

## Discussion of Undergraduate Tutorial System for Safety Engineering Major

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**Abstract.** The implementation of the undergraduate tutorial system is the powerful complement of the traditional teaching mode, and it is the embodiment of modern teaching model which in accordance with the aptitude of each student. The present situation of undergraduate tutorial system in Chinese universities was analyzed, and the main problems existing in the system was pointed out. Taken the present situation of currently imperfect counselor management system into considering, the feasibility of undergraduate tutorial system in safety engineering major in mining was analyzed. Considering the characteristic of safety engineering, the comments and suggestions of implementation undergraduate tutorial system in safety engineering major was put forward and discussed.

### Introduction

The tutorial system for undergraduates originated from University of Oxford in Fourteenth Century, and its unique educational model lasted for several hundred years [1-4]. The tutorial system for undergraduates is different from the tutorial system at the graduate level. It is a kind of educational system which is guided by tutors for the undergraduate students' study, scientific research, moral character and life. The implementation of undergraduate tutorial system is a powerful supplement to the traditional apprentice teaching mode, and it is the embodiment of teaching students in accordance with their aptitude. The tutorial system of undergraduate responsibility mainly has three aspects: first, it can provide guidance for the formation of students' correct ideology; second, it can provide suggestions for students' major learning; third, and it can cultivate students' innovation consciousness and innovation ability.

In the late twentieth Century and early nineteenth Century, with the introduction of elective system and credit system in the universities, graduate training tutorial system was extended to undergraduate training in Harvard University, University of Oxford, University of Cambridge and other colleges and universities. In China, with the gradual deepening of the reform of higher education and the increasing attention to the cultivation of creative talents and quality education of undergraduate students, many universities have begun to explore and try the undergraduate tutorial system [5]. In 2002, tutorial system was begun to implement for undergraduate education in Peking University, and in Zhejiang University, the tutorial system in undergraduate was applied in undergraduate education management. And now, there are more and more universities began and try to conduct and trail tutorial system in undergraduate to improve the teaching quality of undergraduates. But for some special major in universities, the implementation of tutorial system has some problems.

In this paper, firstly, the current situation of undergraduate tutorial system in University of China was analyzed, and then the status quo of safety engineering major of mining in China university of

Mining and Technology (Beijing) was depicted, the professional undergraduate teaching mode of safety engineering was discussed, in the end, the feasibility of safety engineering undergraduate tutorial system was analyzed, and the opinions and suggestions of tutorial system implementation was given.

### **Present Situation of Undergraduate Tutorial System in China**

The tutorial system for undergraduates in China is at the exploratory stage, so there have many problems in the process of trial and implementation generally, the following problems as following[6-8]:

1) The undergraduate tutor is confused with the function of the class teacher and counselor. Among these confusions, the information asymmetry is particularly prominent. In the process of managing students and interaction with students, there are role conflict or overlap, these caused some difficult to students in understanding tutor's function. So, once students meet their learning, living, or ideological problems, they often do not know who is more suitable to help them.

2) Tutor resources lacking in Chinese universities. With the enrolled students increasing in Chinese universities, the ratio between teachers and students is a huge difference in China compared with America or Europe universities. The teacher student ratio of Stanford University is 1: 3, of Princeton University is 1: 6, but in China, it is about 1:25 to 1:30. So, the lack of teacher resources in Chinese universities hinders the implementation of the tutorial system.

3) The model of tutorial system is single. At present, the tutorial system model of Chinese universities is single, and lack of flexibility. In addition, counselors resources lacking, the tutorial system implementation increases the teacher working pressure to a certain extent. In Chinese universities, especially in Science and Engineering Colleges, the teacher who undertake teaching tasks must take care of scientific research side by side. The implementation of tutorial system add more pressure not only on teaching tasks but also scientific research to the teacher undertaking undergraduate tutor work.

