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Exploration on the Construction of Knowledge Service Platforms for Vocational Education by Professional Publishers: A Case Study of China Customs Press Co., Ltd.’ s “Customs Knowledge Base” (Postprint)

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Abstract

After years of exploration and practice, numerous professional publishers have achieved certain accomplishments in the construction of knowledge service platforms; however, in the niche domain of vocational education, large-scale development has yet to materialize. Vocational education constitutes an important component of China’ s formal education system. As China enters a new development stage, the significant status and role of vocational education are becoming increasingly prominent. As knowledge resource output entities in specific fields, professional publishers possess both the capability and responsibility to provide enhanced services for vocational education. This paper examines the construction of knowledge service platforms for vocational education by professional publishers, taking the “Customs Academy” platform of China Customs Press Co., Ltd. as a case study, and investigates the topic from four dimensions: product development, platform construction, platform operation, and platform sales.

Full Text

Exploring Knowledge Service Platform Construction for Vocational Education by Professional Publishers: A Case Study of China Customs Publishing House’ s “Customs Academy”

Abstract: Through recent years of exploration and practice, many professional publishers have achieved certain accomplishments in building knowledge service

platforms. However, in the specialized segment of vocational education, large-scale development has yet to materialize. Vocational education constitutes a vital component of China's formal education system, and its significance has become increasingly prominent as the nation enters a new development phase. As providers of domain-specific knowledge resources, professional publishers possess both the capability and responsibility to deliver enhanced services for vocational education. This paper examines the knowledge service platform "Customs Academy" developed by China Customs Publishing House Co., Ltd., discussing knowledge service platform construction for vocational education from four dimensions: product development, platform construction, platform operation, and platform sales.

Keywords: knowledge services; vocational education; professional publishing; online education; VR technology

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Introduction

As knowledge disseminators, publishers are no longer content with traditional print publishing amid internet disruption and the rise of new media. They actively seek transformation from single "content providers" to comprehensive "service providers" integrating content, products, platforms, and technology, aiming to deliver integrated solutions for users. This transformation receives policy support: in 2015, the former State Administration of Press, Publication, Radio, Film and Television launched pilot programs for professional digital content resource knowledge service models to accelerate specialized knowledge service platform construction, effectively aggregate domain-specific digital content resources, and advance national knowledge service system development. Driven by both policy support and internal development needs, publishing organizations are actively exploring transformation paths. After four years of exploration and development, they have produced knowledge service products with both social and economic benefits.

Vocational education represents a crucial component of China's formal education system. The recently issued "National Vocational Education Reform Implementation Plan" emphasizes that vocational education holds equal importance with general education. As China enters a new development phase, the significance of vocational education has become increasingly prominent, meriting a more prominent position in educational reform, innovation, and socio-economic development. Professional publishers, as providers and processors of domain-specific knowledge resources, bear both the responsibility and obligation to contribute to vocational education development. Publishers possess natural

advantages including author resources, distribution channels, knowledge assets, and established teacher user communities accumulated over years—all providing talent and foundation for knowledge service platform construction. Therefore, whether driven by social benefits or transformation needs, publishers should prioritize knowledge service platform construction for vocational education.

China Customs Publishing House Co., Ltd., as a second-batch pilot unit for professional digital content resource knowledge service models, strives to become a comprehensive knowledge service provider in foreign trade. For vocational education, it leverages its self-built “Customs Academy” platform to provide integrated services spanning pre-class preparation, classroom teaching, post-class testing, and comprehensive teacher evaluation, aiming to create a one-stop knowledge service platform to support relevant professional education and teaching. Within just one year since launch, the platform has served multiple vocational colleges. This paper uses “Customs Academy” as a case study to explore strategies for professional publishers building knowledge service platforms for vocational education.

According to the “2017-2018 China Digital Publishing Industry Annual Report,” China’s digital publishing industry generated total revenue of 707.193 billion yuan in 2017, with online education reaching 101 billion yuan, accounting for over 14%. Leveraging their advantages, publishing organizations have explored digital education development paths in preschool education, basic education, higher education, vocational education, and online training, laying out digital education product markets. The basic education sector, in particular, features rich layers and diverse products. In contrast, vocational education remains considerably weaker, with fewer products and rare blockbuster offerings. External factors include the rapid rise of internet education companies capturing market share, while internal factors stem from vocational education being “application-oriented,” emphasizing practical skill development. Publishers, most adept at knowledge resource output, have struggled to transform fragmented knowledge into solution services that meet user needs when building vocational education knowledge service platforms.

1. Product Development Strategy

Knowledge service product development must center on user needs, guided by user experience to maximize satisfaction and improve user satisfaction. The process can be implemented through three steps.

1.1 Identifying Target Users

Vocational education service products differ from general higher education products in their broad universality. Vocational education is significantly influenced by professional positioning, employment direction, and region, with training methods and content for the same major potentially varying greatly across institutions. Therefore, at project inception, the end users must be clearly iden-

tified and focused on specific groups, such as teachers and students in certain majors at specific vocational colleges in certain regions. Only after conducting feasibility analysis for these target groups can truly user-aligned products be planned.

