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Article

Construction of a Multi-Dimensional Textbook System for the Early Childhood Care and Education Service and Management Major Based on Outcome-Based Education (OBE)

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Abstract: Since the renaming of the Early Childhood Care and Education Service and Management major (formerly Child Development and Health Management), textbook development has lagged behind and now constitutes a salient constraint on the quality of talent cultivation. Drawing on the philosophy of Outcome-Based Education (OBE), this study employs literature review, content analysis, and policy text analysis to systematically diagnose the structural contradictions in existing textbooks across four dimensions—goal orientation, content organization, format and media, and evaluation and feedback—and subsequently constructs a four-dimensional multi-dimensional textbook system model of "Goals–Content–Format–Evaluation." On this basis, the study proposes a content-integration pathway characterized by "integration of medical and educational care" and "alignment with job requirements and vocational certifications," together with an integrated format scheme of "print + digital + virtual simulation," and designs a closed-loop mechanism of "process monitoring–outcome evaluation–dynamic revision" for continuous improvement of textbook quality. The research aims to provide a framework reference that combines theoretical explanatory power with practical operability for textbook development in this major at higher vocational colleges, and to promote the transformation of textbook development from experience-oriented to outcome-oriented.

Keywords: Outcome-Based Education (OBE); early childhood care and education service and management; multi-dimensional textbooks; course–competition–certification integration; medical–educational care integration

1. Introduction

In 2021, the Ministry of Education issued the Vocational Education Major Catalogue (2021), renaming the "Child Development and Health Management" major as the "Early Childhood Care and Education Service and Management" major and reclassifying it under the Public Health and Health Management category of the Medicine and Health discipline group. This adjustment represents not merely a change of name and administrative affiliation, but a fundamental repositioning by the state of talent cultivation for the care of children aged 0–3—shifting from the previous single orientation toward educational caregiving to a compound, competency-oriented model characterized by the "integration of medical and educational care" (yiyu jiehe). With the in-depth implementation of the three-child policy and the accelerated development of an inclusive childcare service system, enrollment in this major has expanded rapidly, and society's demand for high-quality childcare professionals has become increasingly pressing. The advancement of inclusive childcare services imposes structural requirements on the supply of childcare talent. Inclusive childcare policy constitutes an important guarantee for the sustainable development of the childcare service system; however, existing policy texts still exhibit problems such as a high frequency of authority-based instruments, a narrow range of incentive-based instruments, and insufficient capacity-building

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instruments [1]. In particular, the shortage of capacity-building instruments directly constrains policy support for the training of practitioners and for textbook development. In sharp contrast to the rapid transformation of the major's orientation, textbook resource development has lagged severely behind. Most existing textbooks are simple transplants or patchworks of preschool education or nursing textbooks; they lack systematic design targeting the core competencies of childcare positions, can hardly support the talent-cultivation orientation of "medical–educational integration," and fail to meet childcare institutions' expectations for versatile practitioners.

Clear signals have been released at the policy level. The Ministry of Education's Implementation Plan for the Construction of "14th Five-Year Plan" Vocational Education Planned Textbooks explicitly calls for accelerating the development of textbooks in urgently needed livelihood-related majors such as childcare, nursing, and domestic services, placing textbook development for the childcare major on the priority agenda of the national vocational education textbook system [2]. This provides a policy opportunity for textbook development while also imposing higher requirements on its scientific rigor and systematicness. How to construct a high-quality textbook system that fits the major's positioning, aligns with job requirements, and accommodates students' developmental patterns has thus become a pressing practical issue.

The philosophy of Outcome-Based Education (OBE) centers on "student-centeredness, outcome orientation, and continuous improvement." Its backward-design principle emphasizes planning curricular content, instructional strategies, and assessment methods in reverse, starting from the competencies that learners should ultimately attain, thereby providing a sound methodological foundation for textbook development. Introducing OBE into textbook development for the childcare major helps to reverse the ingrained "knowledge-based" logic of traditional textbook writing and to establish a textbook design paradigm centered on the attainment of job competencies. Against this background, the present study seeks to construct a multi-dimensional textbook system model with both theoretical explanatory power and practical operability, in order to provide a framework reference for textbook development in this major at higher vocational colleges.

2. Diagnosis of the Structural Problems of Existing Textbooks

Overall, current textbooks for the childcare major at higher vocational colleges insufficiently reflect the distinctive core feature of "medical–educational integration," and problems such as outdated content relative to industry development and inadequate alignment with job requirements are prominent. Specifically, these problems can be examined from the following four dimensions.

