Postprint: Analysis of Information Literacy Education in Higher Vocational Education Based on Big Data Platforms

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Abstract

This article briefly analyzes the existing problems in information literacy education in vocational colleges under big data platform conditions: sluggish development of information literacy education initiatives, inadequate hardware infrastructure, incomplete implementation of novel teaching technologies, and weak educational resource sharing; it proposes corresponding countermeasures: enhancing the developmental capacity of information literacy education programs, improving the hardware infrastructure of big data information education systems, among others, thereby strengthening the implementation capability of information literacy education in vocational colleges and effectively actualizing the educational value of big data platforms.

Full Text

Preamble

Analysis of Information Literacy Education in Higher Vocational Colleges Based on Big Data Platforms

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Abstract: This paper examines the current challenges facing information literacy education in higher vocational colleges within the context of big data platforms: sluggish development of information literacy programs, inadequate infrastructure, incomplete implementation of new instructional technologies, and low levels of educational resource sharing. It proposes corresponding solutions: accelerating the development of information literacy education, improving hardware facilities for big data information education systems, and enhancing the execution capacity of information literacy education to fully realize the educational value of big data platforms.

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In the era of big data, information resource systems contain diverse data types, and strengthening data application can effectively enhance the overall information literacy of vocational college users. Meanwhile, on big data platforms, user demand for information focuses on search engine utilization, which offers considerable convenience. However, the integrated application efficiency of related data tools and technologies—such as data resource databases and advanced vocabulary retrieval—remains low, thereby reducing the accuracy of information retrieval on big data platforms.

1. Current Problems in Information Literacy Education

1.1 Sluggish Development of Information Literacy Programs

Currently, some higher vocational colleges face issues including incomplete education systems and low efficiency in big data application when implementing information literacy education, which weakens the developmental capacity of these programs. While key universities have systematically rolled out information literacy education for undergraduates in recent years, vocational colleges encounter numerous constraints, such as the incomplete implementation of smart library construction. This lag in big data platform development has diminished the effectiveness of information literacy education and hindered innovation in teaching content.

1.2 Inadequate Infrastructure

Under constrained conditions for information literacy education, vocational colleges face funding shortages and a need for talent resources in smart library construction, which increases the challenges of developing intelligent teaching systems. Courses centered on big data platform construction include information resource selection, search engine utilization, efficient integration of data resource databases, and information security protection. These information literacy courses aim to enhance students' independent operation skills on big data platforms. However, the incomplete implementation of smart library construction has resulted in students' poor operational capabilities, particularly in information discrimination, retrieval, and keyword application.

1.3 Incomplete Implementation of New Instructional Technologies

Currently, some vocational colleges have yet to effectively integrate diverse information education technologies such as micro-lecture videos and online simulations into their information literacy education systems. The practical implementation of information literacy education places high demands on instructors' professional capabilities, requiring them to efficiently integrate teaching resources, strengthen resource selection and utilization, and analyze complex educational data [1].

1.4 Low Level of Educational Resource Sharing

The low interactive utilization rate of teaching resources has become an obstacle to developing information literacy education in vocational colleges, even creating educational fragmentation. Against the backdrop of big data platforms, it is essential to leverage the educational value of data, enhance information sharing effectiveness, improve the educational data platform system, and elevate the execution capacity of information literacy education.

2. Solutions for Information Literacy Education

2.1 Enhancing Program Development Through Big Data Platforms

Centered on the educational subject, vocational colleges should construct systematic information literacy education systems that meet diverse resource demands and expand coverage. Big data platforms can enhance the integration and processing of campus electronic educational resources, forming multi-level digital educational resources. Simultaneously, these platforms enable the construction of new digital education platforms and tripartite cooperation systems among libraries, enterprises, and universities, increasing funding adequacy and alleviating talent resource pressures for smart libraries. With support from enterprise data professionals, resource allocation can be ensured to be comprehensive and systematic [2].

Specific measures include: (1) establishing scientific teaching resource allocation plans that highlight the educational advantages of organizational information resources at all levels; and (2) expanding the audience for digital educational resources by strengthening information literacy promotion to increase the user base and fulfill educational objectives.

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2.2 Platform Development and Application

2.2.1 MOOC Platform Development and Efficient Application Online Platform Application Model: The platform operates by integrating NetEase' s online shared resources with vocational college curricula to enhance applicability. The learning model features online classroom learning with resources from multiple universities covering over 3,000 open courses in areas such as business management and information technology. The curriculum system includes resource downloads, teaching plans, evaluations, course feedback, and communication zones, supporting the growth of both faculty and students in information literacy. Teaching service functions encompass course delivery, evaluation, and interaction. Assessment uses the highest score from three student evaluations, while video resources are presented as premium courses and PowerPoint materials.

Autonomous Learning Application Model: This model allows faculty and students to engage in self-directed online learning, classroom-based online learning, or paid courses. The platform offers 1,600 premium open courses including electives and professional courses. The instructional structure includes courseware explanations, discussion forums, personal progress tracking, assignment completion status, and customizable learning pace [3]. Teaching services include course delivery and live streaming. Assessment focuses on final examinations supplemented by daily assignment completion, with video courses presented through screen writing, PowerPoint explanations, and multi-subject premium courses.

