

# **Development and Practice of Print-Digital Integrated Textbooks for Double-High-Level Vocational Colleges: A Case of Windows Server Network OS Course**

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**Abstract:** Against the backdrop of the Double-High Plan initiative, this paper analyzes the inherent requirements and practical orientations of textbook development in higher vocational colleges. It clarifies the positioning transformation of print textbooks, shifting from a core content carrier to a supplementary digital resource carrier, and from one-way knowledge impartment to multi-dimensional learning support. Taking the textbook Windows Server Network Operating System as a practical case, this study elaborates on the core principles of digital textbook development, the construction of content frameworks, approaches to resource integration, and pathways for building interactive systems. By adopting modular content division, hierarchical resource allocation, and full-process interactive design, the research establishes a new textbook model that “consolidates the knowledge core with print textbooks, enhances practical operation training through digital resources, and improves teaching quality via print-digital integration”. This model provides an actionable practical solution for the renewal and optimization of textbooks in information technology majors at Double-High level colleges, facilitating the precise alignment between technical and skilled personnel training and the demands of industrial positions.

**Keywords:** High-level Vocational Colleges and Universities with High-Quality Programs; Print-Digital Integrated Textbooks; Textbook Development

## **1. Introduction**

In the high-quality development of vocational education, the “Double High-Level Plan” serves as a key driver for enhancing the connotation construction and reform of vocational colleges,

with the core mission of elevating the quality of technical and skilled personnel training. As a fundamental component of teaching, textbook development directly impacts the effectiveness of talent cultivation and constitutes a critical link in building a modern vocational education system. The essence of integrated print-digital textbooks lies not merely in converting print content into electronic formats, but in comprehensively restructuring and optimizing textbook forms, functions, and service models based on the laws of vocational education and the requirements of professional competency development. The development and application of such textbooks must precisely align with the core requirements of the “Double High-Level Plan”—including modular organization, dynamic updates, and personalized provision—while fully accounting for variations across teaching scenarios and individual differences in students' cognitive levels. Research and practice in this field therefore hold both theoretical significance and practical value for instructional application.

## **2. New Requirements for Textbooks under the “Double High-Level Plan”**

### **2.1 New Requirements for the Functional Positioning of Textbooks**

Textbook compilation must be closely aligned with industrial post competency standards, integrating real enterprise project cases, typical work tasks, and cutting-edge technical specifications into content structuring, thereby breaking the limitations of the fragmented segmentation of traditional disciplinary knowledge. Centered on the actual demand for technical and skilled talents driven by the development of new quality productive forces, textbooks should take practical ability cultivation as the core, deeply integrating professional literacy development, craftsmanship cultivation, and technical skill training. This

ensures that textbook content precisely matches post competency requirements, laying a solid foundation for students' technical application and long-term career development.

Textbooks must proactively align with the reform direction of modular and project-based curricula, abandoning the static arrangement model of fixed chapters and establishing a regular content update mechanism. Keeping pace with industrial technological iteration and policy adjustments, they should timely incorporate new technologies, processes, and standards while eliminating content outdated by industry development. Additionally, they need to address the connection needs of the secondary-vocational, higher-vocational, and undergraduate articulation training system, constructing a progressively layered content framework that precisely matches curriculum design, teaching schedules, and talent development programs, providing strong support for the dynamic optimization of the curriculum system [1].

## **2.2 New Requirements for Textbook Form under the “Double High-Level Plan”**

Textbooks should break away from the traditional single format of text and images, and enhance content interactivity and extended value. Through operable demonstrations, instant feedback mechanisms and other approaches, students should be guided to shift from passive reading to active participation, so as to truly implement the integration of learning and practice. Relying on digital tools to establish convenient content update channels, instructors can supplement case materials and adjust module sequences according to actual teaching needs, better meeting the dynamic demands of classroom teaching and independent learning [2]. A diversified presentation framework of "print content + digital resources + practical training guidance" should be built to eliminate barriers between different content forms. The print part focuses on sorting out core knowledge and refining key skill points; digital resources aim to expand learning content and extend practical operation scenarios; practical training guidance closely aligns with actual on-the-job operation procedures. The three components complement each other to form an organic whole. By integrating various presentation forms such as text, video and simulation scenarios, the design caters to the usage needs of different teaching scenarios and students' differentiated learning

habits, realizing the efficient integration and flexible application of various content resources [3].

