

Wiki based development of topic oriented collaborative knowledge construction network environment

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Abstract: The goal of collaborative knowledge construction is to form valuable public knowledge for learning groups, rather than simply improving the contents of learning individuals' minds. It focuses on the construction and improvement of group knowledge. Therefore, as a new teaching concept, collaborative knowledge construction has attracted more and more attention. Wiki is a kind of social software in the Web 2.0 environment. Because of its unique advantages in the process of topic based learning and collaborative knowledge construction, it constructs a topic based collaborative knowledge construction model in the network environment.

1. Introduction

Through factor analysis, the process model of collaborative knowledge construction based on topic is formed, and then the preliminary model of collaborative knowledge construction based on topic is constructed. This study further analyzes the role and significance of Wiki in thematic learning and collaborative knowledge construction, and completes the construction of Wiki network environment, the design and development of website columns. Taking modern education technology as an experimental course, this paper conducts three rounds of action research on topic based collaborative knowledge construction in Wiki network environment, and modifies the mode of topic based collaborative knowledge construction in network environment.

2. How to build the platform

At present, there are two main ways to build wiki platform. One is to use the services provided by the commercial wiki portal to register users and organize their own required item structure. This method is simple and easy to use, without too high technical threshold. It can focus on enriching the content of the website. The disadvantage is that there are not too many choices for the structure, interface and operation control of the website, and the function of the website is not satisfactory. The second is to apply for hosting in a commercial hosting space or build a platform in a campus network server, and use open source code to build a wiki system, which can have its own independent domain name, space and page style. This way requires certain technical conditions, but compared with the traditional development environment based on Dreamweaver, asp.net, etc.[1]is way is more suitable for teachers to develop by themselves. On the one hand, it can be developed according to teaching. On the other hand, it also has great security. Building a platform based on campus network, whether from the perspective of virus prevention or from the perspective of preventing the participation of irrelevant personnel, its security is better than the form of registered users of commercial portal website, which is convenient for teaching management.

2.1. Main system components and introduction of building wiki platform

2.1.1. Development environment.

At present, most of them choose commercial operating system windows or free operating system Linux; most of them use PHP, ASP, JSP language. PHP is an English hypertext preprocessing

language (Hypertext The abbreviation of preprocessor) is an HTML embedded language. PHP is quite similar to ASP of Microsoft. [2] is a "script language embedded in HTML document" executed on the server side. The language style is similar to C language. Its unique syntax mixes C, Java, Perl and PHP's self innovative syntax, which is refreshing. PHP (PHP: hypertext preprocessor) is one of the most popular server-side scripting languages. After several times of development, it has some features of advanced languages, such as object-oriented programming, shell programming, etc. at the end of 2006 after the introduction of PHP5, a total of 19 million domains installed PHP. It has the following advantages:

2.1.2. Database system

Commonly used database systems mainly include SQL server, mysql, access, etc. At present, MySQL is widely used in small and medium-sized websites on the Internet. Because of its small size, fast speed and low total cost of ownership, especially the characteristics of open source, many small and medium-sized websites choose MySQL as their website database in order to reduce the total cost of ownership. It supports Linux, windows and other operating systems, and provides APIs for PHP and other programming languages. It can not only be applied in the client server network environment as a separate application, but also be embedded in other software as a library. It can provide multiple database connection ways such as TCP / IP, ODBC and JDBC, and provide management tools for managing, checking and optimizing database operation.

There is no doubt that MySQL is the most popular database management software (DBMS) at present. According to the survey of Evans Data Corporation, a third-party Market Research Organization, there are more than 11 million activated installations and more than 50000 downloads per day. Figure 1 shows the usage frequency of MySQL.

