

## System Design based on Moodle

Shen Xiaojun<sup>1</sup>, Yuan Jiugen<sup>1</sup>, Xing Ruonan<sup>2</sup>

Education School ,Jiangxi Science & Technology Normal University ,Nanchang, China

Communication School, Jiangxi Normal University

yjgnine@163.com,Nanchang, China

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**Abstract.** Moodle is open source software and it can build course management and teaching platform for teachers. This paper, according to the latest network teaching theory and teaching practice, discusses the development and implementation of teaching system based on Moodle platform. Based on combination with the curriculum development theory and related theories of Moodle course, we designed the teaching system under the environment of Moodle design. The introduction of Moodle provides an economical and applicable, open-source information teaching environment for teachers. It promotes curriculum's progress and the development of School's information. It also makes a contribution to the popularization and application of the promotion to open source software in campus.

### Introduction

With the development of curriculum in the network environment is becoming the goal that the teachers pursues. With the application of information technology under the education pattern, the teaching model and concept of the classroom is of the significant changes [1]. Compared with the traditional teaching in the past, class under the informationization environment is added a lot of vitality and fresh elements. Therefore, teaching efficiency and effect are improved a lot. In 2007, Moodle course management system, as the learning platform with good learning content and environment, was firstly brought into the national educational technology training for teachers. The corresponding training and research activities are held all over the country.

The development and implementation of the network course of Moodle aims at improving the teachers' autonomous development of web-based course awareness and enhancing the ability of curriculum development, and promoting the construction and development of network course, as well as improving quality and ability of independent design of network course and teachers' autonomous development.

### Overview of Moodle

Moodle, a course management, system (CMS), is not only in Moodle, but also could be applied to the students online learning courses and teachers' teaching upon online courses, which is to help build the network course platform. Along with the upgrade and release the new version, Moodle's new functions are constantly discovered and dug out. At present, Moodle is not only used in universities, but also in middle schools, primary schools and the various training institutions.

#### A. *Feathers of Moodle*

The Moodle platform is simple and practical to use. In the use of Moodle, users need not the professional level of computer theory, nor the development of the network course programming technology.[2] Users that use Moodle only need to have a computer that belongs to them, even at home; they could easily create their own online courses in accordance with the demand, and upload network courses designed by themselves to public teaching platforms sharing them with other people. The Moodle system uses the modular structure, which makes the flexible character of the platform outstanding, modification and expansion convenient.

### *B. Main Modules of the Moodle Platform*

The main modules of the Moodle platform are (1) Operation module (2) Chat module (3) voting module (4) discuss the module (5) vocabulary module (6) test module (7) resource module (8) survey module (9) WI Xi module etc. Questions are stored in the item bank upon a certain order. The system also has the automatic scoring and feedback function, which can reduce the workload of teachers. Resource module can be remote upload, even be edited directly in the relevant interface of Moodle, and provide the link address.[3] Investigation reports on online network are presented as diagrams; data with different files' supporting, such as EXCEL, CVS, word. The validity of the questionnaire is obvious.

## **The Function of Moodle System**

### *C. System Management Function*

It mainly includes modular dynamic management function, permissions operation and management function, user registration management function etc. The user can conveniently create relevant website which can be used for education and training through the Moodle platform. In this platform, as every function module was under the dynamic management, the user can install or uninstall some modules anytime and anywhere according to the demand, the administrator can also optimize a variety of functions of the platform, flexibly limits the permissions of the log-in users', and allows the relevant users' permissions..

### *D. Network Teaching Functions*

In the Moodle platform, the teachers can learn tracking view student learning course, state browse report of their experiment, monitoring and tracking their login time, studying location and course, and tools etc. without any limitation.

### *E. Courses Test Function*

The test function of courses includes two parts: test and analysis of the two parts. The test department is an independent test bank, consists an online test system composed of a powerful, teachers can be randomly from the question database, select the corresponding questions to test students.[4] The test questions are multiple choices, fill in the blanks, and judge a problem and matching questions. Analysis part includes the analysis of performance statistics data; the teacher can set the type and the difficulty in accordance with the needs of teaching, evaluation of test.

### *F. Teaching Function*

The teacher may carry on curriculum teaching according to the online teaching module in Moodle platform which includes all general network teaching functions, such as discussion, notes, dialogue, vocabulary, practice, investigation, training, project etc.

