Design and Application of Management System for Undergraduate Graduation Thesis (Design) of Normal University

Take Guangxi Science and Technology Normal University as an Example

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Abstract. Guangxi Science & Technology Normal University was upgraded from a three-year normal college to an undergraduate normal college in 2015. After several years of precipitation, it is about to undergo the first qualification assessment since its promotion. Graduation thesis (design) is as a qualified undergraduate assessment of one of the most important links. In order to realize the whole process of graduation thesis information management, schools and enterprises use brainstorming and Delphi to conceive the whole process of thesis information management system from thesis title application to thesis archiving so that the college graduation design steps into the pace of information management.

Keywords: undergraduate talent training · graduation thesis system · information technology · academic misconduct

1 Introduction

Chen Baosheng, Minister of Education, pointed out in the National Conference on Undergraduate Education in the New Era:" Talent training is the essential function of universities, and undergraduate education is the root and foundation of universities. The quality and effect of talent training should be taken as the fundamental standard for testing all work." Undergraduate Graduation (Design) Thesis is an important link in the process of talent training in colleges and universities, which plays an important role in cultivating and improving students' ability to solve practical problems with comprehensive knowledge. The graduation thesis link is not only a comprehensive test of the students' learning results, integrity ability and comprehensive quality in the past four years, but also a comprehensive investigation of the school teaching effect and talent training quality. [1].

In recent years, China has successively issued relevant policies to strengthen the management of graduation (design) thesis, comprehensively improve the management level of undergraduate graduation design, and promote the overall improvement of graduation

design quality. ***Notice of the Ministry of Education on Strengthening the Spirit of the National Conference on Undergraduate Education in Higher Education in the New Era (Jiao Gao Letter [2018] No. 8)*** and ***Opinions on Accelerating the Construction of High-level Undergraduate Education and Comprehensively Improving the Ability of Personnel Training (Jiao Gao [2018] No. 2).*** The Article 12 of 40 Articles of Higher Education in the New Era is clearly stated, to strengthen the Graduation (Design) Thesis topic selection, proposal, defense and other links; strictly monitor the form, content and difficulty; improve the quality of graduation (design) thesis.

Although many scholars have carried out relevant research and exploration on undergraduate graduation design in recent years, there are few experience in graduation (design) thesis management system designed for normal universities, especially the newly established normal universities and the actual situation of the university. This paper aims to complete the design and application of this system through the cooperation with enterprises.

2   The Overall Idea of the Paper Management System

2.1   University Graduation Thesis Management System Structure

University research and development graduation thesis management system sees Fig. 1. The system architecture is mainly in B/S architecture or C/S structure. C/S architecture (Client,/Server) is installed the software on the client directly. The system directly with the server requests to meet different functional requirements. B/S architecture (Browser/Server) is the browser in the Web server. The users can use the browser and database interaction to provide users with different functions [2, 3]. Compared with the two architectures, B/S structure can simplify the services of the client and transform and optimize them on the basis of C/S technology. However, the defect is the large workload of the server, which requires the server to ensure high performance. Generally, the corresponding structure can be selected according to the actual situation of university graduation thesis management. The school finally chooses the B/S architecture. This architecture is the current mainstream architecture.

3   Overall Operation of the Thesis System

3.1   Basic Environment and System Architecture

The basic environment supporting the system includes the operating system, storage, backup, load balancing, cloud platform, database, server, network environment, etc.