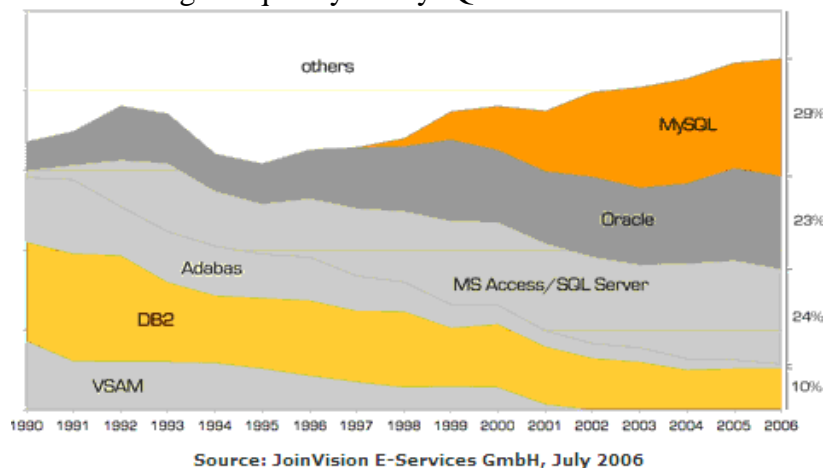


Figure 1. MySQL usage frequency

MySQL has 25% market share of all databases used by developers in the past two years. [3] these users include some well-known large companies and organizations, such as Yahoo, Alcatel lucent, Google, Nokia, youtube and zappos.com. With MySQL being merged by sun in 2007, MySQL will play an increasingly important role in enterprise applications.

2.1.3. Web server

Apache is an open source HTTP server, which can run in most calculator operating systems. Because of its multi platform and security, it is widely used and becomes one of the most popular web server-side software. Since April 1996, Apache has been the most popular HTTP server on the Internet: in May 1999, it ran on 57% of web servers; by July 2005, it had risen to 69%.

2.1.4. Engine introduction

Building a wiki site requires a wiki engine. Wiki engine, or wiki software, refers to the software used to build wikis. According to the introduction of famous wiki engines on Wikipedia, the list of typical wiki engines is as follows:

Table 1. Typical wiki engine and introduction

Parameter Common engines	development language	Installation requirements	Remarks
MediaWiki	PHP	Apache+PHP+MyS QL	Select IIS for the engine server used by Wikipedia (part of the source code needs to be modified)
SushiWiki	C#	IIS+ASP+ (Optional database server)	Good Chinese support
OpenWiki2004	ASP	IIS+ASP+ODBC	It is a very excellent wiki engine. At present, there are few wiki engines in ASP, so openwiki is undoubtedly the first choice of the server based on IIS + ASP. Support Chinese (general)
HDWiki	PHP	Apache+PHP+MyS QL	Chinese wiki system Similar to the Media Wiki environment

After considering the characteristics of each wiki engine and the needs of secondary development, this research chooses interactive online open source wiki system (HDWiki) as the core wiki reference program developed on this platform. As the first Chinese wiki system with independent intellectual property rights in China, interactive wiki open source system (HDWiki) was officially launched by interactive online (Beijing) Technology Co., Ltd. (<http://www.haodong.com>) on November 28, ^[4] providing free, easy-to-use and powerful wiki station building system.

2.2. HDWiki operation environment and installation steps

2.2.1. Operation environment of HDWiki.

The operating system requires HDWiki to have cross platform features, which can run in Linux / FreeBSD / Unix, Microsoft Windows 2000 / 2003 and other operating system environments. For example, Windows users need to change the initial password root of MySQL for windows to avoid cross directory file reading and writing. Linux / FreeBSD is recommended for better stability and load capacity. If you use Windows system, PHP needs to be installed in ISAPI (non CGI) mode.

