and OBE principles; (2) to embed the assessment points of the “1+X” Postpartum Recovery (Intermediate) Certificate into teaching modules and skill training projects; (3) to develop multimedia resources, a typical case library, and an exercise bank, implement blended teaching through an online platform, and construct a diversified evaluation system to empirically examine the course’s implementation effects.

2. Literature review

2.1. Studies on the OBE philosophy

The OBE philosophy is outcome-oriented and emphasizes learner-centeredness and continuous improvement in the teaching process. Domestic research has demonstrated that this philosophy can effectively drive the restructuring of course modules and innovation in teaching models. For instance, in the curriculum reform of applied universities, the OBE philosophy has been used to reconstruct course modules, thereby enhancing students’ ability to solve complex problems^[1]. Meanwhile, research on the construction of innovation and entrepreneurship curriculum systems in higher vocational colleges also indicates that the OBE philosophy can provide effective guidance for setting course objectives and optimizing content^[2].

In recent years, there have been multiple empirical studies on curriculum reform based on the OBE philosophy in the international fields of nursing and health education, showing that the OBE framework helps improve the quality of practical teaching and students’ job competence^[1,3,4].

2.2. Studies on the “1+X” certificate system

The “1+X” certificate system achieves curriculum–certificate integration by embedding vocational skill level standards into professional curricula. Since the introduction of the Postpartum Recovery Vocational Skill Level Certificate in higher vocational midwifery programs, curriculum–certificate integration reforms have achieved certain results, with a noticeable increase in students’ certificate pass rates ^[5]. However, challenges persist during implementation, including loose alignment between certificate content and existing curricula, insufficient practical training resources, and incomplete evaluation systems, all of which need to be addressed in course development ^[5].

2.3. Studies on postpartum recovery course development

The postpartum recovery course is an important component of higher vocational midwifery programs. Under traditional teaching models, such courses typically cover basic theories supplemented by some practical training. However, existing course setups still suffer from problems such as disconnection between teaching content and industry needs, and weak practical components ^[6]. In recent years, with the rise of online open courses, the field of postpartum recovery has begun to explore the use of multimedia resources to improve teaching effectiveness. Nevertheless, existing online courses in this area still exhibit deficiencies in systematicity, interactivity, and learning support services ^[6].

2.4. Research gaps

Although progress has been made in research on the OBE philosophy, the “1+X” certificate system, and postpartum recovery course development, significant research gaps remain. Most existing studies focus on individual areas, and there is a scarcity of research that integrates the OBE philosophy with the “1+X” certificate system specifically for postpartum recovery course development. Furthermore, systematic research on the construction of high-quality online open courses tailored to the postpartum recovery specialty is still lacking. Based on the above analysis, this study, guided by the OBE philosophy and combined with the “1+X” certificate system, explores the pathway for constructing and applying a high-quality online open course on postpartum recovery.

3. Course development

3.1. Setting course objectives

A job competency analysis was conducted in collaboration with local maternal and child health hospitals and chain postpartum recovery institutions. The findings indicate that, in terms of knowledge, practitioners need to master the recovery patterns of various postpartum systems, rehabilitation assessment methods, and management of common complications. In terms of skills, they must independently perform pelvic floor muscle rehabilitation training guidance, diastasis recti assessment and correction techniques, basic equipment operation, and simple psychological counseling. In terms of professionalism, emphasis is placed on privacy protection, effective communication, and teamwork.

Regarding knowledge objectives, the course aims to help students grasp foundational theoretical knowledge, including postpartum physiological change mechanisms, rehabilitation assessment methods, and strategies for managing common complications. The selection of knowledge points references industry standards and incorporates the assessment requirements of the “1+X” certificate, ensuring that students build

a solid theoretical foundation.

Regarding skill objectives, through virtual simulation and laboratory practice, students are enabled to standardize the implementation of pelvic floor muscle exercise guidance, diastasis recti correction techniques, postpartum body recovery training, and to operate commonly used equipment such as electrical stimulation therapy devices ^[7].

Regarding professionalism objectives, professional ethics education is integrated throughout the course. Teamwork and communication skills are cultivated through group tasks, and students are guided to develop lifelong learning awareness to keep pace with new industry developments.

3.2. Instructional content design

Knowledge framework construction: Based on the assessment requirements of the “1+X” Postpartum Recovery Vocational Skill Level Certificate, this course constructed a comprehensive knowledge framework covering multiple modules, including postpartum physiological recovery, physical constitution regulation, body shape restoration, reproductive health care, psychological counseling, and service management. The course content starts with postpartum physiological changes and progressively extends to interdisciplinary fields such as rehabilitation techniques, nutritional diet, psychological intervention, and service management, forming a knowledge chain from basics to applications and from individual topics to comprehensive synthesis. Simultaneously, the core knowledge points of the certificate assessment are embedded within each teaching module, ensuring that students can simultaneously prepare for the certificate examination during the learning process.

Skill training project design: In accordance with the requirements of the “1+X” certificate system, this course is designed to target training projects centered on core postpartum recovery skills, covering three aspects: technical operations, equipment usage, and comprehensive case analysis. In terms of technical operations, multiple practice modules were established, allowing students to repeatedly practice through simulated training to improve their proficiency. In terms of equipment usage, training on the operation of biofeedback devices, electrical stimulation therapy instruments, and other commonly used postpartum recovery equipment was arranged. For comprehensive case analysis, students developed personalized rehabilitation plans based on real cases and refined them through group discussions ^[5].

