

Construction of training mode of high-quality applied innovative talents in computer science and technology

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Abstract: At present, China has entered the information age, and all these developments are based on computer science and technology. Therefore, the society has an increasing demand for talents in computer science and technology. Major colleges and universities should actively respond to the call of the times and do a good job in the training of computer and technology professionals. This article mainly discusses computer and technology. This paper first analyzes the current situation of talent training, and then discusses the specific training strategies.

1. Introduction

In recent years, with the proposal of the slogan of smart earth and perceptual world, the government has attached more importance to the strategy of innovation driven development, and has strongly supported and guided the new industrial mode, new industrial format, new cross technology and new third industry, which are represented by "made in China 2025" and "Internet plus". It is urgent to speed up the process of engineering education reform and innovation. In order to practice the "new engineering", we believe that engineering education must break the boundary of the traditional talent training mode and move towards organic cross integration, so as to explore a new teaching friendly teaching ecosystem of in-depth interaction and mutual assistance among universities, enterprises and society.

2. The applied talents of computer science and technology have their own characteristics

(1) Master solid basic knowledge of natural theory and systematic computer professional knowledge. (2) Have strong engineering practice ability and comprehensive application ability of computer related professional knowledge. (3) Have a certain understanding of economic, management and legal knowledge, and can scientifically and properly deal with economic, management and legal problems involved in technical activities. (4) In addition to basic excellent computer knowledge and technology, we should also have good ideological and moral quality, psychological quality and physical quality. (5) Have a strong awareness and ability of technological development and innovation, can directly participate in the front-line technological innovation of the enterprise, effectively solve the practical problems faced by the enterprise production and management, and have the awareness of lifelong learning to create favorable conditions for improving the competition among peers^[1](Figure 1).

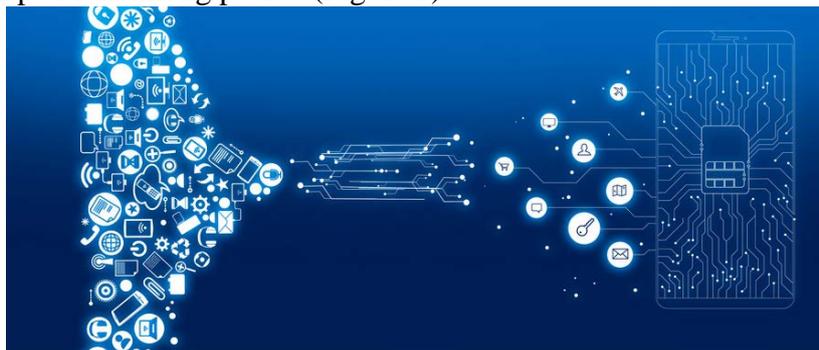


Figure 1 Computer science and technology

3. Training objectives

The engineering type and technology application type in the training framework of computer science and technology professionals are collectively referred to as application type. The objective ratio of engineering talent training is 3 to cultivate talents who can engage in developing products to meet social needs for most IT enterprises. They mainly focus on the comprehensive application of basic theories and principles. They should not only consider the performance of the system, but also consider the cost of building the system and possible side effects; It can be a hardware based system or a software system (application software and system software). It studies how to build the system and how to realize automatic calculation at low cost and high efficiency^[2]. The training goal of applied talents is to cultivate information technology talents for the construction and operation of enterprises and national information system (mainstream demand). Based on the school's orientation, guided by social needs and combined with the characteristics of its industry, the training objectives of Applied Talents in computer science and technology specialty are: to meet the needs of China's socialist modernization, develop morally, intellectually and physically in an all-round way, and have good scientific literacy and humanistic knowledge background, It is a senior applied engineering and technical personnel who systematically master the basic theoretical knowledge of computer science and technology, have strong technical application ability, engineering practice application ability and knowledge innovation ability, can directly participate in the front-line technological innovation of the enterprise and solve the engineering and technical problems faced by the enterprise.

4. Current situation of training mode of Applied Talents in computer science and Technology Specialty

4.1 The teaching content can not keep up with the needs of society

Computer science and technology is a very fast developing discipline, especially driven by social needs. The development of computer science and technology discipline changes with each passing day. We need to constantly pay attention to the frontier technology of the discipline, and teach these frontier knowledge to students in the process of teaching, so as to promote the renewal and growth of students' professional knowledge^[3]. However, the teaching content of our existing computer science and technology specialty is relatively old and has not been updated according to social development, resulting in that the knowledge learned by students can not keep up with the needs of social development, and it is difficult for students to obtain social recognition.

4.2 Ignoring the cultivation of students' application ability

Computer science and technology majors have very high requirements for the application ability of employees, because only employees with relevant application ability can effectively undertake various work tasks and solve various unexpected problems. However, in the process of training computer science and technology professionals, many schools only pay attention to the improvement of students' theoretical quality and ignore the cultivation of students' application ability, resulting in students' high scores and low abilities, which makes it difficult for students to quickly integrate into their post work^[4].

4.3 Problems in teaching methods

Good teaching methods can ensure the realization of teaching objectives. In the teaching process of computer science and technology, unscientific teaching methods seriously affect the teaching effect and the realization of teaching objectives. In the process of teaching, many schools adopt the teaching method of teachers' teaching and students' listening^[5]. Under the influence of such teaching methods, students' awareness of active thinking is poor and their participation in the teaching process is low, so the teaching quality is relatively low and it is difficult to achieve the teaching objectives.

