Application research of college English teaching resources based on knowledge base management platform

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Abstract. In this paper, based on the knowledge sharing in the college English teaching efficiency is low, and the existing network auxiliary teaching platform in the "information explosion" of potential crisis, with the demand of the teachers and students of high level of knowledge management, make full use of computer network technology, network database technology, on the basis of knowledge discovery technology. This paper constructs a platform model of college English teaching resource system based on knowledge base management platform, and expounds and analyzes the main function modules, implementation technologies, and attention matters in operation and management of this platform. This platform can provide rich knowledge base resources and convenient interactive communication, and improve the level of knowledge management in English teaching. Constantly improve the quality of teaching. Of great significance.

1. Introduction
In the process of college English teaching, teachers and students have not only accumulated a considerable amount of knowledge [1-2]. And will encounter all kinds of new problems, need to seek new knowledge to solve. Under the traditional teaching mode. Lack of convenient channel of knowledge sharing between teachers and students, with all kinds of network teaching platform (auxiliary) put into use, to some extent, solve the above problems, in the network platform operation, have a rapid increase in all kinds of information, especially the exchange information, the information contains a large number of valuable in the explicit knowledge and tacit knowledge, need to be archived on a regular basis. If we only do mechanical data backup, but do not do professional management of relevant knowledge, we cannot rise from "data management" to "knowledge management". The knowledge contained in information is hard to apply, adding storage overhead and creating "data graves."

Knowledge management refers to the construction of a quantitative and qualitative knowledge system in an organization, so that the information and knowledge in the organization can be continuously fed back into the knowledge system through the process of obtaining, creating, sharing, integrating, recording, accessing, updating and innovating [3-5]. Form a continuous cycle of accumulation of personal and organizational knowledge, and become the intellectual capital of management and application in the organization. The essence of knowledge management is to seek the best combination of information processing ability and human knowledge innovation ability. Maximize knowledge sharing throughout the management process [6-7]. Effective knowledge management in college English teaching can promote the flow of knowledge in foreign language colleges. Improve the efficiency of individual teachers in acquiring knowledge, as well as the application and innovation ability of knowledge, and create a good knowledge environment for students' personalized and active learning. In order to implement knowledge management, it is necessary to build a perfect knowledge base system to
acquire, store, retrieve, maintain and distribute knowledge. And integrate with other kinds of network teaching (auxiliary) platforms to form a virtuous circle of "knowledge sharing - knowledge application - knowledge innovation - knowledge sharing". Based on computer network technology, network database technology and knowledge discovery technology, this paper constructs a web-based college English teaching knowledge base system platform model. The main function module, realization technology and operation management of the model are discussed.

2. Objects of knowledge management in college English teaching

In college English teaching, the objects of knowledge management mainly include teachers' personal knowledge, students' personal knowledge, organizational internal knowledge and organizational external knowledge [8-10]. Personal knowledge of teachers includes knowledge possessed by teachers and knowledge needed by teachers. Teachers are engaged in the teaching and research of English majors. Accumulated a wealth of teaching resources and teaching experience, itself also needs to continue to learn, supplement new knowledge. Students' personal knowledge includes knowledge about students, knowledge needed by students and knowledge possessed by students. In the first place. College English teachers should not only take charge of the teaching of English majors, but also take charge of the public English teaching of other majors in the whole school. Students from different majors in the same class have great differences in their English proficiency and interest in English, so teachers should teach students in accordance with their aptitude. It is necessary to master the knowledge about students. Secondly, under the personalized active learning mode of college students. Different students need different emphasis on English related knowledge, teachers only know what students need knowledge. Can more pertinently carry on the teaching and the instruction? Finally, students will accumulate considerable personal knowledge in the process of learning English. This knowledge is not only valuable to other students. Moreover, it has some enlightening effects on teachers (such as the application of the latest English learning means and learning tools).

Organizational internal knowledge refers to the internal public knowledge of the foreign language institute. On the one hand, it includes all kinds of teaching (auxiliary) documents related to English teaching, including various personnel training programs, curriculum Outlines, electronic teaching plans, multimedia general teaching resources, etc. On the other hand, it includes all kinds of personal knowledge acquired from teachers and students of foreign language institute. These knowledge flows freely within the foreign language teaching unit. Organize external knowledge, including the knowledge acquired in the communication process between teachers of foreign language colleges and non-foreign language major students of schools, foreign language examination training institutions, enterprises and public institutions, and other external institutions.