Misaligned goals: vague formulation of learning outcomes. Most textbooks fail to articulate expected learning outcomes clearly; statements of cultivation objectives remain at the level of generic listings of disciplinary knowledge, lacking measurable and assessable indicators. Textbook authors tend to describe objectives with vague verbs such as "understand," "grasp," and "be familiar with," without answering the fundamental question of "what exactly can students do after completing this textbook." Such vagueness deprives instructional implementation and assessment of clear anchors and weakens the textbook's function as a carrier of learning outcomes. Research indicates that "there is a significant positive relationship between the clarity of course objectives and the consistency of assessment standards, and the consistency of assessment standards exerts an important influence on teaching–learning–assessment alignment" [3]. If textbook objectives remain at vague formulations such as "understand" and "grasp," assessment standards cannot be anchored, and teaching–learning–assessment alignment breaks down at the textbook level.

Fragmented content: mechanical juxtaposition of medical and educational knowledge. Medical and health knowledge and educational caregiving knowledge appear in existing textbooks in a state of "mechanical juxtaposition," lacking organic logical coherence and competency integration, with content redundancy and gaps

coexisting. More critically, the 1+X Early Childhood Care Vocational Skill Level Standard is insufficiently integrated, and typical work tasks of childcare positions have not been effectively transformed into instructional projects, leaving a conspicuous gap between textbook content and workplace practice. This fragmentation contradicts the actual "medical–educational fusion" logic of childcare work and hampers the cultivation of students' ability to apply multidisciplinary knowledge comprehensively to solve job-related problems.

Monotonous formats: inadequate support from digital resources. Print textbooks remain absolutely dominant; supplementary digital resources are scarce in quantity and uneven in quality, and virtual simulation training resources are nearly non-existent. Childcare skills are highly context-dependent and operational: the training of core skills such as infant and toddler first aid, feeding and care, and health observation depends heavily on situated simulation and repeated hands-on practice, which a single print medium can hardly accommodate. The limitations of textbook formats thus directly constrain the quality and efficiency of skills training.

Absent evaluation: lack of feedback and revision mechanisms. Textbook development generally lacks mechanisms for tracking usage effectiveness, and revision cycles extend to five or even eight years, unable to reflect timely updates in industry standards and technological development. Once published, a textbook is virtually "fixed"; instructional and workplace feedback accumulated during use can hardly be channeled back into revision, so quality improvement lacks an evidence-based closed-loop mechanism and continuous optimization is difficult to achieve.

These four problems are not isolated but interwoven and mutually reinforcing: misaligned goals deprive content organization of its rationale; fragmented content leaves format design without an integrative basis; and absent evaluation strips the textbook system of its capacity for self-correction. Textbook reform therefore cannot adopt a piecemeal repair strategy but requires holistic reconstruction at the system level.

3. The Intrinsic Fit between OBE and Multi-Dimensional Textbooks

The OBE philosophy was systematically proposed by Spady in 1994; its core is that educational activities should be designed backward, starting from the learning outcomes students are ultimately expected to attain. OBE holds that the goals of instructional design and implementation are the learning outcomes students achieve through the educational process. The closer the outcomes are to students' authentic learning experiences, the more durable they are likely to be—outcomes derived from students' long-term, extensive practice exhibit particularly high persistence [4]. This claim is especially pertinent to the childcare major: the highly situated nature of childcare skills dictates that textbook content must approximate authentic workplace experience rather than remain at systematic expositions of disciplinary knowledge. OBE comprises three essential elements. First, student-centeredness: attention is paid to what students have learned rather than what teachers have taught. Second, outcome orientation: all instructional activities are organized around clearly defined expected outcomes. Third, continuous improvement: an evidence-based evaluation and feedback mechanism forms a cycle of "design–implementation–evaluation–improvement." OBE's backward-design pathway—defining learning outcomes, designing the assessment system, and organizing instructional activities—aligns closely with the logic of textbook development: as the core carrier of instruction, a textbook's content organization and format design should likewise proceed from expected learning outcomes rather than from the disciplinary knowledge system.

Multi-dimensional textbooks are a new form of textbook relative to traditional print textbooks, characterized by four core features: diversification of formats, integrating print, digital, and virtual simulation media; systematization of content, organically fusing theoretical knowledge, practical skills, and professional literacy; interactivity of use, supporting multi-dimensional interaction among teachers and students, between schools and enterprises, and between humans and machines; and dynamic updating, promptly aligning with industry development and technological change. These features directly

respond to the four structural problems identified above: diversified formats address the problem of monotonous formats; systematized content bridges fragmented content; interactive use rectifies misaligned goals; and dynamic updating remedies absent evaluation.

It is thus evident that a deep intrinsic fit exists between OBE and multi-dimensional textbooks: OBE provides the backward-design logical starting point and the quality assurance of continuous improvement for multi-dimensional textbook development, while multi-dimensional textbooks supply the carrier support and practical arena for the implementation of OBE. Developing multi-dimensional textbooks for the Early Childhood Care and Education Service and Management major based on OBE can more fully reflect the major's distinctive characteristics and industry requirements and effectively promote the attainment of the major's competency goals.

4. Design Pathway of the Multi-Dimensional Textbook System under OBE

Following OBE's backward-design principle, textbook development proceeds from "job competency requirements," which are decomposed layer by layer into the program cultivation objectives, course learning outcomes, and unit instructional objectives, ultimately determining the organization of textbook content and the choice of formats, thereby forming a logically coherent backward-design chain.

