

Research of Training Pattern for International Computer Science Elite

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Abstract. Training international talents is one of the important tasks of higher education now. Students, faculty and training environment of international cooperation are essential elements of training international computer science talents. The processes are curricular system compatible with international standard, training environment, cooperation with international universities and companies. Using appropriate training pattern, we can get a good supply of computer science talents.

Keywords: International talent; Training pattern; Computer science.

1.Introduction

The rapid development of world economy causes the requirement for international talent and promotes the internalized of higher education[1]. Many colleges and universities are exploring the training pattern of international talents. They proposed that higher education should be compatible with international standard. The training aim is not only engineer who has professional knowledge and skill, but also compound talent who can implement international exchange and cooperation, and follow the latest technologies in the world. As one of the rapidly developing specialized field, computer science has broad application area. Training a lot of international computer science talents can promote related specialized area.

The rest of this paper is organized as follows: section II relates the necessity of training international talents. In section III, the conditions of training international computer science talents are listed. Section IV presents training methods for international computer science elite. Finally, Section V concludes this paper.

2.The Necessity Of Training International Talents

The development of economic globalization and expanding of international exchange and cooperation promotes the requirements for international talents all over the world. For raising the nation's competitive strength, many countries pay great attention to develop human resource and carry out the strategy of training talents with international view. Chinese government proposed "the strategy of reinvigorating China through human resource development" in time[2], and recognize the developing and management problem of human resource from the view of raising nation's competitive strength. Carrying out the strategy of reinvigorating country through human resource development is the requirements of facing new century, taking part in intense international competition and improving the quality of citizens comprehensively[3].

As the base of training talents, colleges and universities should address the requirement trend of human resource, quicken the step of cooperation with foreign higher education and research the strategy of training international talents. In the era of information and economic globalization, training high competent students who can understand multiculturalism and has team working consciousness and international competitiveness is the developing direction of higher education[4]. Training international talents is an efficient path of speeding the internationalization of our country's higher education, and an important action to implement the strategy aim of strengthening country by qualified personnel.

Some developed countries reformed their higher education's training pattern, implemented a series of methods to enhance the international exchange and cooperation and trained international talents[5]. For breaking the monopolization in higher education marked by the U.S. and Britain, France enhanced the higher education exchange with European Union and Asia countries to promote the training of international talents.

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As the important member country of European Union, Germany actively took part in the ERASMUS and SOCRATES Plans, and encourage students to engage in researching or studying action in other member country. Otherwise, foreign colleges and universities promote the internationalization of course to offer a reliable condition for training international talents. For example, Australia higher education make students know politics, economy, culture and history of international society by offering various international courses and introducing other country's history, geography and custom.

In China, many universities are activity exploring the training pattern of international talents[4]. For example, some famous universities such as Nankai University and Fudan University redefined the human training aim and try to training qualified compound talents with international view and global consciousness. Nankai University followed the era developing step and offered International Finance, International Economics and Practice of International Trade courses which have been national excellent courses now. Fudan University offered Chemistry and Human Being, Global Sociology courses and make problems of human being's survival and development as main content. These course expanded students' international view and enhanced their sense of global responsibility. Huazhong University of Science and Technology proposed "Implementing quality education engineering with a core of innovative education, building the system of personnel training and try to train high quality innovative talents with international competitiveness".

3.The Conditions Of Training International Computer Science Talents

International computer science elite should not only be proficient to professional knowledge and skill of computer science, but also have good ability for international communicating and consciousness. They can follow the developing trend of international computer technology, solve project practice problem using leading technique and platform in industry, and have good international competitiveness. To train these highly competent talents, essential teaching condition and appropriate training environment is necessary. The cooperation of teacher and students is also very important.

3.1. High Quality Students Are Seeds Of Elite

For training international computer science elite, we must choose some talent seeds who have development potential. They should know and be proficient in international language to get to internationalized aim. Excepts the conventional English studying in college, whole English teaching should be implemented in elite class. English teaching material, English textbook, English exercises and English test paper, even teaching in English can offer students a whole English environment to enhance their English ability and make a reliable base for international exchange or practice in the future.

3.2. Excellent Teachers Are Key Of Training Talents

Teaching in English for elite class has high requirements for teacher. They should not only have related professional knowledge, but also be proficient in English and can explain the course clearly with fluent English. Universities in Hongkong train computer science engineer at the base of teaching in English, emphasize the communicating between teacher and students in class, pay attention to the frontier nature of knowledge and the combination of research and application. Most of university in China still train computer professional person base on teaching in Chinese and using the traditional teaching method. The shortage of excellent scholar with international view makes it possible that many students couldn't understand the latest international knowledge in computer area and lack the ability of international exchange and competitiveness. To solve the shortage of excellent teacher, universities can adopt the method of combination of inviting and training. At first they may invite excellent teacher out of sea and start the instance of teaching in English. Then encourage teachers who have oversea education background to offer whole English course. On the base of these steps, universities should prepare reserve teachers by sending some excellent teachers to go abroad for further studying and improving their English ability so that they can teaching in English after they come back.