4) Standard and evaluation mechanism of undergraduate tutorial system in Chinese universities is incomplete relatively. First, although the obligation and assessment mechanism of undergraduate tutorial system is formulated in Chinese universities, but it is difficult to implement in the implementation process; second, there is no effective incentive mechanism in the implementation of undergraduate tutorial system, this lead counselor lack enthusiasm and initiation to implement the tutor's duty.

The above problems are common in Chinese Universities, so the interaction consciousness of students and teachers is very weak in undergraduate tutorial system, all these result in the undergraduate tutorial system existing in name only, and the undergraduate tutorial system is just a formality in most Chinese universities.

### **Feasibility Analysis of Tutorial System for Safety Engineering Specialty**

#### **Present Situation of Management Mode for Safety Engineering Undergraduate**

At present, the model of professional counselor management and head teacher assistant was applied in safety engineering of China University of Mining and Technology (Beijing). Problems of undergraduates' daily life, learning and ideological undergraduates are mostly responsible for the counselor. And at now, two full-time counselors are assigned to response the all tasks of about 200 undergraduates in safety engineering. So to now, during the process of counselor system[9-11], there exist the following problems:

1) the management of education in modern universities involves various aspects of administration, party affairs, Youth League committees and other aspects of schools, colleges, grades and so on. In daily practice, not only the numerous and jumbled work contents, but also the heavily daily routine process, lead counselors struggling to cope with. In addition, the individual thought and behavior of contemporary college students varies a lot, so counselors can only use the limited energy to deal

with all the minor details problem in the passive processing, there is little time and energy to improve the overall quality of the design scheme actively according to the personality of students, thus, there is no chance to develop the potential of students.

2) the identity of counselors are usually the university graduates obtained their degree certification from this major or from the university or masters of this major, so, under normal conditions, counselors are not familiar with the relevant professional knowledge of students, they deal with the education management mainly relying on long-term work experience. Student management involves all aspects of daily life, but the most basic quality for students to grow up, such as learning methodology, the comb of professional knowledge, the cultivation of professional interest, the guidance of employment and postgraduate entrance examination, etc., counselors can't play a full role. Thus, this leads to more lectures on ideological and political aspects in the education management work of the counselor, therefore the guidance of the relevant majors can only depend on the teacher's classroom teaching. All these will affect the development of students' comprehensive quality.

3) Because of energy and time, even if the counselor did his best, he could not go into every student's extracurricular life carefully, understand their thoughts and dynamics, and listen to their inner world. Thus, it is impossible to construct a psychological consultation platform to meet the emotional needs of undergraduates. In the diversification and complexity of today, the lack of such channels of psychological communication has undoubtedly become an important bottleneck for the healthy development of students.

### **Feasibility Analysis of Undergraduate Tutorial System in Safety Engineering**

1) analysis of feasibility of tutorial system resources; as to the teacher resource of safety engineering in China University of Mining and Technology (Beijing), there are 19 full-time teachers, 2 experimental teachers. And every year, the average of 60 undergraduate students are enrolled in safety engineering, the teacher-student ratio is close to 1:3. Relative to other engineering colleges and majors, the implementation of tutorial system resources are relatively full and rich in safety engineering of CUMT (Beijing), there is the possibility of realizing the tutor system.

2) The implementation of undergraduate tutorial system is conducive to better access to the professions studied of students. Because the counselor has different majors and backgrounds from the students under management, as a result, counselors are more familiar with the students' daily management and ideological education, but not very good at students' professional problems. Therefore, when faced with problems related to learning methods, curriculum selection and employment guidance, they will be unable to help or even to mislead children. The introduction of the undergraduate tutor system can help students in professional education. Let students get ideological and life help from counselors, get professional and academic counseling from undergraduate mentors. In this way, the management of colleges and universities from the "tube student" transition to "guide students". Through the communication with the undergraduate mentor, the students can choose the professional direction of the subject more quickly and efficiently, thus completing the study of the major much better.

