Bottleneck Constraints and Countermeasures in Credit System Reform

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Abstract: The implementation of the credit system reform is the trend of the development of higher education. This paper analyzes the constraints encountered by the local colleges and universities in the reform of the credit system, which are the unreasonable curriculum structure, the blindness of students’ selection and the shortage of teaching resources. It puts forward countermeasures from three aspects: increase the number of elective courses, establish and improve the mentor system and increase the teaching resources.

Keywords: Credit System; Bottleneck Restriction; Countermeasure

I. INTRODUCTION

Since the reform and opening up, many colleges and universities in China gradually implement the reform of the credit system. But today, the overall effect of the teaching management of the credit system in colleges and universities is not satisfactory. Whether in theory or in practice, there is still some vague understanding on the following questions: what’s the essential factor to implement the credit system in colleges and universities? What are the main difficulties in the operation of the credit system? How to effectively implement the core elements of the credit system? Research shows that the credit system reform in the national key institutions has been at the forefront, and has made some useful experience. At present, some local colleges and universities have begun to implement flexible credit system. However, the process of the reform of the credit system in local colleges and universities is more difficult, and the biggest difficulty lies in the implementation of the elective system. This makes credit system reform in a lot of local colleges specious to a certain extent, a mere formality. Therefore, it is significant to explore the nature, characteristics, operating barriers and solutions to the elective system from the theoretical and practical level for the local colleges and universities to effectively promote the reform of the credit system.

II. THE BACKGROUND OF CREDIT SYSTEM REFORM

In the traditional sense, the college education management system, which is in accordance with the established teaching plan, requires students to complete the fixed curriculum in the specified period of time, to develop a unified standard of professional personnel. At the end of the eighteenth Century, with the rapid economic growth of capitalism, the social division of labor is more and more thin. Because of the lack of knowledge structure and innovation ability, students trained by traditional teaching mode are more and more unsuitable for the rapid development of social and economic needs. Therefore, in the beginning of nineteenth Century, some universities in Europe and America began to open some practical courses which are consistent with the students’ interest according to the diverse needs of the community. Because of the limitation of university time, students can't learn all the lessons, then, the elective system was born. Under the influence of the thought of "learning freedom", Germany implemented the elective system at first, let students choose the elective courses offered by the school in accordance with the social needs, employment needs and personal interests. At the beginning, the implementation of the elective system is completely free. Some students often chose courses according to whether the credit was easy to obtain or the class time is convenient, which led to the curriculum selected was fragmented, and deviated from the professional training objectives. In view of the above drawbacks, Harvard University optimized the system of course selection and abolished the completely free elective system. Students must study a certain number of courses in the major areas, as well as a certain amount of basic courses in humanities, social sciences and natural sciences and other areas. After 1920s, many European and American countries implemented the credit system reform on the basis of elective system, and actively established the required courses, elective courses and optional courses, and focused on improving the proportion of elective courses to total credits. At this point, the teaching management system, which was the measurement unit of the credit, tended to be shaped. It can be seen that the credit system is formed on the basis of the course selection system. It is finally consolidated and spread after continuous development and improvement. The credit system is a teaching method for the effective implementation of the elective system. Its remarkable characteristic is that students enjoy a certain degree of freedom in the aspects of individual intelligence, interest, learning basis, economic situation and employment needs. Students have the freedom of the combination of curriculum and learning progress. Thus college education turns from common education to personality education and increases students learning enthusiasm and initiative. To play the advantages of the elective system, it is necessary
to increase the student's right to choose, let them choose the professional, curriculum, teachers, teaching time and education mode, meet their diverse needs, develop their learning potential. The main starting point is that college must provide a large number of elective courses for students to choose. Since the reform and opening up, China accelerated transformation, increasing the urgent needs of the higher professional which is complex, innovative, competitive and full of personality. With the increasing demand of the talents in society, it is difficult to meet the needs of the current talent market. It can be seen that the rapid development of China's economic and social development has caused the change of the demand for talents and quality. This requires that the training mode of higher education should be diversified, which makes the traditional academic year system have a great challenge. Credit system, which has been used for 200 years in Western countries, provides a useful reference for solving the plight of the single talent training mode in China. Therefore, the reform of the credit system in colleges and universities is the need of the development of the times and the only way for the development of colleges and universities.

III. THE CONSTRAINTS OF CREDIT SYSTEM REFORM

A. The unreasonable curriculum structure

Curriculum structure is a kind of reasonable relationship and appropriate proportion of all kinds of curriculum system, which is composed of various courses. From different dimensions, we can divide the course types into compulsory courses and elective courses, basic courses and professional courses, theory courses and practical courses. The college professional teaching program is usually defined as the ratio between basic course and specialized course, compulsory course and elective course.