The innovation of textbook forms should be grounded in the talent training model of “integration of industry and education, and collaboration between schools and enterprises” under the Double High-Level Plan, emphasizing the practical nature of vocational education. Digital resources can incorporate real enterprise project cases and on-site operation videos from the industry, and synchronously integrate new technologies, new processes, and new standards to align textbook content with the pace of industrial development. In addition, it is essential to focus on the convenience and adaptability of textbook forms, enhance the access experience of digital resources, support multi-terminal adaptation, and facilitate students in conducting independent learning and practical training review during fragmented time. Through form innovation, textbooks will not only serve as a carrier for knowledge transmission, but also become a bridge connecting classroom learning, post practice, and industrial development, thereby facilitating the achievement of the goal of cultivating high-quality technical and skilled talents under the Double High-Level Plan and highlighting the contemporary value and educational effectiveness of vocational education textbooks.

## **2.3 New Requirements for Textbook Service Provision under the “Double High-Level Plan”**

To address individual differences in students' cognitive levels and skill foundations, textbooks must establish a tiered and categorized content delivery framework. This involves structuring content into basic, intermediate, and advanced modules, enabling students to select learning pathways tailored to their own circumstances. By leveraging learning data analytics to refine content design, targeted resources can be provided to students at different proficiency levels. This approach mitigates the limitations of standardized textbooks in accommodating individual differences, thereby facilitating personalized competency development. Textbooks must also be adapted to the online-offline blended teaching model to ensure compatibility across diverse instructional scenarios. Online content should be accessible via multiple terminals, including mobile devices

and PCs, offering fragmented and lightweight learning materials. Offline content, in turn, should focus on facilitating in-class interaction and practical training, ensuring seamless integration with online learning components. Incorporating elements such as virtual simulations and operational guidance can alleviate constraints imposed by limited training facilities and equipment, comprehensively fulfilling the functional requirements of various teaching contexts.

Textbook design must be based on a literacy-oriented approach, align with talent training objectives, and integrate the cultivation of core literacy into the content of each module and the design of teaching activities, thereby avoiding mere knowledge indoctrination and skill training. It is essential to balance scientificity and practicality by selecting content that is closely related to students' lives, consistent with industrial development and social needs, so as to enhance the interestingness and applicability of textbooks and stimulate students' learning initiative. In addition, it is necessary to reserve room for content expansion, enable teachers to make flexible adjustments to teaching content in light of regional educational characteristics and students' development needs, and achieve the organic integration of standardization and personalization, as well as unity and flexibility, in textbooks. Only in this way can textbooks truly fulfill their role as the core carrier of teaching and help promote the dual enhancement of teaching quality and students' comprehensive abilities.

### **3. The Positioning of Print Textbooks under the Guidance of the “Double High-Level Plan”**

#### **3.1 The Transformational Shift from Core Carrier to Supplementary Carrier**

With the rapid proliferation of digital textbooks, print textbooks have gradually moved away from their central role as the primary content carrier, evolving into a supplementary component that complements the functions of digital materials. Instead of striving for exhaustive content coverage, they now focus on systematically organizing knowledge frameworks, precisely distilling core concepts, and annotating and analyzing key and difficult points, thereby providing students with a solid knowledge foundation. As a companion to

digital resources, print textbooks help students establish clear knowledge structures, mitigate the learning disorientation caused by the fragmentation of digital content, and work in tandem with digital materials to achieve collaborative educational outcomes [4].

#### **3.2 Functional Shift from Knowledge Transmission to Learning Support**

The core function of print textbooks has evolved from mere knowledge delivery to providing auxiliary support throughout students' learning processes, with an increased emphasis on instrumental and practical value. Through refined layout design, targeted key-point annotations, and supplementary operational guidance, these textbooks offer clear pathways for self-directed learning, helping students overcome learning difficulties and achieve internalization of knowledge. Aligned with the requirements of practical training, they also detail operational procedures and precautions that digital resources often fail to present comprehensively, serving as a tangible foundation for classroom interactions, group discussions, and hands-on exercises. Additionally, the portability of print textbooks makes them adaptable to scenarios where digital content is restricted—such as field training or offline environments—ensuring uninterrupted learning continuity.

