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Framework Design and Development of Information System for Student Work Management in Colleges and Universities

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Abstract

This paper has designed and developed information system for student work management in colleges and universities for the demand of student management work in one city. First, elaborate and analyze the demand of information system for student work management in colleges and universities, including system overview, data description, functional demand, operation condition and system performance etc, describe the design program of system and then describe external design, database design and user interface design of each module; last, introduce the functional realization of system, test each functional index of system through practical application in one university in one city. Test results have shown that the adoption of this system realizes zero distance communication between students, teachers and school, realize deep and extensive implementation of students ideological and political education work, make information management of student work more orderly, forbidden students' violation of discipline indirectly and improve the working efficiency.

Keywords: information system, student work management, college student management, system development.

1. INTRODUCTION

At present, internet application has attained unprecedented rapid development; various kinds of interest applications are accepted and used by more and more institutions and groups of people. With the increasing enrollment in colleges and universities in recent years, student scale expands rapidly, the development of era promotes the continuous change of their thoughts and behavior and various kinds of information of students increase exponentially. Under the big environment of the popularization of internet as well as giant student information amount, traditional student management work in colleges and universities is difficult to adapt to the demand of student management work, student management work in colleges and universities will welcome more new opportunities and challenges (Amran et al., 2010). At this moment, it needs to set up reliable information system for student work management in colleges and universities based on network technology and stabile of B/S structure, create good growth environment for the quality education and individual development of students and improve the efficiency of students management work. The information construction of student work management is an important of school running management, whether realizing this process relates to the overall efficiency of smooth operation of each category.

Adopting information system for student management in colleges and universities can relieve the working load of people for student management, speed up the processing

speed of student information data, use student information quickly, make various kinds of student management work in an orderly and standard way; the adoption of this system can save labor force, financial and material resources for the school and decrease management cost; this system is with strong interaction and realizes zero distance communication between students and teachers, between leaders and teachers and between students; it will be more reliable for the storage of information data, moreover, the extensive adoption of network will realize sharing of information data and make full use of resources (Secker et al., 2000). Above characteristics will be presented gradually in this management system.

Selection of topic in this paper is based on the human communication challenges between teachers and students and between school and students in one school of one city during the period with rapid internet development and then makes analysis. Start from information system for student work management in colleges and universities based on WEB technology and with adoption of B/S structure, analyze the advantages of system based on WEB technology in network era compared with traditional management method, introduce the functional application of system in details as well as system functional design and realization etc (Bo, 2000). At the same time, the development of this system is with convenient expanding nature, which allows to combining actual situation of school and increase function module to reach the purpose of resources sharing with other subsystems of school and effective and reasonable utilization of school resources. It combines advanced office management model, improves various activities of student management work and work efficiency in colleges and universities, saves labor cost and expands school functions to realize the comprehensive information of student education process (Du and Feng, 2012).

2. SYSTEM DEMAND ANALYSIS

2.1 Targets

Information system design for student work management in business schools is easy and practical, easy to maintain, with simple style and good for publish, browsing and checking for various kinds of information. In system design process, I always follow the practical situation of management suitable for students; at the same time, it meets the overall target and demand of student management. Focus on the principle of people orientation and economic and practical, grasp the center of "serving students wholeheartedly" and let each design detail in information system for student work management in colleges and universities has the necessity of survival.

The main purposes of developing information system for student work management in colleges and universities are realizing paperless office gradually, saving energy and reducing emission in the student work management, at the same time; making standard management for student work, improving office efficiency, making it convenient for the manager to acquire and release student management work information, making it convenient for users to check and offer feedback for related information and using saved large amount of time to make reflection, cultivation and education on the growth and cultivation of college students and then using this to improving the student management level in colleges and universities.

2.2 Data description

After the system making deployment, following data can maintain stability basically, including student administrator details, school details, major details, class details, tutor (headmaster) details and student details etc. The above related data table can be exported from existing educational administration management system and other systems and then stored in database, in which encrypted login password and other

information may exist in administrator details, tutor (headmaster) details and student details three information tables (Cheung et al., 2011; Hou et al., 2014; Tseng et al., 2015). Information system application for student work management in colleges and universities adopts MD5 form to encrypt in a unified way, the initial password is MD5 encrypted "PASSWORD".