The system adopts the browser/server mode architecture (Browser/Server mode, namely B/S mode), based on Net technology development, SQL Server mainstream database, Windows operating system and a variety of server platforms, IE 7 above the browser and various browser tools. The system architecture is shown in Fig. 1.
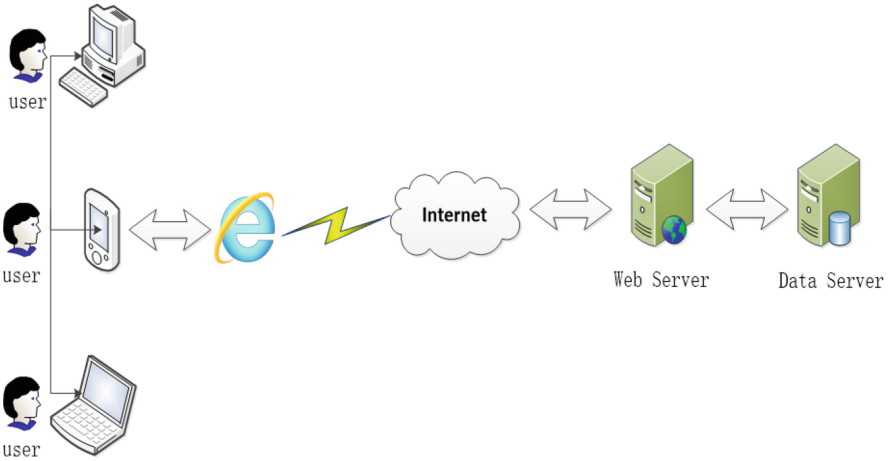
Fig. 1. B/S system architecture

3.2 System Deployment

The system is a standardized Internet product, using the form of cloud deployment, more than gigabit LAN support, with a variety of network connection modes, such as DDN, ADSL, VPN, broadband MAN, etc. The system configuration supports at least 3000PC concurrent terminal, and does not limit the number of user registration, and the concurrent number meets the actual needs of the school.

The system should have good scalability, fully consider the interface of the existing application system, follow the strict scientific software architecture and adopt the latest international technology, specifications and interface standards, and provide scalable components or plug-ins to ensure the advancement, integrity and consistency of information.

3.3 System Security

The system has a good security mechanism and security strategy, which is strict and reasonable authority setting to ensure the data security on the relevant server. In addition, by establishing a view mechanism, different users can only access the corresponding authorized view, so as to ensure the security of the system data to a certain extent.

The system complies with the relevant specifications of the International Workflow Management Coalition (WfMC), supports the selective setting and enabling of the workflow, supports the flexible configuration of various document templates, supports the corresponding processing time, personnel or role information and operation rights, and supports the system log management to realize the cleaning of system performance, personnel login and operation monitoring.

3.4   Content Management

The system supports the whole process management of college students' graduation thesis (design) from the proposed subject, topic selection, assignment, proposal management, mid-term management, review, defense, promotion to the final archiving, supports the flexible selection of each process module and settings, supports seamless embedded paper detection function to avoid using the interface to the school and producing unnecessary costs and risks, to test academic misconduct of relevant documents and issue the test results [4].

System administrators can publish notices on the home page of the system, set the start and end time of tasks at each stage, establish departments and majors, create accounts for teachers and students, and support multi-dimensional and diversified comprehensive information inquiry and statistical analysis.

3.5   User Management

The system has a unified user and authority management mechanism, which can easily carry out comprehensive authority management to the system and avoid information redundancy. Permission can be controlled from specific people, specific departments, specific roles, specific security level and other dimensions. The system administrator can be decentralized to the management personnel of each department [5]. The department administrators at all levels can control the process and test results of their departments according to their authority. The system role Settings are shown in Fig. 2.

The roles include system administrator, teaching secretary, dean, professional leader, evaluation expert, defense input worker, instructor, student. From the selection of the project to the defense, each role is now the online communication and interaction. The online operation of multiple roles is to achieve paperless operation for the graduation thesis (design).
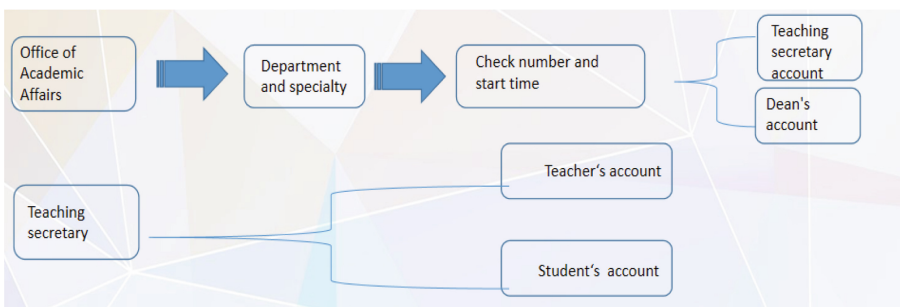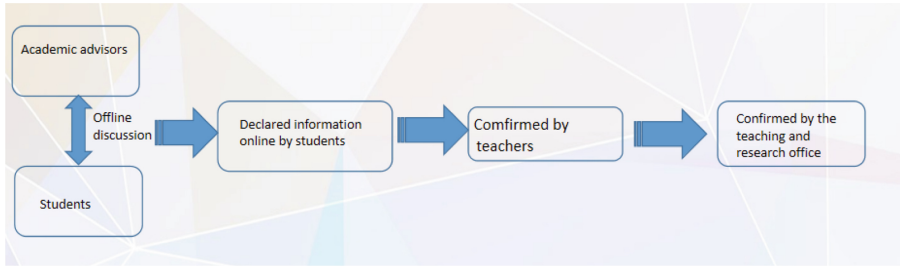

