On the Reasons and Improvement Measures of College Students under the Background of Credit System Based on Game Theory

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Abstract. This paper studies the phenomenon of "reverse course selection" in Colleges and Universities under the credit system. Under the current credit system, the phenomenon of "reverse course selection" in Colleges and universities exists universally and continues to spread. Students' behavior of "reverse course selection" is not only related to the integrity and rationality of their knowledge structure, but also to the smooth implementation of the course selection system and credit system. This paper uses game theory as a tool to analyze the causes of the phenomenon of "reverse course selection" in Colleges and Universities under the credit system, and puts forward corresponding countermeasures according to the reality of our country.

Introduction

Credit system is also known as credit accumulation system. Compared with academic year system, it is not a teaching management system that measures students' learning quantity by credit, but by study time. Concerning the concept of credit system, the International Encyclopedia of Higher Education explains that "credit system is a management method to measure the contribution of a certain teaching process (usually a course) to the completion of degree requirements (function, status);" The Chinese Encyclopedia of Higher Education explains that "credit system is a university." A teaching management system, which takes credit as the unit of calculating students' learning quantity and obtains the lowest necessary credit as the standard of graduation. The Dictionary of Education defines credit as "an educational management system of American colleges and universities, a unit of calculating students' learning quantity by credit, for each course." There are certain credits, one hour a week in class, after one semester of study, you can get credits if you pass the exam [1]. Some domestic scholars summarize the credit system as "taking students' self-selection of learning content as the core (self-selection of courses), taking credits and performance points as the measurement unit of students' learning quantity and quality, allowing students to study." Flexible selection of flexible learning process system in a longer period of time and tutorial system for the whole process of students' learning by teachers. Teaching Management System [2]. From this definition, we can see that the complete credit system includes not only the course selection system, but also the performance point system, flexible education system and tutorial system. In the 1970s, the credit system was first formed as a formal teaching management system in Harvard University. Since then, many universities in the United States and other countries have implemented the credit system. In China, the development of credit system has also experienced several ups and downs, but with the development of socialist market economy and the arrival of the era of higher education popularization, the implementation of credit system in Chinese universities has become a general trend. At this stage, most domestic universities have implemented or started to try out the credit system.

Game theory is a theory that studies the strategic choice of rational economic individuals in their interaction. Although it originated from mathematics, it has been widely used in the fields of economics, politics, philosophy, literature, business and international relations, and has become a powerful tool for understanding human behavior. Game theory is not only a pure knowledge, but also a method. By introducing game theory into the field of education, we can get a new way of thinking on education [3].
Game theory has three basic assumptions: Firstly, the participants are rational; secondly, the participants all have the common knowledge of these rationalities; thirdly, the participants know the rules of the game. When we make a game analysis of the phenomenon of "adverse course selection" in Colleges and Universities under the credit system, it is based on the hypothesis that the investigation of human behavior in economics is based on the theory of fully rational economic man, that is to say, all economic actions are triggered by people's motive to pursue the maximum of their own economic interests, and that human beings always exist. In the desire and action to increase their own interests as much as possible, and in the process of pursuing maximum interests, they always show the nature of egoism. Therefore, as participants in the course selection process, both teachers and students are rational people who pursue the maximum of their own interests. Therefore, before they make certain actions, they always compare and analyze the costs and benefits of their alternative ways of behavior, from which they choose the actions that can bring the greatest benefits to themselves [4].

Some College Students Pay More Attention to Marks than Substance in Choosing Courses

For a long time, the comprehensive evaluation of college students is mainly based on academic performance, focusing only on student performance, with "high score = excellent students = high quality" as the evaluation criteria for students. Under the background of "scoring-only" education, if schools and teachers lack control and guidance on students' choosing courses, students will inevitably produce and spread the phenomenon of "reverse course selection" in order to get high marks as their learning purpose during school. In view of this, it is necessary to make an in-depth analysis of the current student assessment and evaluation system.