Through the analysis of the professional teaching program, it shows that the majority of the professional teaching plan is not flexible enough. The proportion of the compulsory course is more than 75%, while the elective course is less than 30%. The proportion of elective courses is significantly lower. In foreign university, the proportion of elective courses is high, which is the basis for the development of the credit system. For example, in Massachusetts Institute of Technology, there are 300 of 360 credits are optional, which accounting for 83.3% of the total credits. In Japanese university, elective courses account for 25% to 40% of all courses; In French university, the proportion of the elective course is 40% to 60%. Local institutions, which implement credit system, can only be said to be worthy of the name if they can’t open high quality elective courses and reasonably determine the proportion among compulsory courses, restricted courses and elective courses. In addition, in some of the local colleges and universities which implement credit system, teachers and students pay not enough attention on elective courses because of effective of the traditional curriculum ideas and teaching evaluation system. Teachers’ preparation for the elective course is not enough and their attitude is not serious. Students only pursue the credits. They choose courses but not really learn. The result is inevitable to endanger the quality of elective courses, and even affect the real implementation of the elective system.

B. The blindness of students’ selection

In the course of selecting courses, some students neglect the construction of reasonable knowledge structure, and choose the courses which are easy to learn and take the credit. They would not like to choose strict teacher. They pay attention to credit and neglect learning content and learning ability. In the course of time, some students will focus on Tuesday, Wednesday, Thursday, instead of Monday, Friday. In the course of the selection, some students do not consider their own learning foundation and are lack of understanding of the course content. They wildly follow the trend, at last they can’t choose their favorite and practical courses. The reason is that although college students are adults, more freedom should be given to them, but they are not fully mature. Their world outlook, philosophy of life and values and personality is still in the stereotypes, some ideas and practices are often in irrational state. Therefore, for the process of course selection, it is necessary to give students a positive guidance to avoid the randomness and blindness. In the early stage of the implementation of the elective system, Harvard University has encountered this dilemma. During the period of president Eliot in Harvard University, the elective system is completely free. Students often avoid the difficult and choose the easy course in order to get credit. They do not care the academic value and practicality, which directly affect the quality and specifications of talents. Therefore, the later generations continued to have the elective system to be supplemented and perfected. Having taken over the position as president of Harvard University in 1909, Lowell Laurence began to implement the "centralized distribution system" – 6 of the total 16 yearly courses of the undergraduates must be relevant with major fields, and other at least 6 courses must be allocated in the natural sciences, social sciences and humanity areas. By 1970s, Harvard University put forward a set of core curriculum system basing on the centralized distribution system, which stipulated that 32 major courses chosen by undergraduates in 4 years must consist of 16 professional courses, 8 elective courses and 8 core courses. The 8 core courses must be selected from ten areas including historical research, literature and art, science, foreign culture, ethics, social analysis and so on. The system is still in use nowadays. It is easy to see that from the initial
implementation of the free elective system by Eliot to Lowell's "centralized distribution system", and then to the core curriculum concept, a significant fact can be concluded from the series of changes that students' learning freedom should not be unlimited and freewheeling, and is urgent to obtain guidance and help from school or tutor.

C. The shortage of teaching resources

Some local colleges and universities can’t open the elective course of quantity and quality, which is closely related to the teaching resources. Teaching resource is used to need the demand of the school education teaching process directly or indirectly. It constitutes the elements of education teaching, which is scarce and selective. It mainly includes human resources (such as teachers, etc.), space resources (such as classrooms, laboratories, etc.) and time resources (time that students can freely control) and so on.

Compared with the academic year system, the implementation of the credit system usually requires the university to have more abundant educational resources. Stable team of teachers which have both ability and political integrity and reasonable structure is necessary. There must be enough classrooms, experimental equipment in order to meet the basic learning needs of students. Students should have more discretionary time to learn freely. However, the reality is that the majority of teachers in local colleges and universities are inadequate in quantity and low quality; teaching resources in the academic year system are stretched, and cannot meet the needs of the implementation of the credit system. Most of the students learning time is compulsory diverted, and they don’t have much of a free time. Even if the school opened a number of high quality elective courses, students will be unable to learn because of time conflict. Therefore, in the process of carrying out the credit system reform, local colleges and universities must take into account and analyze the resources of the school, such as human resources, space and time resources and judge which is more scarce. Education institutes should try to solve the most urgent resource contradiction, and then to achieve the overall optimization of teaching resources.