### **4. Development Path and Implementation Essentials of Digital Textbooks in “Double High-Level” Vocational Colleges – A Case Study of Windows Server Network Operating System**

#### **4.1 Core Principles and Goal Setting for Digital Textbook Development**

The development of the digital textbook Windows Server Network Operating System centers on the training standards for technical and skilled talents in the information technology field set by the “Double High-Level Plan”, and is closely aligned with the core competency requirements of positions such as network operation and maintenance and system management. During the compilation process, essential on-the-job skills including system deployment, troubleshooting, and security configuration are taken as the core content, while industrial technical standards and vocational skill level requirements are integrated

into the textbook's content arrangement. Emphasis is placed on strengthening students' practical operation capabilities and problem-solving abilities, ensuring that the textbook content effectively helps students meet post competency requirements and fulfill the industry's demand for high-quality technical and skilled talents.

The development of digital textbooks must be grounded in the characteristics of digital teaching and students' cognitive laws, establishing a scientific and reasonable interactive logic to avoid the pitfall of "electronic stacking of content". Through scenario-based task guidance, step-by-step practical operation design, and real-time learning feedback, students' learning initiative is stimulated. Interactive design should fit the practical nature of the course, with interactive nodes set around core system operation links, so that interactive behaviors truly serve knowledge comprehension and skill improvement. This achieves a seamless connection of "learning-practice-assessment" and enhances the effectiveness of digital learning [5].

The development of digital textbooks needs to accommodate the large-scale teaching needs of different colleges and classes, while reserving space for personalized adjustment. By unifying core content and skill standards, stable teaching quality in large-scale instruction is guaranteed; customizable modules are designed to allow colleges to flexibly adjust content sequences and supplement expanded materials according to their professional training orientations and teaching priorities. Supporting designs such as layered exercises and optional cases are incorporated to meet the learning needs of students at different levels, realizing the organic integration of large-scale promotion and personalized teaching [6].

## **4.2 Content Architecture Design of the Digital Textbook Windows Server Network Operating System**

### **4.2.1 Modular content decomposition based on job competency requirements**

The digital textbook windows server network operating system should be developed in accordance with the competency framework for network operation and maintenance roles. It breaks away from the traditional chapter-based structure and organizes content following the logic of "job tasks – skill modules – knowledge

points". The textbook is divided into three major modules: basic cognition, core operations, and integrated application, with each module further broken down into specific task units. The basic module covers introductory skill training such as system installation and environment configuration; the core module focuses on core job tasks including domain controller deployment, file service management, and remote desktop configuration; the integrated application module is designed around complex work scenarios such as troubleshooting, security hardening, and multi-server collaboration. Each module is both independent and interconnected, adapting to a modular teaching model and allowing students to study selectively based on their learning progress and job competency needs.

Content within each module is arranged to follow real-world workflow. Each unit is structured around the sequence of "task introduction – knowledge preparation – practical operation steps – outcome verification". The task introduction section presents problems derived from actual job scenarios to stimulate students' learning motivation; the knowledge preparation section distills core theoretical knowledge, avoiding redundant explanations and emphasizing practicality; the practical operation steps section provides detailed step-by-step guidance, highlighting key operational points and precautions; the outcome verification section sets targeted practical tasks and evaluation criteria to strengthen skill mastery. Meanwhile, reserved expansion space in each module allows for timely updates with emerging content such as cloud server configuration and virtualization deployment in line with industry technological advancements, ensuring the timeliness of textbook content [7].

### **4.2.2 Integration and adaptation of digital resources**

A well-structured digital resource matrix is established to achieve precise alignment with modular content, forming a complete support chain of "resources-content-practice". Video resources are divided into three tiers: Basic-level operation demonstration videos focus on single skill points with step-by-step explanations, each lasting 5–10 minutes, suitable for foundational learning. Advanced-level case videos demonstrate complete workflows for complex tasks, incorporating problem-solving strategies from real-world work scenarios. Extended-level

industry case videos present authentic enterprise application contexts, bridging textbook content with actual job requirements.

Animation resources target abstract concepts and principles such as data transmission processes and domain environment mechanisms. Through visual presentation, they reduce comprehension barriers and compensate for the limitations of text-only explanations.