2.2.2 Smart Library Digital Platform Construction RFID technology significantly enhances data collection capabilities in smart libraries. Its advantages include: simultaneous support for multiple borrowers, mobility of borrowed items, programmable procedures, laser-free scanning, durability up to 100,000 uses, weather resistance, waterproofing, integrated anti-theft features, batch return processing, and automatic book sorting.

The RFID system comprises six modules: (1) **Tag Conversion** links library data platforms with RFID technology by matching RFID codes with library codes, facilitating reader information scheduling and technology integration; (2) **Self-Service Borrowing/Returning** uses intelligent scanning of electronic and barcodes for efficient operation with simple procedures and secure hardware; (3) **Human-Computer Interaction Query** replaces manual computer retrieval with OPAC touch-screen systems integrating mouse and keyboard functions, saving space while providing convenient resource access and enhancing intelligent terminal operation skills; (4) **Mobile Book Inventory** uses RFID devices for non-contact, rapid scanning and matching of book tags with shelf locations, enabling efficient shelving, retrieval, and statistics while reducing staff workload and enhancing resource updating; (5) **Staff Work Area** integrates high-efficiency reading and identification programs for tag editing and information recognition, improving circulation processing efficiency; and (6) **Book**

Security scans RFID tags to monitor borrowing status and protect resources, with aesthetically designed security gates that also provide patron flow statistics to inform collection development decisions [4].

2.3 Comprehensive Implementation of New Instructional Technologies

Vocational colleges should identify educational priorities including students' perception of their own information literacy, data mining capabilities, and security awareness when using digital resources. Introducing new instructional technologies is essential to enhance student understanding of big data platform teaching.

2.3.1 Constructing an Internet+ Information Education System Vocational colleges should implement blended online-offline education to improve utilization efficiency of big data platform resources and enhance information literacy education effectiveness.

Integration of General and Professional Curriculum Resources: Information literacy education should begin with basic information operations and fundamentals, including courses on literature retrieval and subject indexing to build foundational resource acquisition skills. General proficiency tests should assess platform operation competence. Building upon basic big data knowledge, specialized courses should be offered to create an effective fusion of general and professional knowledge, comprehensively enhancing student information literacy. Professional content improves operational flexibility and builds solid knowledge reserves, enabling students to master skills such as information retrieval, discrimination, and application while developing critical thinking and collaborative awareness. Therefore, professional courses should incorporate information engineering knowledge to keep students updated on big data developments and maintain learning enthusiasm. Leveraging their specialized characteristics, vocational colleges should integrate database resources to develop simulation and online modeling courses that reduce practical activity costs while improving professional operation skills from an information literacy perspective.

Hierarchical Information Literacy Education System:
A. Primary Level: For freshmen, covering smart library orientation, big data platform operation procedures, and literature retrieval basics to develop fundamental resource acquisition awareness and legal understanding through electronic article sharing and video presentations.
B. Learning Level: For sophomores, using methods such as electronic resource sharing, data analysis reports, literature retrieval competitions, and professional information retrieval contests to enhance application capabilities.
C. Application Level: For juniors, focusing on graduation projects and group research to deepen big data technology learning and develop superior information literacy.

2.4 Implementing Educational Evaluation Systems

Big data platforms should serve as the core for comprehensive evaluation to improve information literacy education outcomes [5]. Educators should actively use these platforms to scientifically collect and analyze student learning data for objective assessment. This includes: (1) administrators using big data to statistically analyze student performance across subjects and provide objective skill evaluations, sharing results to enhance information literacy; and (2) partner enterprises evaluating teaching outcomes through the big data platform to improve employment market adaptability, with results 公示 ed to help students develop information literacy by viewing enterprise recognition and market share data.

2.5 Enhancing Educational Resource Sharing

High traffic on vocational college data platforms can reach system processing limits. Therefore, hardware processing nodes should be added to improve overall efficiency during operation. LVS software can be used for IP load balancing to enhance campus network performance. Colleges should build educational resource databases based on their needs to improve platform utilization efficiency and educational functionality. Strengthening digital resource sharing and interaction capabilities improves application efficiency and cost control for information literacy education [6].

During platform development, distributed file processing programs provide ample storage space while cloud storage architecture ensures data integrity. In distributed systems, each server stores corresponding files while multiple machines simultaneously provide services to upper-level platforms. Upper-level applications offer diverse file operation programs (add, delete, modify, query) for comprehensive user operations. From a high-performance, multifunctional data platform perspective, this approach comprehensively shapes student information literacy.

Conclusion

In implementing information literacy education, higher vocational colleges should actively leverage the educational functions of big data platforms to alleviate resource constraints, enhance digital resource sharing and interaction capabilities, and improve educational effectiveness. By constructing MOOC platforms and smart libraries according to institutional needs, colleges can create quality big data teaching environments that enhance student information literacy development.

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