

Teaching Management System-based Undergraduate Academic Early Warning Helping System Developed

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Abstract. In this paper, the existing undergraduate educational management system, data, design and development of learning difficulties early warning helping system based on a set of Undergraduate Teaching Management System. Through the set warning threshold conditions, the warning helping system sieve screen out students with learning difficulties, and to take precautions targeted, multi-channel communication and collaboration between schools, teachers, students and parents to help students to overcome the difficulties, the successful completion of their studies. In-depth analysis of the data in the Senate system, using the system to monitor student data in accordance with a pre-set warning threshold, analysis, feedback, and take the appropriate corrective measures, and ultimately form a joint force to prevent a deviation from the normal college students' academic track.

I. Introduction

In order to fulfill the requirement of our country's rapid economic development on talented people's knowledge structure, overall capabilities, and competency, many higher educational institutes in our country have set their goals to cultivate well talented and innovative students, and, therefore, have explored and practiced some reforms on the training model and teaching management system. They build a credit teaching management system, based on the system of selecting classes and the guarantee of modern educational management, in order to propel the modernization of the educational management, and fulfill the imperative requirement of our country's economic, scientific, and social development.

Take Donghua University as an example. The university reformed the credit based system in 2002. The institute implemented a well rounded education with the possibility to change focuses. The institute also propelled changes on the heuristic research based way of teaching, in order to arise the awareness of innovation and find potential. The implementation of the credit based system has given students more free selections on courses, developed a flexible learning system, prosecuted a flexible time limit of study, and improved the activeness and willingness to study. The system encourages the personalized development of students. With the instructions of the advisors, students select the courses, time, and instructors freely, arrange the progress of the study freely, and have personalized development. The ultimate goal of the reform is to cultivate well rounded and talented people that have practical experience, are innovative and collaborative, and can fulfill the requirement of the modernization of socialism.

Meanwhile, with the full implementation of the credit based system, there are new problems as well. While schools are giving students plenty of freedom on their studies, they are making the students within the same major have different progress, which causes difficulties for the management team to accurately manage the completion of study within a certain time period, especially on students with difficulties on their studies. Because of traumatic events, family misfortune, obsess on the internet, health conditions, and so on, these students cannot study regularly through their own efforts. This phenomenon is getting serious with the popularization of higher education and expansion of the educational scope. These students with difficulties in their studies are usually unable to finished the required credit hours within four years and have to extend their studies. Moreover, some even cannot finished within an extended study period. Faced with the increasing number of students who cannot finish their studies on time, the education management team thinks that there will be severe consequences, if this phenomenon is not prevented.

II. The current situation of the precautions system for students with learning difficulties in higher education in our country

Literature[1] points out that the main method to implement the “process management” mode on students with learning difficulties are 1) establish a list of students who need “process management” care according to grades and emotional conditions; 2) know more about the overall situation of the students and make plans to help; 3) keep records of the students who need “process management” care and provide different care to different students; 4) make some achievements. Chen and some other people[2] point out that we should differentiate all types of students with learning difficulties and then study each type, take school and instructors into consideration when studying the cases of students with learning difficulties, sort all kinds of learning difficulties that fit the overall situation of our country, and develop theories on learning difficulties. Wang, Xue, Gao, and Shen [3][4] emphasized their analysis on the reasons of having learning difficulties, and some author[3] proposes a tentative plan on building the precautions system and categorical precautions system. Sun proposes a precautions model based on campus internet. This model is centered at students, and integrates the traditional campus information management system and the infrastructure system into a digital campus learning precautions system that meets the needs of the care for learning. The system includes precautions on attendance, completion of assignments, completion of courses in major, the cultivation plan on study, and the process of courses. Ding makes several strategies on the optimization of the management of students with learning difficulties in higher education, which include completion of the credit system record management, improvement of the efficacy of students with learning difficulties, and the reinforcement of communication between departments.

In sum, the people has been aware that the expansion in the admission of students in higher educational institutes in our country has led to the expansion of the number of students with learning difficulties. We have explored the establishment of a system that provides care for students with learning difficulties, adopted some corresponding strategies on management, and also proposed the respective system that provides care for students with learning difficulties. However, there is still some inadequacy in the whole picture. First, the management of students with learning difficulties is still at the beginning. Some school's management systems still focuses on the consequence and its management, which means the problems of students burst out at their graduation, and the monitoring and managing on the process is inadequate; Some schools studied the reasons for learning difficulties, and use the strategies and policies to help students establish a correct outlook of life encouraging students into an studying attitude. But they still lack the overall research and practice on the prevention of learning difficulties. Second, there is a lack of special academic monitoring precautions system. Though some schools have established precautions system, the management mode is still by manual. Literature[5] points out that although the internet based learning precautions system can be established, the model involves so many aspects, such as attendance, completion, and so on. This is still difficult to be adopted in digitalized campus, and some operations with data tables still need to be done manually. This is not so efficient, and the effect on monitoring and managing the completion of study has no guarantee.