## **Design and Realization of Curriculum System based on Moodle Platform**

### *G. Design Principle*

Teaching through Moodle platform based on Moodle teaching platform System includes two parts: First is the curriculum teaching and learning. Second is the support of environment. the main objectives of the subject are: To combine the course of teaching and learning theory and the open source software Moodle application technology organically, to design and develop a kind of teaching and management platform based on Moodle, to provide effective environment support for teachers' developing and implementing information technology curriculum, so as to enrich the network curriculum resources, implement the corresponding cooperation between teacher and student and providing communication environment, reasonable evaluation and scientific teaching management and monitoring.

The target system uses the network teaching platform in conjunction with network distributed

technology and B/S software development. The university teachers and students can easily login platform for teaching and learning via the internal LAN. [5] Other external users can also land platform through the Internet to study through visiting each system modules and course.

*H. The Main Function Modules of Design Platform*

The platform is composed of five modules, which are management center, learning and work center, exchange and cooperation center resource center and Exhibition Center, evaluation center. It shown as Fig. 1:

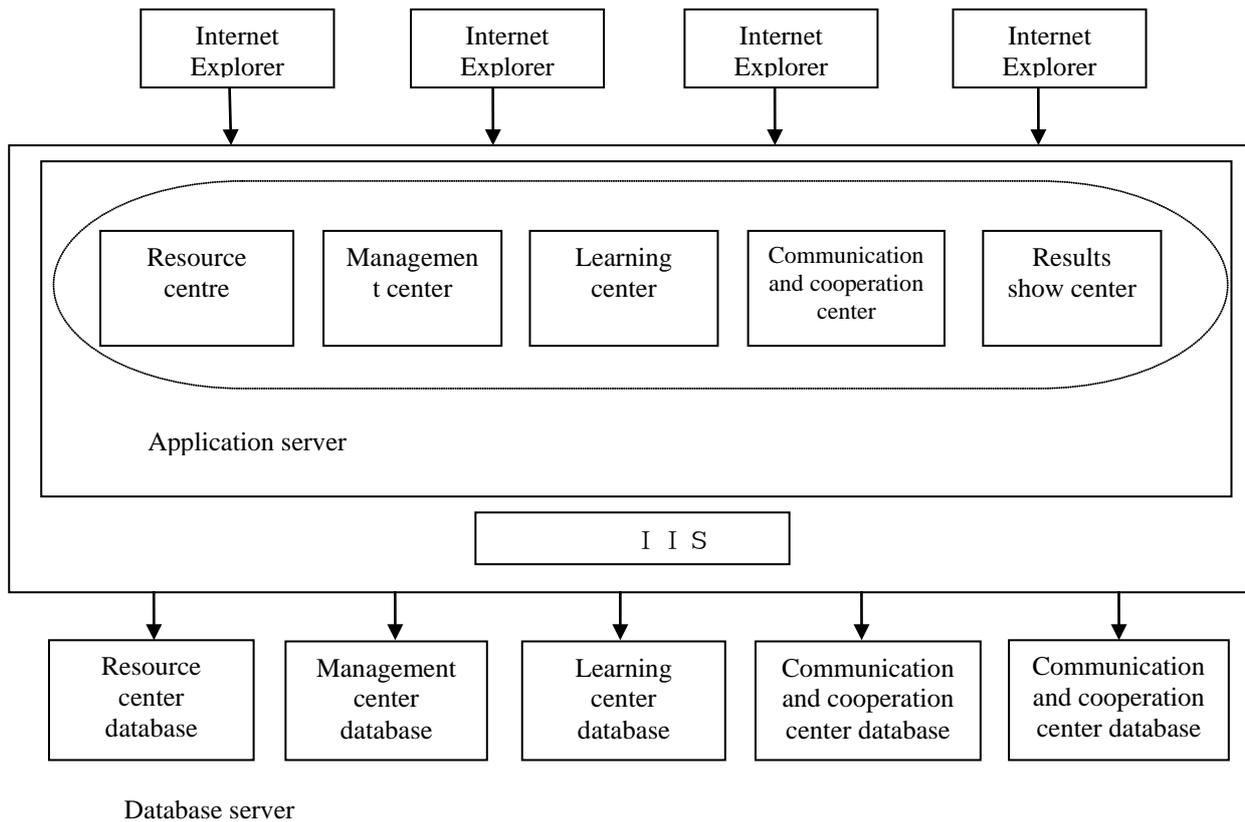


Figure1.Flipped classroom structure graph.

*I. System Architecture*

The system uses the B / S structure, it shown as Fig.2. Through the design of application servers, applicant logic conform in accordance of the standards in the deployment and the implement the application server platform, cope with the operation from the client to the database, in order to shield the physical location of a database, and the differences between the various databases.

