

Design and Research of University Students' Graduation Project Management System Based on Outcomes-Based Education

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Abstract. Based on the concept of Outcomes-based Education (OBE), the project management system for college graduation design is oriented towards the realization of learning results. It attaches great importance to the achievement of learning goals, and through the process of providing topics by tutors, two-way selection of topics by teachers and students, and finally generating topic reports, it can realize the goal of comprehensively improving students' learning effect, learning ability and comprehensive ability, and stimulate students' learning potential to the maximum extent.

Keywords: OBE; University graduation project management system; Select topics

1 Introduction

The focus of teaching in various majors in universities is to cultivate students' professional and systematic abilities, which refers to the ability to consciously apply a system perspective to understand and master the collaborative work and mutual aid mechanism of software and hardware in their respective majors. In recent years, systematic teaching has been attached great importance in the teaching of various majors in colleges and universities, and systematic ability training has become an important link in the reform of professional teaching. At the same time, graduation design is the last practical teaching link after integrating students' theoretical learning and basic skills training. This link is of great significance to cultivate students' engineering practice ability, teamwork spirit, professional ethics and sense of responsibility^[1].

The core idea of outcome-based Education (OBE) is to focus on students' learning Outcomes, and pay attention to the improvement of students' learning effect, learning ability and comprehensive ability. It can be seen that it is very necessary to study and explore the new management mode of college students' graduation project based on the concept of ability orientation (OBE)^[2]. Through timely assessment of students' learning achievements and effective improvement of teaching activities in graduation design, it can promote the transformation from "teaching" to "learning" in an all-round way. It is very important to use OBE concept in the process of college students' graduation design^[3].

At present, there are many problems in the traditional graduation design topic selection mode, which are mainly reflected in four points: First, the solidified topic selection mode does not adapt to the ubiquitous learning ecology; Second, the one-way management of topic selection does not adapt to the diverse development needs of students; Third, the rules of topic selection and evaluation do not adapt to the efficient growth of talents; Fourthly, the supervision and control of topic selection do not adapt to the development of modern information. Obviously, it is urgent to design and research the management system of college graduation project based on OBE concept^[4]. With OBE concept as the core, we will carry out practical activities of graduation design oriented by student ability training, change the topic selection mode and evaluation method, and finally promote the achievement of learning goals. On the one hand, the structure of topic selection is optimized for the needs of industry; On the other hand, in response to the needs of students' growth, a new model of graduation design adapted to modern industry-university-research integration mechanism is constructed^[5].

2 Integration management system mode of graduation design topic

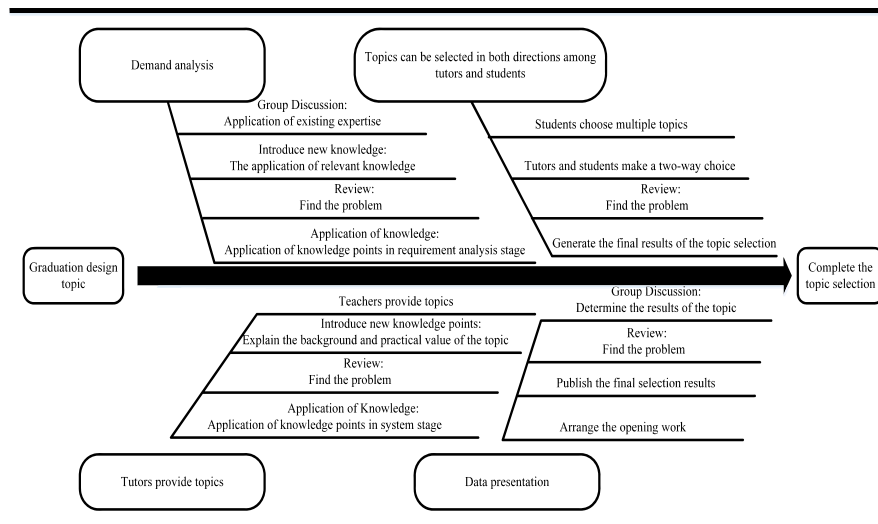


Fig. 1. Design of project management system based on OBE

The OBE model emphasizes the unified collaborative relationship of the whole discipline and emphasizes the relevance of knowledge. It is a relatively macro and overall educational strategy^[6]. Figure 1 illustrates the integration of the OBE idea into the graduation design process of college students. The skeleton in the figure is the four parts in the basic process of graduation design project management: demand analysis, tutor providing topics, two-way topic selection and data presentation by tutors and students. It corresponds to the four major problems of OBE 2W2H, and we will take it as the main line throughout the system. Students complete tasks in each stage according to the requirements of the system. The system provides students with more free training opportunities and accurate guidance through the teachers and students' two-way

selection of topics, so as to stimulate students' creativity and improve students' ability to comprehensively apply course knowledge to analyze problems and solve complex problems^[7].