3. SYSTEM DESIGN FOR STUDENT INFORMATION MANAGEMENT

3.1 Demand Setting

System deployment framework is as shown in Figure 1. Information system for student work management in colleges and universities will be deployed at the school server room, which makes use of existing school network to connect information system for student work management with internet and enables that whole teachers and students can use information system for student work management through internet in office, classroom, dormitory, other Wifi covered areas or when they are on a business trip.

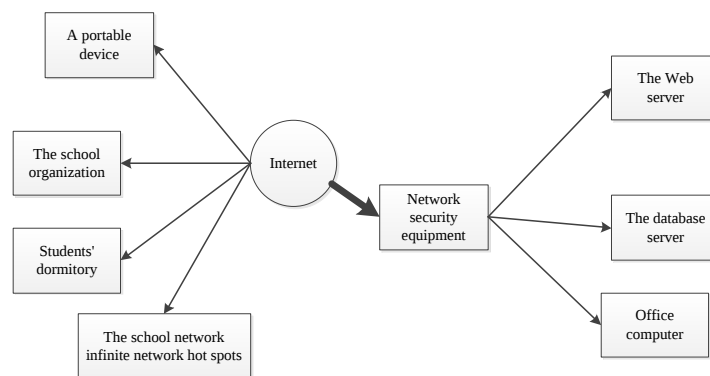


Figure 1. System deployment architecture diagram

In current social network environment, web service has become the most popular method in Internet application. Under this situation, each network user consists of several network terminals including mobile phone and personal computer, while there is default browser in the operation system adopted in current popular network terminal (such as Internet Explorer of Windows operation system, Firefox of Linux operation system, Safari of Mac operation system, Google Android browser of Android system and Safari IOS of IOS system). Based on this network environment, student information management system will adopt B/S mode (Browser/Server), simplify the difficulty of system deployment and save the complexity degree of different platform development clients under the premise of software function, which enables any terminal device connected to internet can use information system for student work management in colleges and universities through the system default browser. In the realization process of information system for student work management in colleges and universities, it also needs to ensure the compatibility of different platform clients.

3.2 Processing Process

As shown in Figure 2, information system for student work management in colleges and universities provides five roles of student, instructor, and person in charge of department student work, leader of school student work and system administrator, who visit and operate information system for student work management with "application subsystem for student", "application subsystem for instructor", "application subsystem for person in charge of department student work" as well as "subsystem for school student work leader and back-stage management" (Ünal and Alır, 2014; Oluwuo and

Enefaa, 2016; Yang and Yang, 2014; Nilesh, 2015). The management system makes integrity constraint for data through database design and ensures the integrity and effectiveness of data in business logic to ensure the data integrity.

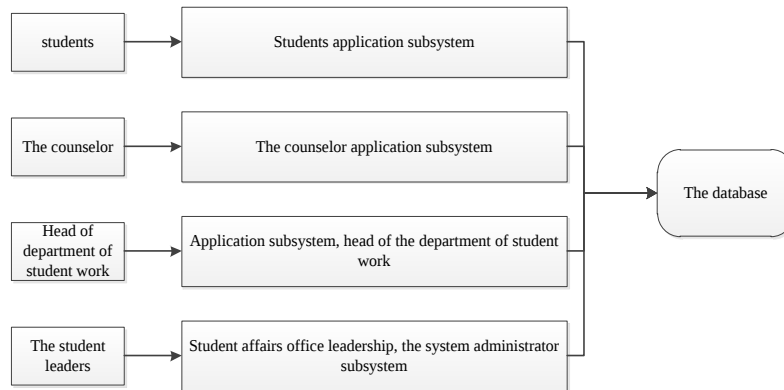


Figure 2. Student work management information system process flow chart

3.3 Detailed design

The overall structural design of information system for student work management in colleges and universities is as shown in Figure 3. The system consists of five parts, including "application subsystem for student", "application subsystem for instructor", "application subsystem for person in charge of department student work", "application subsystem for school student work leader" and "application subsystem for system administrator" (Sedghi et al., 2014; Seeman and O'Hara, 2015; Cope and Staehr, 2005; Beyer, 2008; Kaiser et al., 2003).

