Research on construction and management of provincial first-class curriculum resource sharing library under digital environment

Tao Li[1], Hui Wang[2]

1. School of Information Engineering and Artificial Intelligence, Henan Open University, Zhengzhou 450046, China;

2. Center of Resource Construction and Management, Henan Open University, Zhengzhou 450046, China

Abstract: The development of education informatization in the digital environment has become the trend and direction of the development of the current education field. The construction of provincial first-class curriculum is an important strategy for the development of higher education. The sharing and utilization of curriculum resources play an important role in improving the teaching quality and students' comprehensive quality. In view of the construction and management of the provincial first-class course resource sharing database under the digital environment, the institutional system framework of "five-party linkage" is designed, the unified system framework and data and interface standards of the resource database are constructed, and the "dynamic tracking mechanism of resource learning" and "dynamic quality assessment system of multiple resources" are established. To realize the tracking and systematic monitoring, evaluation and feedback of resource quality, so as to improve the sharing and utilization efficiency of course resources and promote the development of education informatization.

Key words: digital environment; Provincial first-class curriculum; Resource sharing library; System architecture; Data standard; Dynamic quality assessment

I. Introduction

Education informatization under the digital environment has become an important direction and trend of education reform. In higher education, teachers can make use of digital technology to create and use course resources to achieve more effective teaching activities. Resource sharing is an important goal in the development of educational informatization. In higher education, sharing course resources can not only improve teaching quality and students' comprehensive quality, but also reduce resource waste and repetitive construction. Therefore, it is an urgent need for the current development of higher education to establish a provincial first-class course resource sharing library under the digital environment.

2. The background and current situation of the construction of provincial first-class course resource sharing database under the digital environment

With the rapid development of China's higher education, the competition among universities is becoming more and more fierce, and the sharing of high-quality educational resources has become a way to improve the quality of education. Since the Ministry of Education issued the Opinions of the Ministry of Education on Strengthening the Application and Management of the Construction of Online Open Courses in Colleges and Universities (No. [2015]3), each province has taken this as the guideline and action program of its provincial education department, and implemented it according to the regional reality. The number of online courses has exceeded 1,000 in Zhejiang province, Anhui Province, online Course Learning Center platform and Shandong province, and Henan province has more than 500 courses. In September 2019, the Ministry of Education and other 11 departments further issued the Guiding Opinions on Promoting the Healthy Development of Online Education to expand the supply of high-quality educational resources, requiring the use of modern information technologies such as the Internet and artificial intelligence in online education to serve modern education. Although the Henan Provincial Department of Education has formulated the standards for the construction and evaluation of online open courses and set up the Henan Online Course Center, there are still shortcomings in the following aspects:

(1) The top-level design has not formed a standardized and diversified resource base construction and data specification system architecture

At present, the construction and management of the provincial first-class course resource sharing database are mostly in the mode of "government-led and universities main body". The government is responsible for planning, selection and identification, and universities are responsible for curriculum construction and application. While ensuring the quality of the curriculum, this model has obvious shortcomings: first, it lacks diversification and cannot make full use of the resources and advantages of all sectors of society; Second, it lacks flexibility and is difficult to adapt to different needs and changes in a timely manner.

(2) The system architecture has not formed a universal, open and transparent resource system architecture

Because there is no universal architecture, the repeated construction of resources leads to the waste of resources. Secondly, the organization and classification of resources are inconsistent, and it is difficult to achieve unified management and classification of resources, which makes the efficiency of resource searching and utilization very low. Finally, due to the lack of standardized resource base structure, the maintainability of resources will be relatively low, and the cost of updating and maintenance will become high.

(3) The mechanism guarantee needs to be further strengthened, and a dynamic tracking and evaluation system has not been formed

The construction of digital educational resource sharing library aims to provide learners with high-quality and diversified educational

resources, but only providing resources is not enough. Without a dynamic tracking and quality evaluation system, it is not only impossible to detect and evaluate learners' learning effects; And it is impossible to evaluate and monitor the resources.