Virtual simulation content serves as the core support for practical teaching in digital textbooks. A simulation platform that highly replicates real working environments is constructed, covering typical scenarios including basic configuration, fault simulation, and security testing. Students can repeatedly practice operational tasks such as system deployment and troubleshooting on the platform without relying on physical equipment, effectively avoiding hardware damage and safety risks caused by operational errors. The platform is equipped with real-time error prompts and guidance functions, providing targeted feedback when deviations occur to facilitate skill improvement. Additionally, industry-standard documents, tool software packages, and supplementary exercises are integrated and categorized by module for easy access, forming a comprehensive learning support system [8].

For resource optimization, formats are adjusted and loading speeds enhanced to support multi-terminal access, meeting the diverse needs of online self-study and offline classroom teaching. Video and animation resources offer features such as playback speed control, progress jumping, and subtitle switching to accommodate different learning preferences. Simulation resources support both individual operation and group collaborative practice, addressing the needs of personalized training and team-based learning. A resource linking mechanism is established, with jump connections embedded at key knowledge points to enable quick access to supporting materials, thereby improving resource utilization efficiency [9].

#### 4.2.3 Interactive design and construction of a knowledge closed-loop system

Centered on modular content and digital resources, a multi-dimensional interactive framework is established to foster deep student engagement in the learning process. For hands-on interaction, progressive tasks are designed within the virtual simulation platform, advancing sequentially from fundamental operations to

complex applications. Each task incorporates critical checkpoint verifications, providing students with immediate operational feedback, pinpointing error sources, and offering targeted optimization strategies.

For theoretical interaction, each module integrates in-session quizzes, case analyses, and other interactive question types. Upon completion, the system automatically generates a performance analysis report, accurately identifying knowledge gaps and delivering corresponding supplementary learning resources. In terms of collaborative discussion, dedicated module-specific forums are set up to enable students to share practical experiences, pose questions, and seek solutions. Instructors can release extended tasks aligned with the teaching schedule and provide feedback on representative cases, facilitating effective interaction between teachers and students, as well as peer-to-peer collaboration. For personalized learning, the system tracks individual data points—including learning progress, assessment scores, and practical performance—to build a personalized learning profile. This profile drives the intelligent recommendation of tailored learning pathways and supplementary resources. For instance, students demonstrating weaknesses in practical operations are prioritized for foundational operation demonstration videos and simulation exercises, while those lacking theoretical understanding receive animated tutorials and targeted reinforcement exercises.

Using interactive design as a core mechanism, a complete learning cycle of "Learn – Practice – Assess – Feedback – Optimize" is constructed. The learning phase solidifies theoretical foundations through core content and supporting materials. The practice phase enhances skill application via the simulation platform and hands-on tasks. The assessment phase delivers a comprehensive evaluation by combining self-test results, practical performance, and interactive engagement. The feedback phase clarifies areas for improvement through data-driven reports and targeted resource delivery. The optimization phase adjusts learning pathways and resource allocation based on feedback, facilitating the continuous development of students' knowledge and skills. Additionally, a comprehensive project-based module is integrated, requiring students to synthesize core skills from all units, independently design solutions, and complete practical tasks. This not only validates the

effectiveness of the learning cycle but also enhances their comprehensive application capabilities [10].

Within this learning cycle, the guiding function of assessment is emphasized through a combined approach of formative and summative evaluation. Formative assessment encompasses learning progress, interactive participation, and practical performance. Summative assessment focuses on the quality of comprehensive project deliverables and the attainment of skill benchmarks. The assessment criteria are closely aligned with industry competency requirements, developed with the participation of enterprise technical professionals. This ensures that evaluation outcomes authentically reflect students' readiness for professional roles, providing reliable data to support subsequent instructional refinement and the improvement of talent development quality [11].

## 5. Conclusion

Against the backdrop of the “Double High-Level Plan” initiative, the development of print-digital integrated teaching materials must be fundamentally oriented to meet the core competency requirements of professional positions. It is essential to organically integrate the auxiliary and supportive role of print textbooks with the practical empowerment value of digital teaching materials. Print textbooks should focus on systematically organizing core knowledge frameworks and accurately interpreting key and difficult content, laying a solid knowledge foundation for students. In contrast, digital teaching materials should enhance practical skill training and personalized learning guidance through modular content design, diversified resource integration, and the construction of full-process interactive functions. The two formats complement and coexist, jointly forming an efficient synergy for teaching and learning.

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