In previous English teaching activities, although some forms of communication between teachers and students are often carried out, there is not only explicit knowledge but also a large amount of implicit knowledge in all kinds of knowledge, and there is a lack of convenient and efficient communication platform. Knowledge sharing is not effective and knowledge management is still at a low level. With the rapid development of computer network technology, web database technology and multimedia technology, foreign language colleges in many universities have built a series of network management platforms and network teaching auxiliary platforms for English teaching according to their own characteristics. This kind of platform improves the level of knowledge sharing in English teaching to some extent, but it does not have the function of knowledge management in the real sense. In the operation process of such platforms, on the one hand, new knowledge is constantly generated, on the other hand. Users put forward higher requirements for knowledge management level. It has become an inevitable trend of college English network teaching development to build a web-based knowledge base system platform and integrate it with other relevant English network teaching management platforms and English network teaching auxiliary platforms.
3. Knowledge base system model
Aiming at the four kinds of knowledge in college English teaching, this paper presents a platform model of college English teaching resource system based on knowledge base management platform. It mainly includes user access interface, knowledge catalog database, knowledge base, knowledge retrieval module, knowledge distribution module, knowledge maintenance module, knowledge community, English teaching practice community, teachers' personal teaching website and other parts.

(1) User access interface. Including the general user access interface and system administrator interface, providing a window for application and knowledge acquisition, designed to be web-based. Users access according to their personal account passwords. Different accounts, with different permissions, you can do different things.

(2) Knowledge catalogue. Knowledge catalogue is a database formed on the basis of the evaluation of organizational knowledge resources. It collects the description of organizational knowledge resources and can reveal the relationship among various knowledge items and provide corresponding link services. The catalog of information and knowledge is revealed by the knowledge meta-model. The metamodel includes: knowledge provider, knowledge format and mode, knowledge use, knowledge acquisition mode, knowledge acquisition time, knowledge user permission level, knowledge application scope, and connection with other knowledge. Knowledge catalogs can be built from relational databases.

(3) Knowledge base. The knowledge base consists of file server, database server and web server. The structure of each knowledge base depends on the storage and management of the storage or knowledge. Although each library is independent, together they form a single actual repository. User access interface and knowledge maintenance tools are the ways to maintain and access knowledge base contents.

(4) Knowledge retrieval module. One of the most important functions of the knowledge management environment is to provide users with a rich source of knowledge and any resources to find answers. Efficient search and retrieval rely on appropriate storage mechanisms, multiple search techniques, advanced indexing and classification design, and clear access to independent data sources. There are two typical approaches to data: keyword search and full text search. Both approaches have their merits. Generally, keyword search and full text search are combined. Knowledge management environments must provide sophisticated support for complex work. The ideal technology will support multiple search technologies. It includes: natural language search, distributed search, automatic word root extension, lexicon synthesis, object type and index domain search, concept search, and fuzzy search.

(5) Knowledge delivery module. Knowledge delivery is a method for knowledge base system to send knowledge to relevant users automatically. Push technology is a new technology to reduce information overload by regularly transmitting information needed by users on the Internet through certain technical standards or protocols.

(6) Knowledge maintenance module. Knowledge maintenance tool is used to manage knowledge base, which is a complex process combining system management and knowledge management. Potential categories include: security modes, directory interfaces, network interfaces, information about the physical location of knowledge, databases where different types of knowledge reside, necessary protocols, tools and search engines for accessing knowledge, and distribution tools engines.

(7) English teaching practice community. Practice community refers to the people who need to share knowledge and experience by actually forming a certain work connection for a common purpose. From the perspective of knowledge management, the effective operation of practice community is the key to the construction of learning organization. To provide teachers and students with a good communication space and knowledge sharing channels, this paper gives a network practice community, mainly including bulletin board, English learning BBS, chat room, E-mail, search engine, file sharing area and other columns, the community based on the background web database to build a dynamic website. In the early stage of system operation, teaching practice community can be regarded as knowledge community at the same time. With the accumulation of knowledge, independent knowledge communities can be built as appropriate.

(8) Personal teaching websites of teachers. The website also adopts the dynamic website mode based on the background web database. Teachers according to the assigned account and password to log in,
you can upload to your personal information and course teaching resources (including course is an introduction, electronic courseware, learning methods, teaching resources, task and arrangement of the practice, the teaching resource file format consists of word documents, e-book, website links, multimedia video information, etc., the teacher can also is there a difference in personal websites to provide different professional teaching class different teaching materials. Assign different assignments. Personal teaching website provides message board for students to leave a message.

The bottom English teaching practice community and teachers' personal teaching website are both platforms for teachers and students to share knowledge. It is also a place where new problems and information are constantly generated, which is collected through English teaching practice communities, teachers' personal teaching websites and other channels. By combining knowledge discovery tools with manual extraction, the extracted knowledge is evaluated, and valuable knowledge with high confidence is selected and stored in the knowledge base. Both teachers and students can submit their personal knowledge to the knowledge base system through the user interface. After being reviewed and evaluated by administrators, knowledge base can be added, and knowledge retrieval tools can also be used to obtain knowledge. Through knowledge distribution, users can receive all kinds of knowledge they need in a timely manner.

Knowledge. The administrator of the platform is usually a senior expert of foreign language institute. He needs to evaluate the knowledge submitted by users and acquired by knowledge discovery tools, and manage the knowledge base through knowledge maintenance tools.