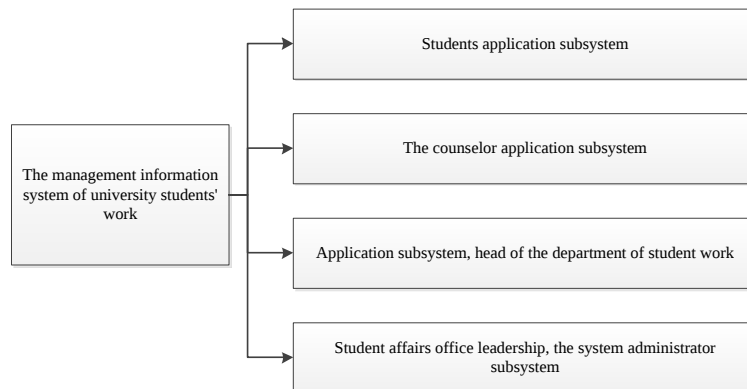


Figure 3. System overall structure design

Each subsystem of student work management information in colleges and universities is open to users including students, instructors, people in charge of school/department student work and leaders of school student work. Users with different activities enter into corresponding subsystems after identity check.

Student application subsystem module design is as shown in Figure 4. Subsystem includes "student personal information management module", "school/department notice module", "offline communication module between teachers and students" and "student opinion feedback module" (Orehovacki et al., 2009; Ajanovski, 2013; Cobarsí et al., 2013; Dyson et al., 2008).

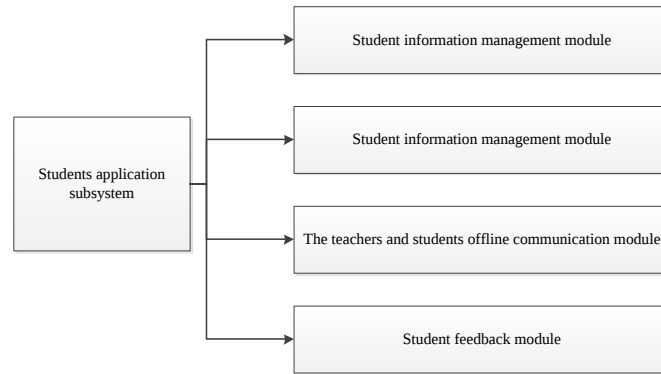


Figure 4. Students application subsystem module design

In "student personal information management module", student can set and revise own basic information as well as safety setting for account login etc; in "school/department notice module", student can check notices from school and department; "in offline communication module between teachers and students", student can send and receive information from class instructor and the system will record the communication information in server automatically; in "student opinion feedback module", student can enter into "student module" through entering student number and password, in this module, the basic information of student can be revised in the option of "personal basic information management"; in the option of "system notice", school released notice can be checked (Recker and Alter, 2012; Olsen and Bryant, 2012; Kacem et al., 2011; Noraziah et al., 2011); in the option of "feedback management", reply information for released feedback information as well as released new feedback information can be checked.

Instructor application subsystem module design is as shown in Figure 5 and the system includes "instructor personal information management module", "school/department notice module", "student absence management module", "student talk record management module", "student home visit information management module", "student feedback management module", "offline communication module between teachers and students" as well as "instructor work report module".

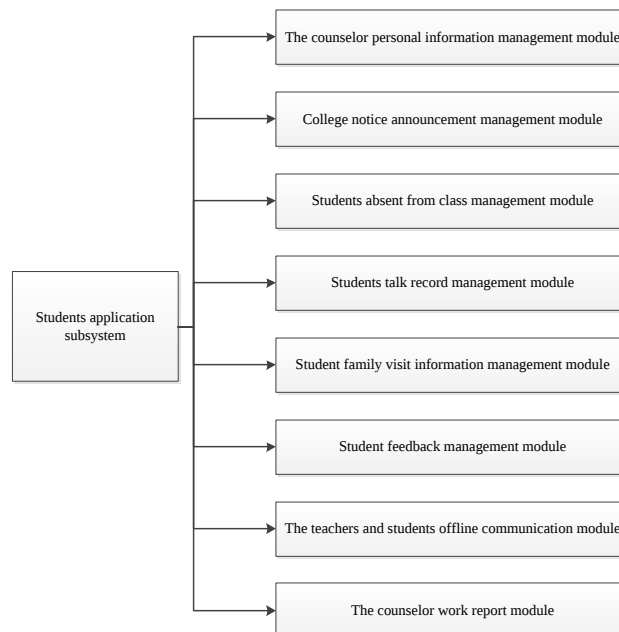


Figure 5. The counselor application subsystem module design

Application subsystem module design for people in charge of department student work is as shown in Figure 6, which includes "personal information management module for people in charge", "department student information management module", "department notice module", "department student absence management module", "department student talk record management module", "department student feedback management module" and "instructor work report management module".