IV. THE MAIN COUNTERMEASURES FOR LOCAL COLLEGES AND UNIVERSITIES TO BREAK THROUGH THE BOTTLENECK OF THE ELECTIVE SYSTEM

A. Increase the number of elective courses, and expand the teaching plan of flexible credit system.

In our country, there are school year credit system, complete credit system, GPA credit system, weighting credit system, addition credit system and other forms of credit system. The effect and flexibility of the implementation of the credit system in local colleges and universities depends on the number of elective courses and their proportion of the total credits. When developing professional training programs and teaching plans, colleges and universities should focus on the design of each kind of curriculum modules. We should not only optimize the design of knowledge and logical structure among public basic courses, professional basic courses and professional courses, but also determine the proportion of the total credits among compulsory courses, limited elective courses and optional courses. The overall thinking of the design of the structure of courses is: it should consist of "wide basic" curricula and elective courses of "active module". As far as the proportion of each kind of curricula and the number of elective courses are concerned, colleges and universities should set their decisions based on the situation of their school, social needs and teaching resources, and should not be based on certain specified creeds. Some scholars put forward that in order to make the students to have a wide range of knowledge as well as a more solid professional knowledge, so as to meet the needs of the job, there should be the three must have a reasonable proportion among public basic courses, professional basic course and professional course, generally 5: 3: 2. When talking about compulsory courses, limited elective course and optional courses, the ratio should be 6: 2: 2. The author believes that this view not only takes the individual needs into account, but also concerns the needs of social development. It has a certain reference value, for it tries to combine the general education and special education, which conforms to the national situation and school situation of local colleges and universities in China. In order to increase the students' learning freedom so as to meet the needs of students to get outstanding and the obtain development of personality, local colleges and universities must continue to increase the resources of elective course. For the students, only through the combination among science, technology and management can they construct the knowledge structure of talents that is suitable for social need. At the same time, we should also take effective measures to ensure quality of elective course teaching, and establish a relatively strict teaching quality evaluation system.

B. Establish and improve the mentor system

Elastic credit system gives students more options of their study, but it can also lead to vague learning goals, unreasonable knowledge structure, etc. Therefore, at the beginning of the Harvard University’s implementation of credit system, it set about introducing the tutorial system of the Oxford university, in order to strengthen guidance towards the students' course selection and learning process. To implement the elective system, colleges and universities generally allocate 1 mentor for every 10 ~ 15 undergraduate students. Mentors are usually professional
teacher from the same faculty, who are familiar with students’ major, training target, teaching program, curriculum system and other academic information. The mentor should also understand the students’ interests, personal needs, learn basis and employment demands as far as possible. Mentors should be capable enough to guide students to choose the right course, develop individual learning plans, communicate with students about study content and study method, help students solve the problems in life, relationship, communication and even to help students to develop career planning. Meanwhile mentors should also get learnt about the students’ view of teaching quality, teaching process and feedback to the school educational administration department according to the facts in order to improve management and service work timely. In recent years, Peking University and Zhejiang University has developed their own characteristics in the tutorial system, setting up the student’s mentors’ cultivation, selection, appointment, evaluation and a series of perfected operation mechanism, forming the "one to one", "one to multi", guide group and other guidance mode, which managed to ensure the students’ getting effective guidance in the aspects of course, choosing profession, enrolling graduate student, determining the development direction, etc. In addition, the "senior system" is also one of the new means adapted in recent years to fit the teaching management of credit system. Namely the seniors help their younger students for reciprocal development. To make it more detailed, the system aims to let seniors to help younger students solve the problem of life, study, thought, and convey their learning methods, experience and other information to lower grade students, to help them to adapt to the colorful university life as quickly as possible. The senior system not only alleviate the shortage of school undergraduate mentors, but also helps to alleviate the pressure of the mentors dealing with the students’ practical problems. There are relatively small quantities of positions in local colleges and universities personnel in China. Thus, in the implementation of credit system reform, we should try to combine tutorial system and senior system, in order to improve the efficiency and effect of teaching management.

C. Increase the teaching resources

The effective operation of elective system not only requires enough excellent quality of elective courses for students to choose freely, high quality teachers and administers, it also requires plenty of classrooms, laboratories, books and materials and good logistics facilities.

The complete elective system can let students choose the courses, choose teachers, choose time, choose their learning progress by themselves in learning process. To achieve the “four independent” mentioned above, local colleges and universities must be equipped with sufficient teachers and teaching administrator, and must also establish a corresponding teaching evaluation and incentive system, so that teachers can be encouraged to take initiative to open more high quality courses. To achieve this goal, there are some measures for local colleges and universities to take. On the one hand, they can increase the number of teachers through employing talents and social celebrities. On the other hand, ability level of teachers can be improved through internal training. It can be of certain difficulty for local colleges and universities to introduce social celebrities and talent. It is also inconvenient to expand the number of position for teachers, for it must attain the authorities’ approval. One more feasible strategy is to have the teachers and teaching administrator furthered trained. We can adopt "send out" and "introduce" two kinds of training methods to train backbone teachers in order to make them grasp timely the forefront knowledge of their professional, of the relevant professional disciplines and obtain interdisciplinary knowledge. They can continuously updated knowledge structure, so as to suit the urgent needs of the reform of credit system better.

In the classroom, laboratory, library and logistics facilities, local colleges and universities should actively strive for external resources on the one hand, including obtaining certain financial and material support from national and local financial departments, as well as integration of social capital (such as cooperating with social capital to construct library, laboratory, etc.); On the other hand, they should make full use of existing school teaching resources and speed up the resources circulation efficiency, such as all-day open school library, laboratory or use evening and weekend time for elective course teaching or moderately expand the scale of class teaching, and so on.

To sum up, the credit system is formed on the basis of the course selection system. It is the product of the development of social economy and education career. In the process of implementation of course selection system, local colleges and universities usually encountered many dilemmas above. In order to guarantee the benign operation of the elective system, local colleges and universities should suit measures to local conditions and improve gradually. There is no current mode for reference. Each unit should actively promote the credit system reform along with the path as the following: elastic academic year system, elective course of the academic year system, academic year credit system and the whole credit system step by step.

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