3.3. International Cooperation Training Is Important To Expand Students' View

International talents shouldn't be trained only in China. They should continue studying in some oversea internationalized universities. Placing themselves in the environment of international education pattern, studying the advanced technology and research strategy, they can expand their view and become international elite talents. For this reason, universities in China should build the cooperation training mechanism with foreign universities, train talents using the pattern of "1+2+1" or "2+2", and promote the cooperation project with recognizing credit each other.

3.4. Cooperation With International Corporation Is Efficient Path To Improve Students' Practice Ability

The elite of computer science should not only study massive theoretical principle knowledge but also go practice in corporations. They should resolve the actual problems by using the knowledge they had studied to raise their manipulative ability. Developed countries emphasize the mode of cooperation by producing, study and research, such as some American universities cooperate with enterprises and institutes with cooperation research center and project research center of industry-university, and train the practice ability of students. German universities emphasize the cooperation of university, institute and corporation to do scientific research and production developing, and train high quality talents.

To make students have international view, they should go practice in international corporations and understand the running mode and working ways of those enterprises. Many international IT companies have built their branch in China after the reform and opening-up. There are foreign manager and employees in those companies, the working language and documents are both in English. Building practice base in this kind of companies is very useful for training international talent. So Chinese universities should make cooperation relationship with international companies and cooperate in opening cooperation course, offering practice base, and building technology education center and laboratory. Beijing University and Tsinghua University both have cooperation relationship with IBM Ltd. and built innovative institute to let a number of students join the related research. It not only implement the combination of university and corporation but also help students to broaden the international view and raise their international competitiveness.

4. The Training Methods For International Computer Science Elite

Scientific training method is necessary for training international talents. We should use the curricular system compatible with international standard and teaching and practice pattern.

4.1. Making English Teaching Plan And Implementing Teaching In English

International talents should be trained not only with teaching in English, but also with the contents compatible with international standard. We should set the teaching plan compatible with the characteristics of Chinese students referring to some famous international universities. The plan satisfies the requirement to students who graduate from higher education in computer science and includes contents of international computer science major, and makes students not been poor in knowledge structure than those oversea.

Besides appropriate curricular system, we should built a set of teaching material compatible with international standard including original edition English textbook, English teaching plan, English exercises and English test paper. Of course the most important is teaching in English, which could place students in international language environment and affect them with knowledge and language ability, and make them to elite talents adapted to international environment.

4.2. Improving Students' Ability Of Research And Analysis Referring To International Competition

There are a lot of international competitions for college students now. The most famous competition in computer science area is ACM International Collegiate Programming Contest which is hold by Association for Computing Machinery of American. Its aim is offering a platform to show the ability of solving problems with computer for college students all over the world. It has become the longest history and the largest programming competition in the world, and there are more than 1000 teams took part in the competition every year. Because of its global feature, taking part in the competition can help students expanding their view and training their thinking and practice ability. Otherwise, some famous IT corporations such as IBM、Google、Microsoft also hold technique innovative competition based on new technique and production and lead students following technology development, make them to solve problem with innovative thinking and train them to IT talents with more competitiveness ability. We can see, a better strategy to training international computer science elite is referring to content of international competition, combining some course and competition, adjusting the content of course design and encouraging students to participating in competition.

4.3. Expanding Cooperation With Foreign Universities To Offer Conditions For Students To Continue Studying In International Universities

For expanding view, college students should go to international universities to continue studying. Just when placed in international education environment and went into advanced laboratory in researching area to study the research method and analysis strategy, students can be recognized as talents with international view. To get to this aim, universities in China should build cooperation training mechanism. Now a lot of universities in China has cooperated with oversea universities and offered conditions for students to continue studying in international universities with multi-training pattern based on recognizing credit each other.

4.4. Building Practice Base In International Corporation And Having Students To Visit And Practice

The feature of information technology make itself to develop rapidly all over the world. International IT enterprises locate in everywhere. Every corporation has itself running mode and culture. Just when employee are suitable with corporation's environment, they can show their best personal ability and create for company and society. College students should go to practice in enterprise and solve real problem with their knowledge to improve their manipulative and researching ability. Computer science elite may win many company's favour, but maybe some of them can't adapt to corporation's culture and technology environment. Universities should arrange students to practice in enterprise before their graduation to help them to have better ability of adapting and manipulating. For training international talents, we should arrange students to visit and practice in international corporation. The important step of training international computer science elite is building practice base in IT corporation with international background and training students with cooperation course and joint laboratory.

5. Conclusion

Internationalization is a developing trend of research universities. Training international talents is one of the important tasks of this kind of universities. The efficient paths of training innovative talents with international view include using curricular system compatible with international standard, teaching in English, cooperating with international universities and enterprises, inviting foreign famous professor to make lectures and having students to participate in practice in international corporations.

With the development of reformation in educational and the expanding of international exchange, more and more colleges and universities start to train international talents. The training pattern for international elite will become more scientific and perfect by constantly exploring and communicating.

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7. References

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