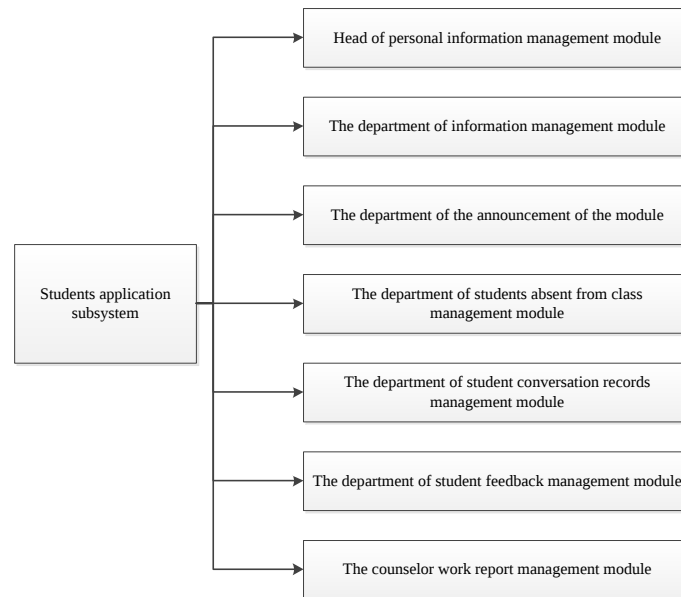


Figure 6. Application subsystem module design, head of the department of student work

4. SYSTEM REALIZATION

4.1 System structure

Information system structure for student work management in colleges and universities is as shown in Figure 7.

4.2 Realization of system main functions

(1) Realizing the function of batch import of student information

In the aspect of realizing the function of batch import of student information, following methods have been adopted: processing of Excel adopts open source library phpExcelReacer.class.php, operation Excel through phpExcelReacer conveniently and then realize the function of batch import of data into system.

(2) Realization of class management function

Front end interactive design has been made through EasyUI, interactive function with user has been realized in a friendly way; in back-stage function realization, operations of class information adding, deleting, revising, checking etc have been realized respectively.

(3) Realization of twining function between instructor and class

It is interface realizing twining function between instructor (headmaster) and class, in the realization of twining function between instructor and class, click the appointment

operation of instructor, select corresponding class to appoint, at the same time; realize the function of revising instructor allocation.

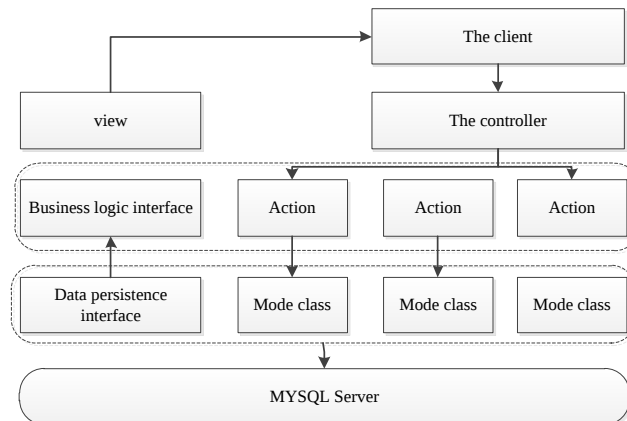


Figure 7. Efficient student work management information system architecture diagram

(4) Realization of student talk record function

It is interface realizing student talk record function. In the design of adding talk record function, make use of time selection plug in provided by EasyUI and present the function of talk time selection in a friendly way. In back-stage design, realize database operation in a simple way through adopting the function of ThinkPHP.

5. CONCLUSIONS

It has been shown in the application of this developed information system for student management in colleges and universities in one business school of one city that the system can decrease the work of people in charge of student work management, speed up the processing spend of student information data, adopt student information more conveniently, make each student management more orderly and standard; the application of this system saves manpower, material resources and financial resources, improves work efficiency and decreases management cost; the characteristic of strong system interaction realizes zero distance communication between teachers and students, between leaders and teachers and between student; the information data storage is more reliable, moreover, the extensive application of network realizes information data sharing and realizes full utilization of resource; promote the comprehensive information process of student education.

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