3) The introduction of the undergraduate guidance system will help improve the overall scientific research level of undergraduate students. CUMT (Beijing) is a special research institution with the background of the coal industry, and safety engineering specialty has more characteristics of industry and research. The professional teachers of safety engineering have a strong scientific research ability, so implement the undergraduate tutorial system have the necessary conditions in safety engineering and professional teachers are also fully qualified to become undergraduate mentors. In the daily teaching of undergraduates, mentors may include undergraduate students' participation in scientific research in the teaching program. Based on the direction of the mentor's scientific research, undergraduates can be guided to carry out research projects within their means. In the course of scientific research, mentor gives the required students the corresponding credits in order to reduce the credits for the required classes. Furthermore, the tutorial system of

undergraduate students increases the initiative of undergraduate students to participate in scientific research and the enthusiasm of mentors to bring undergraduates.

## **Suggestions on Implementation of Guidance System for Safety Engineering Specialty**

### **Locate the Functions and Roles of the Tutor, the Class Teacher and the Counselor**

Counselors are an important part of student management in Colleges and universities. The counselor, with the dual identity of teachers and cadres, is the backbone of the ideological and political education of college students and the organizers, implementers and instructors of the daily ideological and political education and management of college students. The class teacher refers to the specific aspects of the study, ideological education and daily life of one or two classes in accordance with the training objectives of the colleges and universities. The system of class teachers and the making of counselors as the most important student education management system have played a great role in the development of our education. But the system of class teachers and counselors is not perfect. It is reflected that class teachers are usually limited by time and space, and are limited to a relatively limited classroom, while counselors are limited by energy and manpower. At the same time, in China's traditional higher education, there is a phenomenon of disconnection between teaching and the management of students' education, that is, professional teachers are only responsible for disseminate professional knowledge to students in the classroom. After class, students are hard to meet professional teachers, let alone education. The educational role of the subject of professional teachers has not been fully played. The full-time ideological and political personnel are responsible for the daily education and management of the students, education and guidance to the students in many aspects, such as thought and behavior, but often can't find the proper point of entry, which appears empty and unconvincing[12].

The establishment of undergraduate tutorial system has made up for above mentioned loopholes in student management, so that the responsibilities of counselors, class teachers and mentors have focused on each other, forming complementary relationship. The counselor is mainly responsible for the guidance and help of students' learning, ideological and political, daily life and so on. The class teacher is responsible for the study and daily life of the class. The tutor system requires a new relationship between professional teachers and students. The mentor should teach students in accordance with their differences and teach students in accordance with their students' differences. Tutors guide and educate students from their ideas, morality, outlook on life, values, study, life, scientific research and heart, so as to help students get through college life better and cultivate excellent talents for the country. The three roles of counselors, class teachers and mentors are different, and they have different emphasis on the training of undergraduates. Counselors, head teachers and tutors perform their duties to form an organic "three in one" undergraduate education management mode.

### **Various Channels to Improve the Construction of Tutorial System**

The object of university training is semi mature teenagers, whose psychological control and self-cognition are not strong enough. In the course of training, in view of the psychological and development characteristics of the students in this period, it is necessary to enrich the psychological knowledge of the mentors, improve the mentor's psychological guidance ability, thus can guarantee the mentor to judge and mediate the psychological state of the students freely[13]. At the same time, it should strengthen the training of mentors, including the significance of the tutorial system, the duties of mentors, and the work system of tutors, and so on, it should form a team of teachers with reasonable knowledge structure and high comprehensive quality.

As to the tutor team composition[14], Professional teachers are the first choice. In addition to systematic professional knowledge, professional teachers can grasp the direction of professional development well, and have good persuasion and convincing ability with their own learning experience, and have natural advantages in guiding and guiding students' learning and practice. In addition to the professional teachers as the main tutors, retired teachers, outstanding masters and

doctoral candidates can be employed as mentors. Among retired teachers, some teachers who have strong sense of responsibility and willing to play the role of remaining heat should be selected as tutors for undergraduates, which can also play a role in helping young teachers.