Taking “Customs Academy” as an example, China Customs Publishing House Co., Ltd. is a market-leading publisher in foreign economic and trade. Thus, the platform was positioned at creation as a customs and foreign trade knowledge service provider. For vocational education, the publishing house already holds market share in customs affairs and freight forwarding textbooks. Consequently, the platform’s first batch of users was identified as teachers and students at vocational colleges offering majors related to customs declaration, customs affairs, international trade, and international freight forwarding—fields associated with customs clearance. The platform’s goal is to assist teachers and students in their teaching and learning activities. After determining the users and objectives, the team conducted in-depth research into the work and learning scenarios of vocational college teachers and students, analyzing their needs to develop the product.

1.2 Researching User Needs

After identifying target users, it is essential to deeply investigate user scenarios and research needs. Knowledge service platform users comprise teachers and students, each with distinct requirements.

Teachers hope to leverage knowledge service platforms to better support course instruction. Traditional print textbooks + digital textbooks + PowerPoint presentations can no longer meet vocational college teaching needs. Teachers seek modern information network technology platforms to achieve three objectives: First, enrich teaching resources. Vocational education is a typical “application-oriented” education, where cases are as important as theoretical knowledge. Therefore, teachers expect platforms to provide teaching case content based on real-world scenarios. Second, expand teaching methods. Schools increasingly emphasize classroom teaching experience. The traditional “teacher lectures at podium, students listen in classroom” approach has significant limitations, low student engagement, and poor interactivity, resulting in suboptimal teaching outcomes. Thus, teachers hope platforms can offer diverse teaching methods to increase student enthusiasm. Third, strengthen teaching evaluation. Current teaching activities typically involve comprehensive student assessment only at semester end, neglecting daily classroom performance. Therefore, teachers want platforms to record student performance throughout the learning process to support comprehensive semester-end evaluation.

Students hope to leverage knowledge service platforms for more convenient and engaging professional learning. Current vocational college students are predominantly post-1995 and post-2000 generations who value “individuality” and “self,” emphasize practicality, and want to acquire knowledge in their preferred ways.

Their needs include: First, more practical course design. As “application-oriented” education, vocational students hope to acquire professional skills in class that enable them to perform job tasks easily after graduation. Second, more flexible and convenient learning methods. The mobile-native generation can no longer accept fixed-location classroom learning, preferring to use fragmented time for learning via electronic devices outside classrooms. Third, richer and more interesting learning content. Compared with pure lecture-based, text-only learning, students prefer interactive, visual, multimedia content.

1.3 Developing Products Based on Own Advantages

After clarifying user needs, publishers should design and develop products based on their own advantages. Before development, publishers should inventory their existing advantageous resources and distribution channels, analyze extensible areas, and start with fields where they have confidence. New product development should enhance product competitiveness and expand market scope while consolidating existing markets.

Taking “Customs Academy” as an example, after in-depth user needs research and leveraging publishing house advantages, the platform launched an interactive course for vocational education teaching— “Customs Clearance Master Training.” This course uses real enterprise customs clearance work scenarios and characters as foundations for interactive animation design and development, visually demonstrating the integrated customs clearance operation workflow. Through mission-based progression, learners master tasks required at each business stage and the knowledge and skills they should possess. The course comprises four scenarios: sea import, sea export, air import, and air export, each embedding a complete customs clearance case for a shipment of goods. Interactive learning content is designed across four dimensions: First, authentically recreate all operational steps of the customs clearance process for the specific shipment, designing skill points as progression tasks; Second, explaining various customs documents and correct completion methods through practical examples; Third, explaining key and difficult knowledge and skills through micro-videos; Fourth, motivating learning enthusiasm through a points system. The course design meets the needs for comprehensive practical training courses in teaching resources while satisfying post-1990s users’ learning preferences through animation and gamification. The user-centered product design philosophy runs throughout, making the product immediately welcomed and recognized upon launch.

2. Platform Construction Strategy

Platform construction should adopt comprehensive layout and be driven by high technology. Knowledge service platform construction should establish a holistic system, apply internet high technology to meet user needs, integrate technology with publishing, and actively explore comprehensive layout for integrated development to support publisher transformation.

2.1 Top-Level Design with Global Vision and Foresight

Knowledge service platform development serves not a single product or phase but various products over an extended future period. Therefore, platform design must have global vision and foresight. Current prominent issues in educational publishing digitalization include: First, insufficient top-level design planning, resulting in scattered and fragmented overall development lacking holistic planning and phased implementation plans. Second, insufficient systematic product development, with most products being standalone, unable to interconnect or form complete product systems and usage closed loops. Learning from these precedents, publishers building their own knowledge service platforms must analyze their development directions for coming years, product types, and service methods, combine national vocational education reform directions and vocational colleges' long-term planning, create overall platform planning, ensure top-level design compatibility and scalability, and implement specific plans in phases.