Limitations of the Existing Evaluation System for College Students

There are two main parts in the current evaluation system of College students: one is the evaluation of students' academic performance, that is, the curriculum evaluation system; the other is the evaluation of students' comprehensive quality, that is, the annual comprehensive evaluation system. Although these two evaluation systems basically cover all aspects of student development, in practice, because the management department pays more attention to the assessment of students' academic performance, most students will consider how to get good grades, school honors, scholarships and university diplomas when choosing courses. Emphasizing the study of knowledge, not to mention the development of quality, ability and personality, results in the phenomenon of "reverse course selection" for most students. The student evaluation system shows its limitations, as follows:

The Inadequate Understanding of the Purpose of the Examination Results in the Dislocation of the Target Detection

In addition to imparting knowledge, the more important thing in university teaching is to preach and solve puzzles, that is, to cultivate students' correct thinking methods to meet the needs of the future learning society, mainly with the ability to acquire knowledge and apply it in practice, and the ability to find, analyze and solve problems. Examination as an important means of testing teaching objectives should pay attention to the full implementation of teaching objectives, but the existing curriculum assessment system focuses on the effect of knowledge imparting, ignoring the quality and ability training. According to Bloom's target classification theory, the current university curriculum examination only focuses on the detection of the first three levels (knowledge, understanding and application) in the field of cognitive objectives, but seriously ignores the detection of the latter three levels (analysis, synthesis and evaluation), which leads to the serious dislocation of target detection. Students take exams in order to get good grades, credits, honors and diplomas. As a result, in order to get good grades, college students tend to choose teachers who are not strict with students and give high marks.
The Limitation of Comprehensive Assessment Leads to Students' Utilitarian Orientation

It is difficult to quantify and measure people's ideological and moral qualities accurately. However, the existing comprehensive evaluation system of students tries to make a comprehensive evaluation of students in a quantitative way. In practice, it often turns into a focus on the evaluation of students' part of precise quantifiable abilities, such as how many awards they have won and how many participants they have taken part in. Student work and so on. The limitations of this comprehensive evaluation, together with the close relationship between the results and students' evaluation, merit evaluation and scholarship evaluation, lead to students' strong utilitarian orientation in choosing courses, which is mainly manifested in their passive response to learning and their tendency to work with students. It is easy to get high marks when choosing courses without strict requirements of teachers. Similar phenomena are common on campus.

Analyzing the Evaluation System of College Students by Game Theory

In the analysis of the causes of the phenomenon of "adverse selection of courses" in universities, it is found that the current student evaluation system mainly focuses on students' academic assessment. The benefits brought by good results (such as scholarships for undergraduates, three-good students, recommendation for postgraduates without examinations, etc.) make students pay more and more attention to the level of examination results in course selection, thus ignoring them. In the course itself, the game between students arises. Assuming that there are two students in the bureau who have the same level of A and B, each student has two strategies of heavy score and heavy substance to choose from. In the course of choosing courses, students not only know that they have different alternative action plans.

Payment function in the same way to understand the other party's payment function in different options. Then, the game relationship between students is the static game of complete information [5].

In Fig.1, the left number of each strategy indicates the payment of Student A and the right number indicates the payment of Student B. Strategic form, also known as standard form, is one of the expression forms of game. It is convenient for static game analysis. The two sides' payment analysis is as follows:

If both students emphasize substance, they can get payment of 5, expressed as (5, 5). Both students choose the strategy of heavy score. Good grades can bring awards and honors, and the payment is 8, expressed as (8, 8). Student A chooses the strategy of heavy score, and Student B chooses the strategy of heavy score. If Student A chooses the strategy of heavy score and Student B chooses the strategy of heavy score, Student B will inevitably get less than Student A's (8,5) if Student A chooses the strategy of heavy score and Student B chooses the strategy of heavy substance.

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<th>Student B</th>
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<td></td>
<td>Heavy fraction</td>
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<tr>
<td>Student A</td>
<td>Heavy fraction</td>
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<td>Focus on substance</td>
<td>5, 8</td>
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As far as both sides of the game are concerned, they have two alternative strategies, so there are four possible outcomes in the game. The goal of both sides is to maximize their own interests, so the situation of the game is as follows: if student A is concerned about the substantial gains such as expanding knowledge and further development in the future, while student B only focuses on the immediate gains such as scholarships brought by good grades, and the rewards of three good students and blindly pursues them. In terms of time, students A may get less income than students B, and vice versa. If students A and B pursue high scores, then they will get equal income. The game model has pure strategic equilibrium, Nash equilibrium solution is (8, 8), that is, students A and B are heavily scored. The essential reason for this balance is that because of the single means of the prior student evaluation system, exaggerating the examination results as the main basis and necessary conditions for students' evaluation work (such as undergraduate students' evaluation of awards, Party membership recommendation qualifications, exemption from examination recommendation for graduate students, etc.), which will be the future job-hunting and work for students. As a result, students only pay attention to the tightening of teachers' scoring criteria when choosing courses. As a main indicator of evaluating teachers' teaching quality in schools, examination results also make some teachers abandon their professional ethics, perfunctory negligence and dare not strictly manage for fear that students will not choose their own courses. Students, when grading papers, relax the "reverse selection" phenomenon of grading standards. However, if some students choose teachers who are not strict in management and prefer to score high, they will get success and benefit, while other students with similar conditions choose courses that are rigorous and demanding because they emphasize the improvement of their practical abilities. However, they must make more efforts and invest more time, and not necessarily be able to do so.
Successfully passing the examination, this unfair competition makes these students who value substantial gains, such as expanding their knowledge and further development in the future, obviously at a disadvantage. Therefore, when students choose courses and teachers on the basis of the above-mentioned principle of heavy scores, they gain benefits. Affected by the "herd effect," other students will compete to follow suit, resulting in the spread of the phenomenon of "reverse course selection."

