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Exploration and Practice on Reformation Mode of Undergraduate Tutorial System in Faculty of Computer Science

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Abstract

In view of the difficulty in employment of computer science major, the further exploration of the new cultivating mode to adapt the social development has been the task at the forefront of the colleges and universities. So, supported by the technological means, the implementation of the undergraduate student tutorial system which follows the principle of “the whole participation, contracting by individual, divide-and-rule”, can make the combination of teaching and moral education in the universities come true, and can make the teaching in accordance with the students' aptitude to meet the goal of individualized cultivation. It also can be beneficial to the successful operation of credit system thus to cultivate more excellent talents.

Index Terms: major of computer and science; undergraduate student tutorial system; credit system; moral education

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Recent years, with the development of the information society, IT service has been more and more popular. However, there is a great breach of IT talents of appear in China, especially in the field of Software. In the meantime, the employment related to the major of computer has no choice but to run into trouble, which draw the cultivation of the higher education of the students in the major of computer and science into an unsolved problem. Based on this, pilot projects have been introduced to the Faculty of Computer and Science in our university. On the basis of complete credit system, with the breakthrough of the tutorial system reform, we devote to the cultivation of creative talents and to the educational administrative system, and we explore and do experiments with good results. It is also an important problem which needs to be solved as a national strategy in the “National Outline for Medium and Long Term Education Reform and Development (2010-2020)” [1].

1. Introduction

Colleges and universities are the core of the society responsible for cultivating the high-caliber personnel, but after the massive enlarging recruiting scale, the quality of the undergraduates reduces doubtlessly. Each year,

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millions of youngsters enter higher education, but meanwhile, the deficient human resources have already catalyzed an education mode of “mass-production of students”. The disadvantages of this pattern mainly manifest in that the universities put more emphasis on the management and knowledge, while show little concern on the moral education. Being lack of the suitable guidance and cultivation of each individual student is also defect of this mode. After students graduating from colleges and universities, their knowledge and personality can't meet the requirements of the whole society, which indirectly worsen the problem of employment difficulty. Due to the economic crisis, the employment environment is aggravated, and the disadvantages of this mode are becoming more and more obvious.

Recent years undergraduate student tutorial system has been raised in the field of higher education of our country[2][3]. This, on one hand, is to make up the deflection of the “batch production” education mode to a certain context, on the other hand, is a beneficial attempt at achieving personal education under present circumstances of higher education. Take our school as an example, we have implemented “complete credit system” and carried out class tutorial system since 2004. Teachers, however, are now feeling the increasing pressure of teaching and scientific research, which makes that the effect of class in undergraduate student teaching has been gradually weakened and the original undergraduate student system has becoming difficult to undertake the present task confronted higher education. Thus, education has ceased to effective to a high degree. Generally, we are still in the elementary education framework which in essence is the “class teacher” system in middle school and the tutorial system is just formalizing, though we have made great efforts and intensified exploration in various aspects. After 3 years' practice and exploration, in early 2008 the Faculty of Computer Science and Engineering of our university has carried out effective reforms in class tutorial system and implemented the new tutorial system—“full participation, contracting by individual, divide-and-rule”.

2. Exploration in new pattern of under- graduate student tutorial system reformation

As a systematic design to explore new means of teaching and education in colleges and universities, undergraduate student tutorial system is beset with difficulties during its practical operation: there is shortage of tutors with multitasks which far exceeds their ability; the implementation of tutorial system in colleges and universities has not formed a good atmosphere; leaders, teachers and students haven't paid enough attention to it; the remuneration and reward tutors get by the workload of guiding students is much less than that gained from the equal workload of other kinds of teaching and scientific research, which makes it difficult to mobilize tutor's initiative[4]. Concerning about these problems, the Faculty of Computer Science of our school carries out an effective reform on Undergraduate Student Tutorial System.

2.1 Selection and appointment mechanism of under- graduate tutors

(1) According to teacher-student ratio at present, education of branch campus as well as different features between the fundamental curriculum stage of freshman and sophomore and the specialized curriculum stage of junior and senior students, the faculty arranges class tutors who are selected and appointed publicly in the whole faculty and who are presented to letter of appointment in the stage of public subjects for freshman and sophomore, while the faculty arranges a tutor for each 3 to 6 students who are junior or senior ones in the stage of professional courses and the ones whose graduation will be extended.