5. Construction strategy of training mode of Applied Talents in computer science and Computing Specialty

5.1 Update the teaching content in time

Firstly, we should pay constant attention to the frontier content of computer science and technology, and then update the professional teaching content accordingly to integrate the frontier knowledge of the discipline, which can not only enable students to understand the development direction of the discipline, but also enable students to master certain frontier knowledge of the discipline, improve the freshness of their professional knowledge and avoid being eliminated by the society. Secondly, update the teaching materials of computer science and technology. The textbook content of computer science and technology is divided into two parts. One part is the basic knowledge and the other part is the subject frontier knowledge. The basic knowledge is a fixed textbook, and the subject frontier knowledge is updated at any time according to the development of professional technology, so as to promote the timeliness of the textbook content.

5.2 Pay attention to the cultivation of students' application ability

First of all, increase the proportion of practical courses of computer science and technology so that students can fully apply their knowledge. Implement the teaching strategy of combining theoretical courses with practical courses, carry out practice after theoretical courses, let students fully master theoretical knowledge, and promote the enhancement of students' practical ability at the same time^[6]. Secondly, let students enter relevant enterprises for practice, let students apply and learn the professional knowledge of computer science and technology in the real environment of enterprises, and promote the improvement of their computer application ability.

5.3 Improve teaching methods

Firstly, in the teaching process of computer science and technology, the integration of teaching, learning and doing is adopted to carry out teaching, so as to combine teachers' teaching with students' learning and doing, so as to improve students' application ability on the basis of understanding knowledge. Secondly, the interactive teaching method is used in the teaching process of computer science and technology specialty. In the actual teaching process, the interaction between teachers and students is used to promote the teaching process and promote students to actively participate in the classroom, so as to enhance students' learning interest and promote the development of students' Application ability on the premise of improving their interest.

5.4 Face the job market and set the direction flexibly

By analyzing the professional knowledge and ability of computer science and technology required by the industry, and integrating the characteristics and trend of the demand for Applied Talents in enterprises and institutions, the talent training strategy of classification and refinement is realized. Specifically, the elective courses of computer science and technology specialty are set as five direction modules, namely database application, graphics and visualization, network information application, embedded system design and application, and computer detection and control^[7]. The setting of direction module basically reflects the technical characteristics of computer application in advantageous specialties. Students are required to give professional guidance when selecting courses. Students can be required to give priority to one direction module and minor in the knowledge of another module according to the employment situation and trend and their own interests.

5.5 Strengthen ability training and establish practice system

For a long time, the content of practical teaching includes four parts: in class experiment, curriculum design, graduation design and professional practice. In order to ensure the teaching effect of practice links, firstly, the practice curriculum system is optimized, and the experiments and projects of software and hardware courses are rearranged to achieve the goal and systematization of experimental content, and the types of experiments are strictly distinguished; The graduation project

uses the graduation project topic selection system, using teachers The three-level review mode of department head and college strengthens the collection of questions ~ [for management, flexible two-way selection of teachers and students meets the actual needs of students; in the professional practice link, two methods are adopted: inviting the signing company to the school for project training, supplemented by sending students to the practice unit. The software practice uses VB and Java language to design the project, and the hardware practice uses FPGA and C++ for hardware logic design and embedded system development The practice combined with the actual needs of enterprises has shortened the running in period between graduates and employment units, improved students' employment, and achieved remarkable results. In addition, the practical content of quality development can enable students to feel practice outside the classroom, such as lectures on science and technology and employment trends, science and technology salons with teachers' guidance, innovative experimental projects unique to colleges and universities in Hubei Province, technical learning and training and competition activities sponsored by the industry, which can promote the improvement of students' practical ability and innovation ability and enhance their employment competitiveness.

5.6 Follow industry standards and improve professional quality

Software is not only a language, but also a window for foreign exchange and cooperation. Unified software and hardware industry specifications are one of the contents that this major must master. Therefore, it is necessary to encourage capable students to participate in the full same computer technology and software professional and technical qualification (level) examination, and appropriately supplement the contents involved in the examinations such as Java Engineer certification, network t engineer certification, security engineer certification and web sphere certification in the classroom, which will help to improve students' professional ability and literacy in the computer industry.

5.7 Improve functional supervision and ensure teaching quality

In the process of talent training, we need to build a scientific, standardized, operable and effective supervision and information feedback mechanism^[8]. For example, strict teaching management and assessment measures such as school teaching supervisors, college level teaching committees, student informants, teacher student joint meetings, teacher attendance system, three-line (Network) evaluation mode of experts, peers and students, opening teaching inspection and mid-term teaching inspection, teacher reward system, etc. provide a strong guarantee for improving the quality of curriculum teaching(Figure 2).



Figure 2 Training mode of computer science and technology talents

6. Conclusion

New engineering education pays attention to new technology, new industry and the service of education to the new economy. It is considered that the training of high-quality innovative talents in computer science and technology application should be oriented to mainstream and forward-looking technology. It is best to take the training of excellent software engineers as the goal, strengthen the integration of industry and education, introduce international advanced engineering education ideas, and carry out school enterprise cooperation by using the new technology platform, According to the guidance of enterprise needs, cultivate application-oriented talents in line with enterprise needs, meet the needs of emerging industries such as big data, Internet of things and artificial intelligence for application-oriented talents, and enable students to realize their life value and career ideal in national transformation and upgrading.

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