### **Adopt a Diversified Model of Tutorial System**

According to the literature statistics published at home and abroad in recent years, based the different standards, the model classification of the tutor system is not the same. There are four year tutorial system for learning and life in University, grade tutorial system for junior grade and senior grade, an excellent tutorial system for excellent students, students' dormitory tutor system that pays attention to the training of living ability, scientific research tutorial system to guide students to participate in scientific research to increase their scientific research ability and practical ability, individuals freely choose to join a community tutorial system with similar interests and specialties, project tutorial system for cultivating students' innovative ability through various scientific and technological competitions, graduate design tutorial system, and so on. The school background and culture are different, and the mode of tutorial system implementation is different, but the basic aim is to train students' learning ability, scientific research ability and practical ability better.

### **Establish a Sound and Reasonable Management and Implement Mechanism**

A sound and reasonable management mechanism includes the management mechanism of the mentor and various institutional arrangements, such as the mentor's training and recruitment system, assessment methods and incentive mechanism, etc.. The specific system and arrangement include the purpose and significance of the tutorial system for undergraduate students, the conditions of the mentors, the responsibilities of the mentors, the appointment and assessment of the mentors, the treatment of the tutors, and the work process, work method, work plan and diary of the mentor, the feedback form of the mentor's activities, and the record of the performance assessment of the mentor, and other related documents.

In order to motivate the work of mentors much better, it should establish a reasonable incentive mechanism. In order to form a set of reasonable incentive mechanism, the characteristics of the professional organization and the specific management environment are summed up and the institutional arrangements are made by summarizing the incentive factors in these theories. Combined with the operation characteristics and specific management environment of this professional organization form, the incentive elements in these theories are summarized and the system arrangement is made, and a set of reasonable incentive mechanism is formed.

### **Strengthening the Training of Students' Innovation, Practice and Scientific Research Ability**

One of the main objectives of university students' training is to cultivate students' innovative, practical and scientific research ability.

Mentors encourage and guide students to participate in business planning competitions held on a regular basis for college students' innovation and entrepreneurship platform, encourage students to participate in the research projects of mentors, through which increase the students' practical ability and scientific research ability. Students are encouraged to take part in science and technology training projects and tutors' individual to one guide activities. According to the students' professional interest, the mentor will guide the science and technology competitions. In this way, students' ability to design is exercised through activities, and students' awareness of environmental protection is cultivated through design themes.

### **Advocating Individualized Education**

In the implementation of undergraduate tutorial system[15], especially the specialty of science and technology, it should guide, respect and develop the student's personality, fully excavate the creative potential of the students, and improve the comprehensive quality of the students in many aspects as the purpose of the mentor. Tutor system should help students to deal with the problems encountered at all stages of the school. In the first three grades of the University, the tutor should be



more responsible for guiding each student to meet all kinds of specific difficulties in adapting to the ideological understanding, course selection guidance, course and professional study as well as other aspects. In the grade fourth of the University, the mentor should focused on the professional skills of each student, the promotion of scientific research ability, career planning, social practice, interpersonal relationship, job hunting and so on, which fully reflected the characteristics of undergraduate tutors teaching students in accordance with their aptitude and individualized education.

## **Summary**

Considering the characteristics of the profession of safety engineering and the present situation of the management system of instructors in our school, a tutorial system was put forward to manage the undergraduates. The feasibility of implementing the tutorial system was analyzed in the major of safety engineering in our school, and the conclusion is that implement undergraduate tutorial system in our safety engineering specialty is entirely feasible. and put forward some suggestions and suggestions. Combining with the management mode of undergraduates and the characteristics of the professional teachers of safety engineering specialty in our university, the specific suggestions were given for the implementation of the tutorial system.

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