(2) All on-the-job professional teachers are obliged to be an undergraduate tutor, and specific works are arranged according to requirements of each department.

(3) In accordance with the style of a two-way selection which is based on tutors and students, and supplemented by school's allocation. The specific methods are as follows: Each department convenes a teacher convention and arranges teachers to introduce their own research orientation and courses they teach by themselves (or by other forms like faculty's website, written materials). Students can choose tutors according to their own interests and practical situation, while tutors are able to choose students relying on their requirements.

Finally, the faculty is responsible for unified allocation. The number of students of every grade each tutor guides should be limited by tasks they actually can accomplish, and it is not suitable to exceed this limit. To be specific, the number of students guided is determined by the number of teachers and it is feasible that a professor, an associate professor and a lecturer respectively guide 5, 4, 3 students in every grade. Once tutors and students are determined, consistent responsibility system will be carried out from daily management, academic advising to graduation project guidance, getting a job or further education. If there is a specific situation needing to change tutors, students or tutors can put forward application at the end of each semester. The exchange task will be done by the leading group of appointment and evaluation for tutors under the procedures.

(4) On the basis of faculty's arranging tutors, old professors of Generation Committee are appointed to be the second tutors for freshman and sophomore and are responsible for helping the faculty complete cultivation education for students, while the leaders and engineers of relative enterprises become career tutors or the second tutors for junior and senior students, and they are in charge of cultivating student's ability of adapting to enterprises as well as society.

2.2 Responsibilities and requirements of undergraduate tutors

In the view of economics, teachers, as school's resources, possess the characteristics of scarcity. Being the consumer of this scarcity, students enjoy the infinity of needs. Therefore, responsibilities of undergraduate tutors must be clearly defined, that is, "what they should guide and what they should not guide". Generally speaking, the guidance tutors provide for their students should be a whole-process and overall one.

2.3 The appointment and evaluation of tutors

It is essential to have a set of scientific system of appointment and evaluation when the undergraduate's tutors system is carried out[6][7]. The faculty establishes the leading group of appointment and evaluation for tutors once for each semester. The tutors whose testing result does not reach the requirement during the employment term will be dismissed and the result will be reviewed and recorded in the student division. The evaluation for tutors mainly includes student assessment, tutor's accomplishing conditions of their working duties, daily works of school and faculty, conditions of getting involved the class and style of class and study, and other assessment criteria as well: class attendance rate, rate of student's violation of disciplines, pass rate of postgraduate examination, excellent rate of student's scores, rate of students who fail to pass examinations, pass rate of CET-4, employment rate, backward graduation rate, participation rate of sci-tech activities, etc. Particular emphasis will be put on testing tutor's working process. For example, the criterion of the process of student assessment and working reports need account for 80% of the whole criteria. The working evaluation for undergraduates tutors will be added to their annual evaluation and the evaluation results will be the basic conditions for their annual working evaluation, post promotion and position appointment. The undergraduates tutors who fail to pass the annual evaluation will be treated as ones who fail to pass the annual evaluation. In addition, on the basis of the evaluation, the faculty establishes special funds to create effectively incentive and guarantee mechanism.

2.4 Explore comprehensive, diversified and interactive management system platform of student education

Auxiliary means for implementing system which can produce effectiveness and improve efficiency when the three are intensively combined with each other[8]. The Guidance of the National Program for Medium and Long-term Educational Reform and Development (2010-2020) reveals that much emphasis must be put on information technology which has revolutionary effect on education development and education management information system need to be built. Modern management mode of colleges and universities whose ways and means still stay in the time of one-dimension of value outlook, can not adapt to the time of information when multi-dimensions of value outlook coexist. Accordingly, responding to tutorial system reform, we have done a

lot on the organization form of student education management and completed the exploration of interactive platform of system software for tutors, counselors, students and students' parents, that is, informational student management appliance system having been put into trail run, which can help prop up the supporting means of informational technology during the period of tutorial system in order to satisfy the appeals from the diversification trend. This system is based on SOA (Figure 1) student management system, utilizes the framework of spring + struts + ihat is, uses layered design methods to build various kinds of student management's automatic service library by a loosely coupled way so as to achieve complete student management service, support heterogeneous computing environment by assembly service and make it convenient for utilization of integration with other information system.

In the light of the features of student education management, this information organizing system is made up of 4 parts, namely dynamic system, control system, emergency system and value system which are correspondingly related to 4 works: construction of study style, daily management, safety and stability, and ideological and political education. This kind of mutual integration between information organization and tutor management system at present can achieve the innovation of education management tools under network environment.