3 System design and implementation based on OBE

3.1 The construction goal of the system

Based on the OBE concept, the following goals should be achieved in the research of graduation project management system: First, reliability: it means that the system needs to ensure the correct transmission of data and the stability of the database; Second, practicability: it means that the system implementation should be in line with the actual needs and work flow of the graduation project management; Third, security: it means that the system must ensure the safety and reliability of the data for publishing the topics and selecting the topics; Fourth, convenience: it means that the operating interface of the system should be simple and easy to use; Fifth, data presentation: It means that the system should be able to effectively present the results of data processing according to the requirements of each university^[8].

Based on the above objectives, through the analysis and research of the current traditional manual mode of topic selection and proposal, it is obvious that the construction of the graduation project management system needs to achieve the following functions:(1) Students and tutors can fill in the project application form online and submit it to the system administrator for approval;(2) Students are free to change their selected projects before they are approved;(3) The project submitted by the tutor needs to be approved. After the approval, students can log in the website to see all the information of the project and the tutor. At the same time, students can choose at least three topics according to their own research direction, of course, only one topic can be determined in the end;(4)The administrators can directly check the list of students and tutors who have not selected the subject, so as to facilitate the college to make appropriate adjustments;(5) Administrators, tutors and students can communicate through the system message platform;(6)Each topic of the tutor has a limit on the number of students, and the principle of time priority is given to students in the selection of topics;(7) Students and tutors and administrators have different permissions because of their different identities;(8) The administrator has the highest authority, can carry out overall management of students 'topic selection and tutors 'topic application, and effectively present the results of topic selection through the data processing mechanism of the system.

3.2 Design of student project management module

This module is composed of four parts: modifying and deleting student preferences, deleting student topics, and viewing the list of students who have not selected their preferences. The processing process is shown in Figure 2.

Students can log on to the interface of the graduation design project management system and choose the subject of their major. According to the principle of two-way selection of topics in the system, each student can fill in at least three volunteers. Students are free to modify before the administrator does not approve. During this period, each college can generally set a buffer time according to the actual situation, and select the topic or re-select it within the specified time to avoid students' blind and hasty operation.

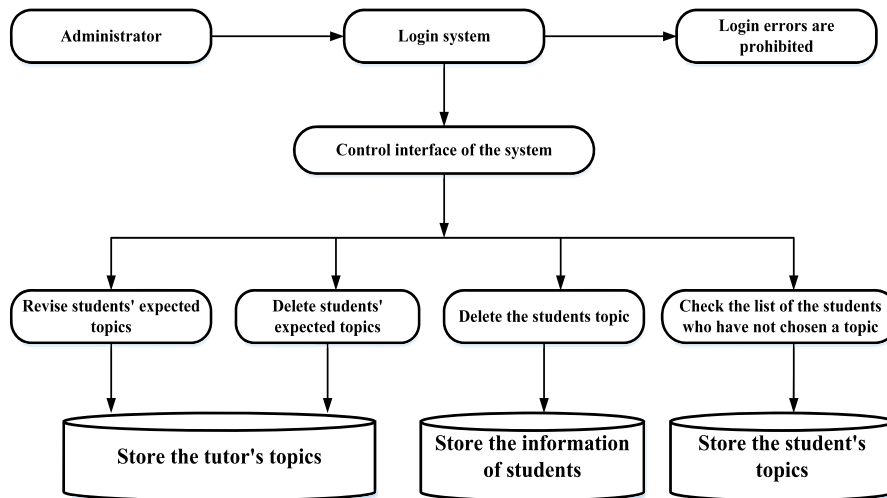


Fig. 2. The processing flow of the student project management module

The key of this operation is that students choose the topics in the form of filling in the volunteer, which simulates the way of filling in the volunteer of the college entrance examination. And the function and performance indicators of the graduation project are determined by students according to their own conditions^[9]. It can stimulate students' learning potential to the maximum extent and cultivate students' self-supervision ability, teamwork ability and comprehensive application ability. At the same time, the tutor can provide multiple topics and their own research fields and research directions in the system, and it can also present many contents of the subject through the system: for example, the progressive practice system and the design experiment framework, and set the stages, sub-goals and corresponding experiments to complete the process of this topics around the graduation design goal. Obviously, such a two-way choice of topic selection and proposal is very in line with the current needs of teachers and students. It can not only consolidate the original knowledge learned by students in the course, but also improve the overall comprehensive experimental ability and realize the scenario-based graduation design system.