Analysis of job competency requirements. This analysis constitutes the starting point of backward design. Drawing on policy documents such as the Guidelines for Care Practices in Childcare Institutions (Trial) [5] and the Management Norms for Childcare Institutions, as well as the 1+X Early Childhood Care Vocational Skill Level Standard and the National Occupational Skill Standard for Childcare Practitioners, the core competency requirements of childcare positions are systematically extracted. On this basis, and informed by the analysis of typical work tasks in childcare institutions, five core job-competency modules are identified, covering key domains such as daily care of infants and toddlers, health management, support for early development, safety protection and emergency response, and home–institution co-education, thereby achieving precise alignment between textbook objectives and job requirements.

Goal dimension: defining measurable expected learning outcomes. Building on the job competency analysis, the five core competency modules are decomposed layer by layer into program cultivation objectives, course learning outcomes, and unit instructional objectives, with objectives at each level formulated using measurable, assessable behavioral verbs that specify the concrete competency performance students should demonstrate upon completion. The clarity of this goal system provides a common frame of reference for the selection of textbook content, the design of instructional activities, and assessment and evaluation.

Content dimension: modular organization featuring medical–educational integration and job–certification alignment. Content organization breaks down traditional disciplinary boundaries and constructs three integrated content modules, using "job-based projects" as the nexus to achieve cross-disciplinary integration of medical health, educational caregiving, and management literacy. Taking the project "Care of Infants and Toddlers with Diarrhea" as an example, this project simultaneously involves the medical–health dimension (etiology identification, oral rehydration procedures), the educational-caregiving dimension (dietary adjustment, emotional soothing), and the management-literacy dimension (home–institution communication, record keeping and reporting, epidemic reporting); the knowledge and skills of the three dimensions are organically interwoven and synergistically applied in authentic job tasks. Each project is accompanied by a complete learning chain of "learning objectives—situational introduction—knowledge links—skills training—reflective evaluation," enabling students to achieve integrated knowledge construction and holistic competency development in the course of completing tasks. This mode of organization both implements the "medical–educational integration" positioning of the major and effectively transforms the 1+X certification standards and typical job tasks into instructional projects.

Format dimension: a "four-in-one" multi-dimensional carrier design. In terms of format design, a four-in-one multi-dimensional carrier configuration is constructed, comprising a core print textbook, a digital resource library, a virtual simulation training system, and an online learning platform. The core print textbook serves as the carrier of systematic knowledge, supporting deep learning and structured knowledge construction; the digital resource library supports autonomous learning, transcending temporal and spatial constraints and meeting individualized learning needs; the virtual simulation training system creates simulated training environments for high-hazard, high-risk scenarios, compensating for the insufficiency of real training conditions; and the online learning platform carries functions of interactive communication, process recording, and data analysis, providing data support for instructional improvement. The four types of carriers are functionally complementary and organically linked, jointly supporting the situated training of childcare skills and the cultivation of versatile competencies.

Evaluation dimension: usage-effectiveness feedback and continuous improvement. A closed-loop mechanism of "process monitoring–outcome evaluation–dynamic revision" is established. Process monitoring relies on digital platforms to automatically collect learning-behavior data and track textbook usage and learning progress in real time; outcome evaluation employs a job-competency attainment rubric jointly developed by colleges and enterprises, assessing textbook effectiveness across the multiple dimensions of knowledge, skills, and professional literacy; dynamic revision is based on annual usage reports, with content updated every two to three years to incorporate new policies, new standards, and new technologies in a timely manner, ensuring that the textbook system remains continuously aligned with industry development. This closed-loop mechanism transforms the textbook from a static "one-off product" into a dynamic "continuously evolving system," genuinely realizing the continuous improvement advocated by OBE.

5. Conclusion

Textbook development for the Early Childhood Care and Education Service and Management major is a systematic endeavor involving goal positioning, content integration, format innovation, and evaluation feedback. Based on OBE, this study has constructed a four-dimensional multi-dimensional textbook system model of "Goals–Content–Format–Evaluation," proposed a backward-design pathway starting from job competency requirements together with a four-in-one format scheme of "print + digital + virtual simulation," and designed a closed-loop mechanism for the continuous improvement of textbook quality, with the aim of providing a theoretical reference and practical framework for textbook development in this field. The limitations of this study are as follows: the sample covers only textbooks published between 2021 and 2024, excluding transitional textbooks from earlier periods; the analysis is primarily text-based and does not incorporate qualitative data such as classroom observations or interviews with teachers and students; and the model's effectiveness remains to be further tested in full-cycle textbook writing and teaching practice. With the rapid development of generative artificial intelligence and related technologies, intelligent, personalized, and adaptive textbooks will become an important research direction in this field. How to integrate intelligent technologies into the multi-dimensional textbook system and achieve the unity of education at scale and personalized learning merits sustained attention in future research.

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