3. The construction plan of provincial first-class curriculum resource sharing library under the digital environment

In order to solve the many problems existing in the resource sharing database and fully consider the influencing factors of the resource database construction, we have developed a new scheme for the construction of the provincial first-class course resource sharing database under the digital environment.

(1) Building a "five-party linkage" coordinated construction of diversified resource database and data specification system architecture

The construction of provincial first-class course resource sharing database is a complex systematic project. Only through the joint promotion and participation of government departments, industry organizations, enterprises, colleges and teachers can we promote the sharing of educational resources and complement each other's advantages, and improve the quality and effect of education and teaching. Therefore, we should establish a "five-party linkage" system, integrate the "government, bank and enterprise" social forces into the construction of the resource library, use the "school, school teacher" education forces to interconnect, give play to the lead of famous teachers, expand the scope of radiation, integrate high-quality resources, and finally form a five-party joint force to achieve resource co-construction and sharing.

In this system (as shown in Figure 1), government departments are mainly responsible for providing policy and financial support, planning and organizing coordination, setting up corresponding institutions responsible for formulating policies and planning, and coordinating forces from all sides to jointly promote; Industry organizations are mainly responsible for providing industry resources and professional support, and providing professional personnel training, practical experience and the latest industry information for the shared database; Enterprise units mainly provide practical resources and practical support, and provide career planning and case analysis of actual projects for the shared library; Colleges and universities mainly provide educational resources and teaching support, such as curriculum design, teaching methods and assessment criteria; And individual teachers mainly provide teaching experience and teaching resources, such as teaching cases, courseware and course videos.
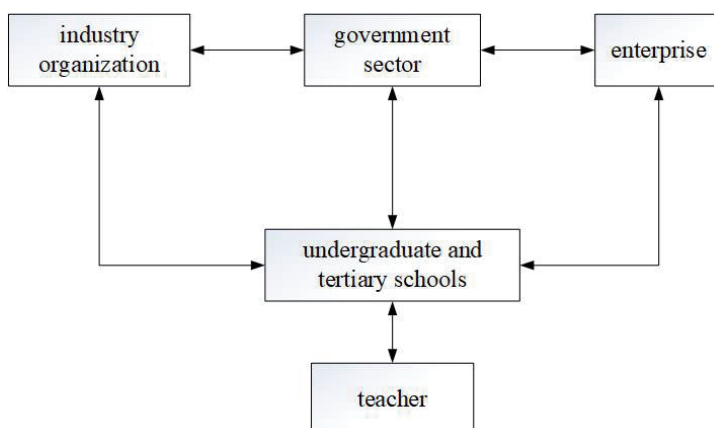

Figure 1 Multi-resource database construction and data specification system architecture promoted by the "five-party linkage"

(2) Establish a whole-process, multi-module resource database architecture

The digital education resource sharing library is a clear structure composed of seven roles: resource administrator, resource construction unit, course service center, resource processing center, course review experts, course teachers and users. This structure assigns different responsibilities and tasks to different roles to ensure the efficient operation and sustainable development of the digital educational resource sharing library. The resource administrator is the manager of the entire shared library and is responsible for the overall planning and management of the shared library; The resource construction unit is responsible for the construction and maintenance of first-class course resources; The course service center is responsible for course service and support; The resource processing center is responsible for the production and technical support of digital educational resources; Course review experts are responsible for evaluating the course content and teaching quality; Curriculum teachers are responsible for teaching and application; Users are the ultimate beneficiaries of the shared library of digital educational resources. They can not only use the resources and courses in the shared library, but also provide feedback and suggestions to promote the development and improvement of the shared library.

(3) Establish a dynamic tracking mechanism for provincial first-class course resource learning

The provincial first-class course resource sharing library has established a dynamic tracking mechanism for resource learning to track and monitor the educational resources in the library and the learning behavior of learners in real time. First of all, the data generated by learners in the learning process is collected in the resource sharing database to track and analyze the learning behavior of learners. At the same time, the use of resources in the resource sharing library is analyzed and evaluated in real time to understand learners' preferences and needs for different types and formats of resources. Then, through the analysis of learners' behavior data and resource usage data,

personalized resource recommendation services are provided for learners. Finally, through the evaluation feedback of learners, the advantages and disadvantages of resources are understood, and the resources are evaluated and improved accordingly.