3.3 Design of tutor project management module

This module is divided into four parts: modification, addition, deletion and subject approval management. The administrator is responsible for the final processing of the information in the database, and finally presents the data processing results in an intuitive and vivid way. Its processing flow is shown in Figure 3.

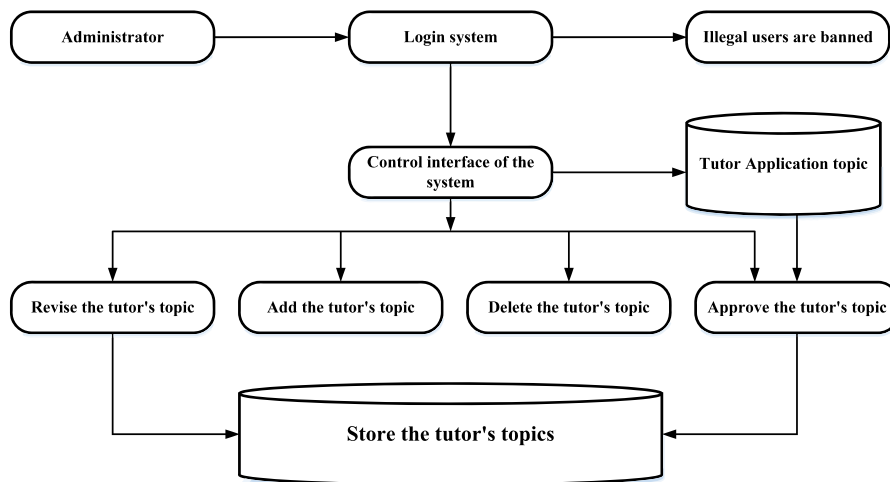


Fig. 3. The processing flow of the tutor project management module

As can be seen from the figure, the tutors log in to the system and enter the tutor control interface to fill in the topics. The topic can be modified, but the operation must be done before the administrator approves it. During this period, each college also sets a buffer time according to the actual situation, one tutor can apply to guide multiple topics and limit the number of students for each topic. A tutor can apply to guide multiple projects and limit the number of students for each topic. The students can see the limited number of candidates for the topic and the number of people who have already filled in the topic when they choose a topic, so as to adjust subjectively and reduce a lot of repetitive and tedious work in the later stage. However, it is important to emphasize the importance of the tutor's project, which must have certain quality. As a professional study in colleges and universities, the project should be able to understand the integrity, correlation, hierarchy, dynamics and openness of the major with a systematic view, and understand the mechanism of cooperation and interaction between software and hardware of the major with a systematic approach. At the same time, it can also take systematic ability cultivation as the core, unify and coordinate the teaching content and system of related courses, and form a coordinated comprehensive practical training of graduation design, so as to give full play to the discipline advantages of tutors and the learning potential of students.

We take OBE "achievement oriented" as the guiding ideology of college students' graduation design. It is the key to strictly check the topic selection and proposal, and the direction of the project directly determines the content and presentation of the students' research in the university. Based on a series of documents issued by China's Ministry of Education and the background of "new engineering" construction, China has increased investment in software and hardware facilities in universities^[10].

The graduation project management system of college students should make full use of the software and hardware of the university, create a multi-level three-dimensional open engineering practice teaching system, improve the practical effect of students, arrange the graduation project and project design as a whole, and create a multi-level engineering practice teaching system based on OBE. We also need to strengthen training through the platform to improve students'

engineering literacy, practical ability, design ability and teamwork ability. At the same time, a diversified evaluation mechanism should be established in universities. We should conduct a multidimensional evaluation on the achievement of students' graduation design goals based on their values, abilities and qualities and practical operations, so as to improve teaching, ideological and political activities and practical activities of graduation design according to the evaluation results^[11].

4 Conclusions

Based on the above analysis, the graduation project management system of universities should be closely around the cultivation of students' ability as a guide. The system can realize the cooperation between schools and enterprises to arrange the graduation design subject as a whole, and strengthen the practical training to adapt to the multi-level three-dimensional graduation design practice teaching system. And it can take multiple measures to promote the construction of major, and adopt the online and offline integration of graduation design topic opening mode to meet the information and personalized teaching needs of college students in the new era. In the work process, we always implement the OBE concept as the guide. We emphasize on the achievement of learning goals, and realize the goal of comprehensively improving students' learning effect, learning ability and comprehensive ability through the process of providing topics by tutors, two-way selection of topics by teachers and students, and finally generating topic reports.

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