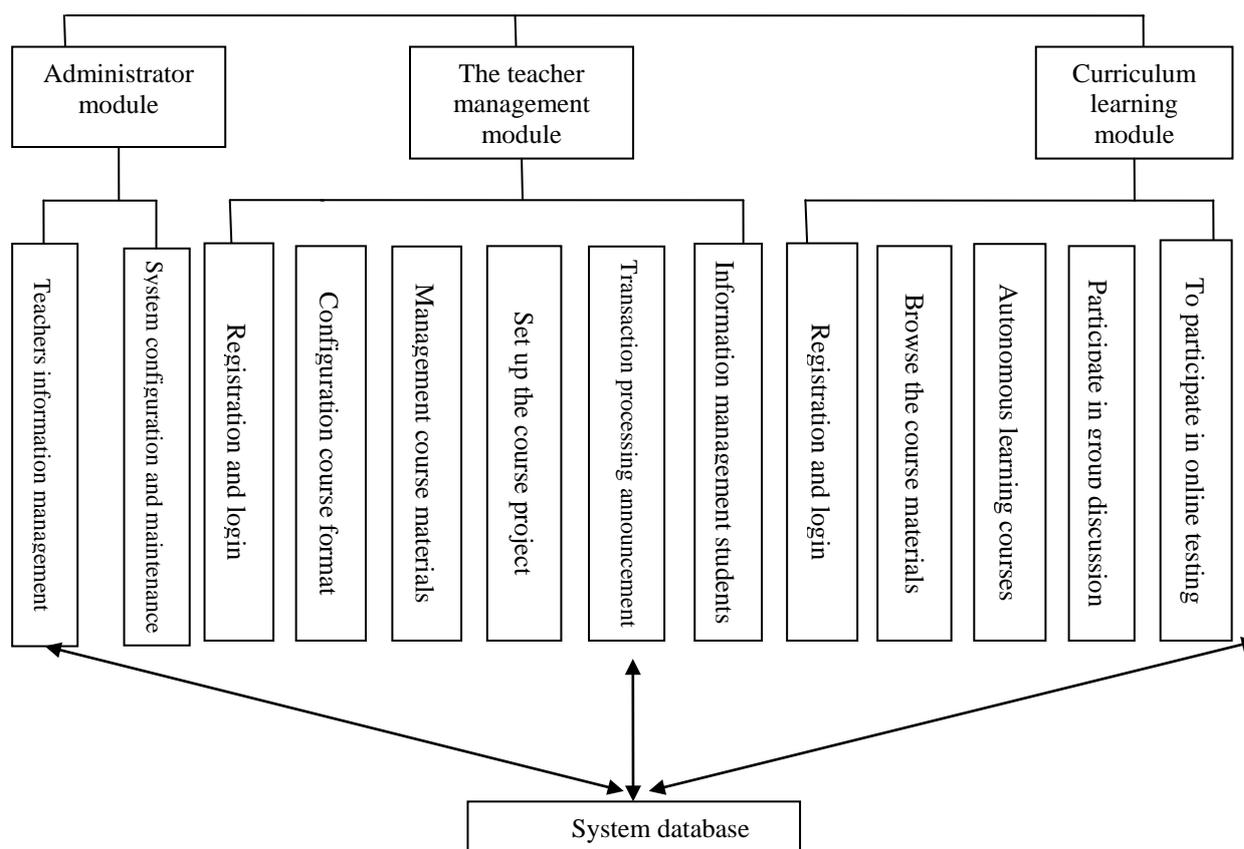


Figure2.Model structure graph

Due to the application of logic stands in a central server, you can use many different hardware, a variety of network operating system, database system to simplifies greatly the management work with quite low cost, make the management of the whole system, the allocation of resources, database operation, the work of the business logic component management and dynamic load such concentrated in the application server.

Giving full play to its inherent potential, mining depth and expansion ability requires us to adopt advanced application architecture and a useful basic principle so that the system can meet the need of business, and adapt to the needs of future development.[6] The design principle of the network application development needs to be followed using network application system. The main principle is: principle and practice; start from the bottom module programming, stepwise assembly and debug, thus completing the whole system development.

## Conclusion

Moodle is an open-source and free software, for the majority of teachers and students studying on the platform, it is easy to use, and avoids the other software's jumbled shortage. It is one of the most ideal platforms for school information network construction.

Students are actively involved in the curriculum design, changing the single learner's roles in Moodle environment. Their autonomous learning ability has been strengthened. The use of Moodle platform not only improves the teachers and students' information literacy who are in primary and secondary schools, but also changes the teachers' teaching and learning concepts, reflects the students' subject status; implements the combination of cooperative learning, independent study and personalized learning. It is also helpful for collaborative development; comprehensively improvement of teachers and students' quality.

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