Through dynamic tracking of these aspects of resource learning in the provincial first-class course resource sharing library, the shared library can optimize the resources and services of the shared library by constantly tracking and analyzing the behavior and needs of learners, and provide better learning experience and support for learners.

(4) Establish a dynamic quality assessment system for provincial first-class course resources

A multi-resource dynamic quality assessment system has been established in the provincial first-class course resource sharing database to conduct multi-faceted and comprehensive quality evaluation and monitoring of educational resources in the shared database to ensure the quality and sustainable development of resources. In this evaluation system, the resource evaluation index system mainly evaluates the content, structure, technology, teaching design, teaching effect and other aspects of resources. The quality monitoring mechanism is to comprehensively and timely inspect and evaluate the educational resources in the shared library; The user evaluation feedback mechanism is mainly to collect the evaluation and suggestions of learners and teachers on the resources in the shared library; The dynamic update mechanism is to constantly update and upgrade the educational resources in the shared library.

With the support of these dynamic quality evaluation systems, the provincial first-class course resource sharing library has established a scientific and reasonable evaluation index system, monitoring mechanism, user evaluation feedback and dynamic update mechanism to ensure that the resources in the shared library are always in a good quality state and provide high-quality resources and services for learners and teachers.

4. Summary and outlook

As an important strategy for the development of higher education, the construction and management of the provincial first-class course resource sharing database under the digital environment is an urgent need for the development of higher education. On the basis of analyzing the construction and management problems of the current curriculum resource sharing database, we put forward new construction ideas and concrete measures, which mainly include constructing the system structure of "five-party linkage" coordinated promotion, establishing a unified system structure and data and interface standards, establishing "resource learning dynamic tracking mechanism" and "multi-resource dynamic quality assessment system". In order to improve the sharing and utilization efficiency of curriculum resources and promote the development of educational informatization.

In the future, with the continuous development of digital technology, the development trend of educational informatization will be more obvious. We need to pay more attention to the quality and effectiveness of educational resources, emphasize the quality monitoring, evaluation and feedback of curriculum resources, and improve the quality and utilization efficiency of resources. We look forward to seeing more beneficial explorations and practices in the future to promote the further development of education informatization.

References:

[1] Opinions of the Ministry of Education on Strengthening the Application and management of online Open courses in colleges and universities [EB/OL].(2015-04-06)[2015-04-16]. The Ministry of Education of the People's Republic of China: http://www.moe.gov.cn/srcsite/A08/s7056/201504/t20150416_189454.html.

[2] The Ministry of Education and other eleven departments jointly issued the Guiding Opinions on Promoting the Healthy Development of Online Education [EB/OL]. (2019-09-30)[2019-09-30]. The Ministry of Education of the People's Republic of China. http://www.moe.gov.cn/jyb_xwfb/gzdt_gzdt/s5987/201909/t20190930_401761.html.

[3] Youfu Wang. The development trend of online open courses in China from "Document No. 3" [J]. China University Teaching and Learning,2015(7):56-59.

[4] Yunfei Li,Jiajing Liang. Current situation and future of the construction of digital educational resource sharing database [J]. Educational Informatization Research, 2020(5):13-19.

[5] Guoyong Wang. Resource base construction of online education in the context of big data [J]. Wireless Internet Technology, 2020(14):20-21.

[6] Chunshu Lin. Research on project performance evaluation index system of Professional teaching resource bank in Vocational education [J], Jiangsu Higher Vocational Education, 2020(1):82-91.

About the author: Li Tao, male, born in Zhengzhou, Henan Province, Ph. D. candidate in University of Electronic Science and Technology of China, Associate Professor in Henan Open University. His research interests include machine learning, artificial intelligence, resource database construction, etc. Wang Hui, male, born in Zhengzhou, Henan Province, Master candidate, Associate Professor, Henan Open University, Research interests: Computer application, digital resource application, etc.