4. Software architecture of college English teaching resource system based on knowledge base management platform

In the process of system opening, according to the specific needs of system application, the development of the system adopts B/S and C/S hybrid architecture mode, which can effectively solve the problem of system operation and reduce the pressure on the server.

B/S model with the server as the core, the system of the server for data processing and storage of the main tasks and responsibilities, users want to use a browser can effective connection and data processing, with the client to use low difficulty, system simple portability strong, system maintenance etc, but also has application mode is simple, the server data processing pressure, the operation of the system were more disadvantages such as slow.

C/S architecture takes the server as the platform for data processing. After data processing, it returns to the browsing section. The advantage of C/S structure is that the data processing speed is fast, some data can be processed on the client side, and the response of the client side is relatively fast. Its disadvantages are poor adaptability of the system and high maintenance cost. By comparing and analyzing the architecture patterns of C/S and B/S, the hybrid architecture of B/S and C/S is adopted in the development of mobile integrated network resource management system.

Network integrated resource management system adopts J2EE enterprise level layered architecture. In the hierarchical implementation process, the system is mainly composed of data layer, resource manager GIS, engine and guidance, presentation layer, business layer and so on. The specific architecture is shown in figure 1 below:

Data acquisition platform: real-time acquisition of external data mainly through the interface, including network element and OMC and other related external data acquisition.

Service layer: it mainly follows relevant technical standards to manage data processing. Its main functions include message queue engine, process engine, GIS engine and resource manager.

Business layer: mainly to achieve the corresponding data management and function matching and other related business processing functions. The main function is to realize the system login and data authentication management.

Interface layer: including the browser of the system, resource query, WAP, SMS, MMS, GIS, system architecture, topology display and other display methods.

The whole network integrated resource management system architecture based on SOA architecture, realizes the stability of system structure, through the core of the ESB integration technology and MQ
data management services, can effectively guarantee system of portability, security and stability, conducive to the new business system, convenient system can effectively integrated with other systems.

![Diagram](image.png)

Figure 1. Software architecture of the system

5. **Design of system network deployment**

In the overall design of the English teaching network resource management system, the network deployment structure of the system should be fully considered. Through scientific placement network deployment and network equipment can effectively improve the system of foreign service capacity and security, which is helpful to realize the goal of the proposed system non-functional requirements, according to the network resource management system of the actual needs of the business English teaching situation, this paper design the specific network deployment situation is:

![Diagram](image2.png)

Figure 2. Schematic diagram of network deployment of English teaching network resource management system

As can be seen from the network topology of the system, in the network deployment of the English teaching network resource management system, the first step is to complete the deployment of the core part, which USES the form of redundant multiple backups to meet the reliability requirements of the
main server. By setting up primary and secondary servers, not only content backup is effectively realized, but also the problem of how to continuously complete the service supply when a single link fails is effectively avoided. Redundant copies are done and implemented by the primary server, with the goal of correctly avoiding data inconsistencies between different servers. For the core router, the internal management interruption must be completed by the core route. Each network operator USES VPN to complete LAN access, and VPN channel is directly connected with LAN to meet the requirements of management and regulation. By using VPN technology, the purpose of system user identity verification is achieved, and group user access system control is also completed. Fundamentally ensure the system in a secure environment. At the same time, for Internet users, in order to meet the needs of network resource access, this paper sets up firewalls and gateways to ensure the security of the system, and USES the double-insurance interception method to prevent illegal users from encroaching and attacking the system more scientifically. Furthermore, it effectively guarantees the security of the system in network deployment and practically realizes the non-functional requirements of security management proposed by the network for system development.

6. Database partitioning

This platform USES MS SQL Server database management system as the organization, storage and management of data. This platform belongs to the system development environment of Microsoft company, so their collocation and integration is very effective. System logic and physical structure diagram are as follows:

![System function structure diagram](image)

![System physical structure diagram](image)

Database is composed of tables, a table can only belong to a database [17], boutique resource sharing platform only apply a database (datagxpt.mdf) is enough, but to establish the application table in the database.
The most basic data objects in the MS SQL Server database are views and tables, and of course, there are other data objects such as sequences, indexes, stored procedures, functions, synonyms, packages, and triggers.

7. Conclusion
This paper presents a college English teaching resource system model based on the knowledge base management platform. According to the characteristics of English teaching activities, it constructs a knowledge environment including individual knowledge base of teachers, internal knowledge base of organizations, external knowledge base of organizations and student knowledge base. Teachers and students can acquire and use knowledge through knowledge retrieval tools and knowledge delivery tools: knowledge base administrators manage knowledge base through knowledge maintenance tools. English teaching practice communities and individual teaching websites are not only important sources of knowledge acquisition in knowledge base, but also places of knowledge sharing, application and innovation. The system platform can well support knowledge management requirements and improve the quality of English teaching. It is of great practical significance to enhance teaching effect and guide and support students to carry out personalized learning. The web-based English teaching knowledge base system model proposed in this paper has strong feasibility and important application value. We will do further research on this.

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