Fig. 2. System role settings

Fig. 3. System settings

4 Overall Process Function of the Paper System

4.1 Propose the Topic and Examine the Topic

Diversified project declaration mode: teachers declare (mutual selection between teachers and students), teachers declare (designated students), teachers declare (team) and students declare projects. Administrators and teaching secretaries have the right to modify the project declared by teachers and students. The process of topic selection is shown in Fig. 3.

The system can realize the project weight arrangement, and realize the non-repetition of the project meeting certain conditions;

The system can analyze the topic according to specific keywords, realize targeted and personalized literature push, ensure the innovation of the topic selection, and improve the quality of the topic selection.

4.2 Submit the Graduation Project and Thesis Testing

Students submit the opening report, guidance record, paper draft and other content. The instructor reviews them online. Students can submit the guidance record and graduation design (thesis) documents for many times. The instructor can review for many times. The instructor does not need to "pass" or "not" pass "when reviewing the" guidance record ". There is no misoperation, because student can upload their paper for many times.

Students who submit papers can be automatically tested or be "passed" by the instructor before the test. The system can limit the number of tests according to the specific requirements of the school, and can also open the authority for individual students.

4.3 Set up the Defense Group and Input the Results

The system can realize the specific arrangement of defense group, defense personnel, defense time and defense place. After the arrangement, students and instructors can inquire in the system. The thesis score consists of three parts, namely the guidance score, evaluation score and defense score. The school can set the proportion of three scores in the system according to relevant regulations, and the instructor, the experts and the defense team can be carried out at the same time.

4.4   Document Export

System will be based on the school template document export, exporting subject information, specification information, graduation thesis (design), test report, opening report, mid-term inspection, guidance, defense record information, etc., Who can export is the role of teachers, teaching secretary, administrator, dean, professional director, keyboarder.

5   Paper System Detection Function

5.1   System Comparison Resources Are Rich

The system has comprehensive professional comparison resources, covering journals, doctoral academic papers, conference papers, newspapers, patents, etc. The comparison database covers more than 8,800 major domestic academic journals, with a real-time volume of at least 58 million; domestic universities and papers of at least 4.6 million; the real-time total of 3.3 million; the Chinese patent database, the real-time total of 29 million; the real-time total covers more than 20 million, and the comparison database is updated regularly to ensure the comprehensive comparison data and the accuracy of test results.

5.2   System Detection Characteristics

The system supports English detection and cross-language detection (mutual copy and recognition in Both Chinese and English);

The system supports multi-format automatic document resolution function (wps, automatic processing of doc, docx, pdf, caj, txt and other formats).

The system can provide a variety of detailed detection reports, including the copy ratio of the total text, the copy ratio of the author removed, the copy ratio after the removal of the cited literature, and the copy ratio of cross-language plagiarism detection, etc., support the differentiation detection of citations and non-citations, mark the proportion of the quoted content, and use different colors to distinguish the quoted content from suspected plagiarized content.

6   Summary

After five years of testing and application, Graduation thesis catches up with the whole process of thesis management needs, especially the paper mutual inspection system, greatly avoiding the plagiarism of the universities. However, with the increase of the number of students from 947 to 4378, the most obvious problem in the system is the problem of network stability, which often occurs when the last time node to submit materials fails to submit. We are looking forward to complete the paper formatting detection function with the enterprise later. The main purpose to realize the instructor only focus on the content of the article is not more time on the student paper format so that the graduation thesis (design) system management will be more scientific and information.

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