III. The structure and function of the system

This paper uses the existing data from the undergraduate Senate management system and has designed a precautions care system based on credit management system for undergrads with learning difficulties. This system will mainly solve the potential academic problems, point out problems promptly, inform students and their parents the long term adverse effects, and take the corresponding prevention strategies. This system is a platform of communication that can help students complete their study successfully through the communication and cooperation of the schools, the instructors, the students, and their parents. Using this platform to further analyze the data in the Senate system, monitoring the data, and analyzing feedbacks of the data according to the designed warning threshold, we can eventually collaborate to prevent college students from having learning difficulties. The learning difficulty precautions and care system is based on fundamental data management, student academic precautions management, extension of studying period system, student care platform, and online attendance check. The functions of its specific modules are as

follow:

A. Fundamental Data Management.

The establishment of the academic precautions care system should first solve the problems of collecting and organizing relevant data of the students so that the data after the analysis can become evidence of each department on making the strategies of precautions and care. The learning difficulty precautions care system share such relevant info with the campus credit management system as the demographic data, grades of each semester, honors, and penalties. This guarantees the data supply of the precautions system for students with learning difficulties.

B. Student Academic Precautions Management.

This is a management module developed for undergrads with learning difficulties from freshman level to senior level. The module includes:

1) The value of academic precaution. There are many regulations on students' academic management, and each regulation has its own index in the student manual. The computer gives the corresponding treatment on the extent to which the behavior or consequence of the student lead. The system has set up four levels of academic precaution according to the campus roll management. The 4 levels are yellow card warning; resignation warning; probation; immediate resignation.

2) Setting up academic precaution. The system will select all the students who fulfill the requirement according to pre-established value, (for example, students who gain less than 15 hours in one semester), and set those students into who need precaution this semester.

3) The database of students who need precautions. The database separate students into four data table according to the pre-established value. Then the system put the students into their corresponding precautions database according to the maximum number of precautions given. This guarantees that every student appear only once in the system.

4) Evaluation on students who have precautions. This evaluation mainly analyzes the data on the students who have got precautions in history, in order to track their progress. Through analyzing the data on these students, we can change and complete the way of our thinking and the method we use on helping the students, and thus, lowering the number of students that need these care.

C. Management Of students Who Extend Academic Years.

This module mainly focuses on seniors who cannot graduate on time. These students usually cannot graduate on time because of the failure of several courses, and the management on these students are still loose. So enhancing the management on these students is one of the main points in the precautions care system. This module mainly contains:

1) The requirement on major courses. The system displays the graduation checklist in tables, so that students can look up easily. Students can adjust their study plans according to their current credits earned.

2) Management on students who need extension. The system automatically selects the names of the students that are set into extension in the undergraduate Senate system and displays the students' ID number, class, name, advisor, major, GPA, attendance, registration, and other relevant info to the staff. The staff click "ID number", and the original transcript of the students appears. Click on "name", and demographic info appears; click on "class" and appears the credits earned.

D. Student Care Management.

This module mainly enhance the communication between school, parents, and students and help to take record of relevant info. This module includes:

The employment of the coordinators. Higher education precaution and care system needs the collaboration of school, parents, and students and will contain different department and relevant faculty. Combined with the uniqueness of the institute itself, the people that involve in the campus precaution and care are faculty, advisors, senators, secretaries, psychologists, and class presidents. Because of this, we need an coordinator to ensure the communication and avoid prevarication. According to the "requirements on higher educational institutes advisors", advisors are the organizers, the implementers, and the instructors of the daily education on students and can usually be the coordinators of the precaution and care system.

The records of students who need precautions. This module mainly documents the specific things the school needs to do on student care in order to facilitate the monitoring. For example,

apart from using computer technology to establish the interactive warning output to give the student feedback, we must also give hard copy to inform the student and his family directly. We can use the way of sending “academic warning notice”, require that the “notice” be sent with track info, keep records of delivery, and finally record such info into the system.

Parents feedback platform. We should give the parents the account ID and password of the platform, along with “academic warning notice”, so that parents can know the courses their child is studying, the grades, and the academic completion when entering the platform. The parents can contact the coordinators when having problems.

E. Online Attendance Check System.

When students got precautions, the system will automatically display the name of the students with marks to the instructors, and the instructors can give these students more care and attention on their attendance and study. Once the instructors find abnormality, they can contact the coordinators to give first hand precautions.

After establishing the system, users only need to use an internet connected computer to finish the corresponding operations, building an invisible bridge among students, parents, and the school. The specific structure is in figure 1.

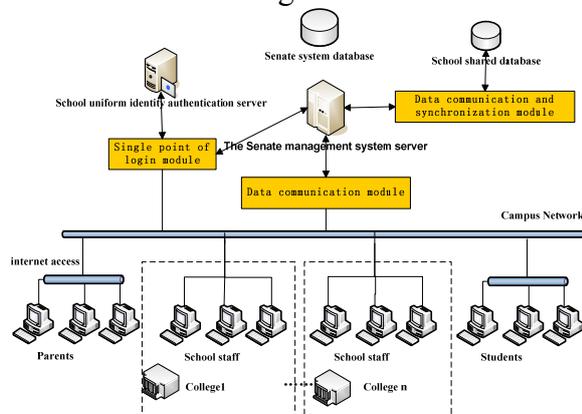


Figure 1 Learning difficulties early warning helping system platform topology diagram

IV. Conclusions

The purpose of establishing the undergraduate learning difficulties precautions systems is to monitor the students when they enter the university, find the students with learning difficulties in time, and use strategies to effectively prevent learning difficulties, which is a new task for higher educational institutes using the credit management system. The establishment of a practical and effective undergraduate learning difficulties precaution system is a powerful tool to manage the whole credit based system. We believe that through the cooperation of departments while maintaining the idea of cultivating talented students, we can well perform the care on students with learning difficulties, improve the quality of education, and reach the goal of “no student behind”.

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