Taking “Customs Academy” as an example, the platform is positioned as a customs and foreign trade knowledge service provider for vocational education, with first-batch target users being teachers and students in customs declaration, customs affairs, international trade, and international freight majors at vocational colleges. Therefore, top-level design must balance the platform' s broad vision as the publishing house' s online education platform while prioritizing current vocational education target user needs.

2.2 Platform Development Fully Utilizing Advanced Internet Technologies

Faced with emerging internet technologies, publishers must embrace the internet with an open mindset, continuously learning its advanced aspects and absorbing beneficial elements. After years of information technology development, almost all press and publishing organizations attach great importance to integrating high technology with traditional content, actively exploring and laying out media convergence development, striving to enable technology to empower publishing. Notably, technology adoption must combine with organizational status and platform needs. While big data, AI, AR, and VR technologies that have remained focal points in recent years have applications and successful cases across the publishing industry chain, vocational education requires technology exploration suited to its characteristics and needs, aligned with top-level design planning and platform features.

The platform extensively applies big data technology to establish associations among various resources and conduct statistical analysis of user data. The interactive course “Customs Clearance Master Training” encompasses diverse teaching resources including videos, exercises, images, and customs documents, which can also be independently extracted for application in other courses or teachers' lesson plans. Therefore, platform design considers resource reuse con-

venience, allowing individual resource extraction in the management platform for direct linking to other courses or application in teacher courseware. For user data analysis, the platform developed a powerful statistics platform enabling visualization of usage data from student and exercise perspectives, facilitating teachers' real-time monitoring of student learning and exercise accuracy statistics to adjust teaching priorities promptly.

The platform applies cloud platform development technology to support seamless multi-device switching with real-time learning data synchronization, recording only the highest scores. Since students hope to learn anytime via fragmented time, "Customs Clearance Master Training" is designed so each level can be completed in 3-5 minutes. Students can log in via mobile WeChat or computer to operate online. The "mission progression" design alleviates pressure from computer lab learning, while real-time ranking viewing motivates continuous autonomous learning.

The platform employs hierarchical user design technology. Publisher service platforms for vocational colleges represent typical B2B structures. Therefore, user design includes three account types—administrator, teacher, and student—each with different permissions. Administrator accounts for academic affairs staff and department heads can view usage data for each course, teacher, and student, as well as usage trajectories for comprehensive evaluation. Teacher accounts can create online classes, manage class members, assign learning tasks, conduct instant in-class assessments, monitor real-time student learning data, and independently extract course resources for application in courseware or linking to courses. Student accounts complete learning through progression and unlocking mechanisms, with animation elements and gamification settings in practice-oriented courses transforming students from passive to active learners.

3. Platform Operation Strategy

Platform operation should adopt a core-user-focused approach combining online and offline methods. Key users of vocational education knowledge service platforms are teachers and students in certain majors or courses, with instructors being the core among key users. Therefore, product promotion and training must target these core users specifically. Only with their recognition can platforms achieve large-scale adoption within institutions. Implementation should combine offline training, free trial access, online tracking, and timely communication, ensuring users consistently feel the platform was developed to solve teaching problems and is continuously improving based on their feedback.

Taking "Customs Academy" as an example, the team prioritizes operation through: (1) Conducting promotion and training at key institutions, offering free trials to teachers; (2) Establishing online communication groups with dedicated maintenance to receive teacher feedback, answer questions, and facilitate peer exchange; (3) Operating an official WeChat account to push new features and industry information; (4) Actively participating in offline industry

events to build momentum, using opportunities when industry organizations conduct teacher training in Wuhan, Chengdu, and other locations to demonstrate platform-assisted teaching, distribute brochures, and invite trials; (5) Continuously tracking teacher usage through the management platform, soliciting feedback from frequent users and consulting with infrequent users for continuous iteration; (6) Organizing training, regular visits, and symposiums for purchased institutions to solicit improvement suggestions from teachers and students; (7) Rewarding active participants and feedback providers by inviting them to beta testing.

As markets expand, student user training and attention should continuously increase. Student users represent the platform's largest user group and ultimate end-users, and their usage experience directly determines the platform's future scale and reach.

4. Platform Sales Strategy

As emerging products, knowledge service platform sales should leverage established brand advantages and promote through mature traditional publishing channels. Simultaneously, as teaching tools for vocational colleges, platforms should learn from software companies and internet education firms. As knowledge service solution providers, they sell not just resources but services, offering bundled multi-year usage rights and continuous service packages to find more partners and broaden sales channels.

Taking "Customs Academy" as an example, some platform courses are associated with print books and reach teachers and students through traditional textbook distribution channels. However, interactive courses like "Customs Clearance Master Training" constitute complete course packages themselves, enabling teachers to create online classes, monitor student learning, and track exercise performance, forming a teaching closed loop. Such courses can be packaged and sold to schools as software. Since publishers lack software sales channels and school procurement forms and content are diverse, self-sales would require substantial human resources. Therefore, institutional sales for "Customs Academy" are conducted both directly and through partner agents. Agency partnerships enable rapid nationwide deployment, complemented by publisher support to achieve optimal promotion effects through dual approaches that increase market coverage.

Note: Figure translations are in progress. See original paper for figures.

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