3.3. Development of teaching resources

Multimedia resources: Micro-videos demonstrating rehabilitation techniques and equipment operation by industry experts were recorded; three-dimensional animations were used to illustrate key physiological changes such as pelvic floor muscle contraction mechanisms and anatomical changes in diastasis recti; interactive PPT courseware with scenario-based questions was developed for self-assessment; and high-definition images were collected to display anatomical structures, manipulation techniques, and procedural steps.

Case library and exercise bank: Typical cases including postpartum depression screening, pelvic floor dysfunction, and diastasis recti were collected, each containing detailed medical history, diagnostic basis, treatment plans, and follow-up results. The exercise bank includes multiple-choice questions, true/false questions, short-answer questions, and comprehensive application questions, which are updated and revised each semester in line with new industry standards.

4. Course implementation

4.1. Teaching organization

Online component: Students watched micro-lectures according to the schedule, studied course materials, and completed chapter quizzes. Discussion forums featured topics such as “How to adjust training intensity for a client with 2.5-finger diastasis recti combined with pubic symphysis separation?” to stimulate critical thinking. Instructors used backend data to identify and follow up with students who needed additional support ^[1].

Offline practice: Practical sessions were conducted in on-campus training centers and off-campus partner bases. Sessions began with demonstrations, followed by group rotations where students completed the entire “assessment–planning–implementation–documentation” workflow. Enterprise technicians were invited to participate in assessments or deliver specialized lectures, bridging the gap between campus and workplace ^[2].

4.2. Learning support services

Instructors provided regular online Q&A sessions and organized centralized face-to-face demonstrations for frequently misunderstood operational procedures. A resource update mechanism was established to supplement videos and cases according to newly issued industry standards and to adjust the difficulty and distribution of exercises based on students’ error patterns ^[1].

4.3. Learning outcome evaluation

Formative assessment (process evaluation): Students’ video completion rates, discussion participation, periodic quiz scores, and practical training attendance were tracked. A learning behavior profile was generated to facilitate timely instructor intervention.

Summative assessment (outcome evaluation): Theoretical written examinations covered core knowledge points. Practical assessments were conducted in a simulated postpartum recovery room, where students randomly selected cases and completed the evaluation and operation procedures. Assessments were jointly evaluated by faculty members and industry experts to ensure objectivity ^[5].

5. Analysis of application effects

5.1. Academic performance

Preliminary teaching feedback following course implementation indicates that students had a generally favorable reception of the course content. In terms of theoretical knowledge, most students were able to understand core concepts such as postpartum physiological foundations and rehabilitation principles, which are closely related to the systematic knowledge framework and the use of multimedia resources. However, there remains room for improvement in comprehensive application items involving individualized plan design, suggesting that future teaching should further strengthen case-based discussions and practical training ^[6].

5.2. Practical competence

Teaching feedback shows that students demonstrated significant improvement in postpartum rehabilitation technical operations, particularly in core skills such as pelvic floor muscle training guidance and diastasis recti assessment and correction, where most students were able to perform operations in a standardized

manner. Follow-up internship feedback indicates that employers generally reported that participating students could quickly adapt to job requirements and performed well in basic postpartum rehabilitation project implementation and client communication. This is closely related to the course's emphasis on simulation training and real-case analysis ^[5].

5.3. Professional ethics

Feedback from the course implementation reveals positive changes in students' professional ethics. Regarding professional morality, most students reported that the course deepened their understanding of professional conduct in the postpartum recovery industry, particularly demonstrating heightened sensitivity to client privacy protection and service ethics. In terms of teamwork, students generally believed that group practical training helped enhance their sense of responsibility and coordination skills. Additionally, some students indicated that they learned to proactively consult new industry guidelines to update their knowledge through the course. The dedicated professional ethics module and the attention given to collaborative performance in the formative assessment played a positive role in shaping students' professional values ^[2].

6. Conclusion and prospects

6.1. Research conclusions

Guided by the OBE philosophy and aligned with the "1+X" Postpartum Recovery Vocational Skill Level Certificate standards, this study successfully completed the overall framework design and resource construction of a high-quality online open course on postpartum recovery. The course encompasses systematic knowledge modules, skill training projects, and supporting micro-videos, case libraries, and exercise banks, adopting a blended teaching model combining online and offline instruction with diversified evaluation. Preliminary teaching feedback indicates that the course has initially demonstrated positive effects in helping students acquire theoretical knowledge, enhance practical skills, and cultivate professional ethics, validating the feasibility of the "outcome-oriented + curriculum–certificate integration" model in postpartum recovery curriculum reform. This study can serve as a reference for the construction of health-related courses in higher vocational education.

6.2. Limitations and future prospects

This study has several limitations. First, the course is still in its preliminary implementation stage, and large-scale systematic data collection and effect analysis have not yet been conducted; the current conclusions are primarily based on teaching feedback and observation. Second, the course has only been piloted in one institution's midwifery program, limiting sample size and regional representativeness. Furthermore, mechanisms for resource updates and long-term tracking of graduates' career development are not yet fully established, and the evaluation of some professional ethics indicators remains somewhat subjective.

Future improvements will focus on the following aspects: (1) continuously iterating course standards and resources in line with industry technological developments; (2) conducting systematic comparisons of academic performance and questionnaire surveys after the course is formally launched to obtain quantitative data support; (3) introducing diversified evaluation methods such as enterprise mentor evaluations and peer reviews to improve the course evaluation system; (4) expanding the course's application scope through cross-institutional collaboration to test its generalizability; and (5) establishing a database for regular follow-ups

with graduates and employers to support continuous course improvement.

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Disclosure statement

The authors declare no conflict of interest.

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