2.2.2. Installation steps

The latest version of HDWiki and HDWiki 4.0.5utf-8 are downloaded from the official website of HDWiki <http://kaiyuan.hudong.com/> because the GBK version does not support multilingual text and some special symbols. Upload all files under the HDWiki folder to the root directory of the server, check the following files or directories to make sure they are readable and writable (please set the property of the following folders to 777 for UNIX and Linux servers):

2.3. Use of main function modules

Through discussion and consultation, teachers can enter the category creation through the background management of Wiki platform to create the topics to be discussed. Under the supervision and guidance of teachers, learners can create and collaborate on each topic, and learn relevant knowledge and skills. And with the teacher through the attachment or edit page in the form of resources to the specified page. ^[5]Wiki will automatically record the upload time and the name or IP of the uploader. In Wiki, learners can modify the content of the web page or restore the previous content, discuss and study the common topics, and all the modifications and contributions will be recorded automatically. Individual learners can view the gap between individuals and other members of the group or other group members through page browsing to complement each other, so as to enrich the learning content; teachers can also view the learning situation of students through various records, and make comprehensive evaluation. The function and use of each functional

module are described in detail below.

2.3.1. Classification area

According to the composition of special learning website, the classification page is created according to the needs of this study, as shown in Table 2.

Table 2. Site page classification list

Classification	sub classification	content	subject
Structured knowledge	Modern educational technology	Including the specific contents of each chapter of the course and related courseware	Teacher
Thematic content	Multimedia courseware making	Under the specific topic classification, different topic pages can be created to construct collaborative knowledge	Student body Teacher led
	Computer network education		
	Teaching design and Practice		
Scalable resources	Extend resources	Including shared multi-faceted knowledge	Student body
	Learning tools download	Include shared software	Teachers and students

To create a new classification in the classification area, you need to enter the background management page. Because the teacher has the administrator status, you can create a classification. The content of structured knowledge is mainly added by the teacher. Students can download it selectively according to the content, and learn relevant knowledge in combination with the classroom. Under the thematic content classification, multiple classifications can be created. In combination with the teaching content, the teacher and students can determine the thematic content through face-to-face, chat software QQ group, email, and platform. Under the thematic content classification, the teacher can create sub classifications to carry out thematic learning. Under each topic, we can create several topics for this topic, the main body of which is students, and the teachers play the role of guidance and supervision. Under the classification of thematic content and extended resources, students' collaboration can be reflected, and public knowledge can be formed in the form of formal group or informal group. Under each topic, a topic discussion page can be formed around the topic. Members can complete the learning tasks through close communication and active collaboration. The achievements not only reflect the crystallization of collective wisdom, but also reflect the different contributions of each member. If the students are divided into groups, it can show that the group performance is closely related to the individual performance. This function can stimulate the enthusiasm and initiative of the members in the group.

2.3.2. Recommended terms

The recommended terms module is located in the center of the home page, which is recommended or cancelled by users with administrator rights. The recommended terms module is mainly used for teachers to send out special learning requirements and notices and other related content, and also can be used to recommend group theme pages with fast update speed and high quality, so as to encourage learners' enthusiasm. And we can recommend the content that we hope to get your comments as a recommendation entry to the eye-catching position of the home page, so as to attract different team members to evaluate it. To achieve the goal of diversified evaluation. In addition, if the teacher gives the students some management authority, they can recommend the topics in their own group, or they can recommend the pages to be discussed for everyone's reference and get the support of collective efforts.

2.3.3. Version control

The version control function of the platform is presented in the background. Version control is

realized through text database or relational database. Keep the version of each page change. Even if participants delete the whole page, teachers or administrators can easily recover the most correct version of the page from the record and retrieve the previous version at any time: version control not only makes it possible for multiple people to work together, but also protects the content from losing version comparison. Each page of a wiki site has an update record, which can also be compared with the previous page, the wiki will automatically find out the differences between any two versions. If learners have certain permission to enter the background, through version control, they can easily see their own learning process and results, and also make it easier for teachers to understand and track learners' learning.

3. Conclusion

The platform has page locking function. Some main pages can be locked with locking technology, so outsiders can no longer edit them. For example, the topic learning requirements published by teachers and the final topic collaboration results can be locked through the page locking function. Through it, the teacher publishes some important contents here, forms the reference evaluation object, the student may carry on the self-evaluation and the mutual evaluation according to it. This is conducive to learners' timely reflection, continuous improvement and accumulation.

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