**The Countermeasure of Suppressing the Spread of "Reverse Course Selection" in Colleges and Universities under the Background of Credit System**

Through the analysis of the participants' strategy game involved in the course selection system, we can know the reasons for the phenomenon of "adverse course selection" driven by the pursuit of maximizing their own interests in all aspects. But we can't stay here. The ultimate purpose of analyzing problems is to find solutions to them. Therefore, on the basis of the previous analysis, the author puts forward some suggestions and Countermeasures to restrain the spread of the phenomenon of "reverse course selection" under the credit system, as described below [6].

**Optimizing the Evaluation System of College Students and Forming a Pragmatic Course-selecting Culture**

Through analysis, it is concluded that in the game between students caused by the limitations of the current university evaluation system, the optimal strategy of students is (heavy score, total score). In order to change the game pattern, the author believes that only by strengthening the guidance of College Students' course selection and further optimizing the evaluation system, can the Pareto optimum of students' course selection be realized. Colleges and universities are not only cultivating students with good grades, but high-quality and all-round innovative talents. Therefore, we should guide students to actively devote themselves to quality education so as to effectively curb the emergence and spread of the phenomenon of "reverse course selection." Specific optimization measures are as follows.

**To Further Improve the Tutorial System and Build a "Pragmatic" and "Realistic" Course Selection Culture**

The management concept of popular higher education is characterized by the change from "regulation" to "guidance and service" for students. On the premise of respecting students' choices, in order to overcome students' blindness in choosing courses, we should actively implement the tutorial system. Schools should establish a series of relatively perfect operational mechanisms for the training, selection, appointment and assessment of tutors, and put forward higher requirements for them in terms of political thinking, business, professional ethics, etc. The tutors should assume the responsibility of consulting and guiding students in course selection and learning, so as to help students understand the direction and prospects of the development of their major. Understanding personnel training objectives and training programs, as well as the structure of professional knowledge, the relationship between courses and related majors, guiding students to choose courses scientifically and rationally and arrange learning process according to their own needs and characteristics, according to the teaching plan, and conducting targeted learning guidance so as to solve students' learning problems in a timely manner. In life, we should care about students' physical and mental health, master ideological dynamics, do a good job in Ideological education, and guide students to develop in an all-round way.

**Conclusion**

This paper studies the phenomenon of "reverse course selection" in colleges and Universities under the credit system. Under the current credit system, the phenomenon of "reverse course selection" in colleges and universities exists universally and continues to spread. Students' behavior of "reverse course selection" is not only related to the integrity and rationality of their knowledge
structure, but also to the smooth implementation of the course selection system and credit system. This paper uses game theory as a tool to analyze the causes of the phenomenon of "reverse course selection" in colleges and universities under the credit system, and puts forward corresponding countermeasures according to the reality of our country.

Optimize the evaluation system of college students and form a "pragmatic" course selection culture. That is to say, on the one hand, we should further improve the tutorial system, strengthen the guidance of students in choosing courses, so that students can rationally design their own elective reading plans in four years of university, and construct a "pragmatic" and "realistic" elective culture; on the other hand, we should adhere to the concept of "educating people-oriented" and adhere to the concept of "helping students to be comprehensive, sustainable and coordinated." The idea of development takes "all for students, all for students, all for students," as the starting point of work, and strives to create a good atmosphere of management education and service education. We should pay more attention to the education and guidance of students in the process of training, and change the summative evaluation system to a combination of formative and summative evaluation system, that is, to establish an evaluation and assessment system based on the education process training, and to cultivate talents who are good at learning and thinking and innovation. This is also the original intention of implementing the credit system in Colleges and universities.

References