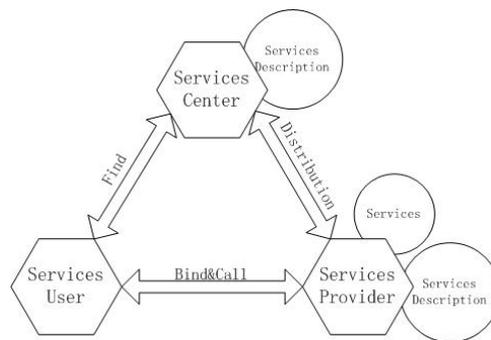


Fig 1. SOA Structure

Tutor's responsibilities includes guidance on ideological ethnics, guidance on selecting courses, introduction of research contents, arranging students to participate in subject research , guidance of student's graduation projects

3. Significant progress has been made during the reform of the undergraduate student tutorial system

Practice has proved that the new tutorial system is a good way to build closer relationship between our students and teachers, so as to carry out subjectivity education and improve the comprehensive qualities of our graduates. It is also a training ground to optimize the construction of the teachers as well as train the backbone teachers. The tutorial system was put into practice in March 2008, and since then, we got further progress in each field under the pattern of "the whole participation of students management and education."

In the first place, the reform of tutorial system brings tremendous change to studying attitudes and learning effect. The students can throw time and energy into study, so that there is an obvious improvement in the construction of the academic disciplines. According to data of a class statist iced at the end of the 4th and the 6th semester, the selected courses increased by 25%, but the excellent rate of students raised from 29% to 45% and the failure rate decreased from 12% to 5.9%; Number of students warned for his poor credits down from 48 to 1 and attendance rate steady on 98%.At the same time, the enthusiasm of cultivating the students' innovative abilities by our undergraduate tutors rises a lot. At present, more than 50% of the students participate in the tutorial research project. The abilities of operation and innovation of the students have been sedulously fostered. The motivation of the study has been improved a lot as well.

In the second place, the reform of tutorial system makes an outstanding contribution to release the pressures of employment. Although undertaking a heavy damage as a result of economic crisis especially in IT industry and faced with a tough job market in major of computer and science or something equivalent, we still make a great effort in enhancing the employable competitiveness of our graduates owing to the change of the training pattern. In the year of 2009 and 2010, the real rate of employment in our faculty went beyond 95%.

Last, the reform of tutorial system intensifies coherence and centripetal force between teachers themselves and teacher-students.

4. Conclusion

Combined with the experience of the undergraduate student tutorial system implement in the Faculty of Computer, the full play of the superiority of the credit system is benign interaction with the establishment of the effective mode of the tutorial system. Insistent perfecting the undergraduate student system and conscientious exploring a pattern conforming to the actual conditions of our higher education, which can be a good way to solve the deep-rooted and fundamental facing problems in the field of higher education in our country.

Reference

- [1] National Outline for Medium and Long Term Education Reform and Development (2010-2020)".(in Chinese)
- [2] Zhang Fusheng. Mode Research of Students Cultivating through Undergraduate Tutorial System[J]. Journal of Liaoning Institute of Technology, pp:139, June 2006(in Chinese)
- [3] Liang Xi. Innovation and Practice of Undergraduate Tutorial System with Credit System [J].Research in Higher Education of Engineering,,p:70,June 2006 (in Chinese)
- [4] Jing Guo'an. The advisor institution of the undergraduate: an educational innovation in university, Journal of Higher Education. vol.26,pp.80-84,May 2005(in Chinese)
- [5] Tian Yongqi. Study of the problems Existed in the Practice of the tutorial system, Journal of Inner Mongolia Finance and Economics College,vol.2,pp.21-22,December 2004(in Chinese)
- [6] Du Zhiping. An Analysis of the Tutorial System of Undergraduate in the University of Oxford,University Education Science, vol.100, pp.50-53, June 2006(in Chinese)
- [7] She Yuanfu.A Probe into the Tutorial System Under the Credit System,Jouranal of Yangzhou University,vol.6, pp:49-51, September 2002(in Chinese)
- [8] Liu an'wu. Comparison of the Graduate Tutor System and the Postgraduate Tutor System,vol.34,pp.130-132,July 2009(in Chinese)

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