

Research on Teaching Reform of Computer Major Oriented by Core Accomplishments

Li Tai

Liaoning Institute of Science and Engineering, Jinzhou, 121013, China

tl5605132@163.com

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Abstract: Key accomplishments are a combination of students' knowledge, skills, emotions, attitudes and values. In the process of computer major education, key accomplishments are transformed into scientific literacy, and the computer professionals who meet the needs of the society are transported to promote the comprehensive development of the economy and society. Based on the composition of the core quality of computer major, this paper proposes the core quality-oriented teaching reform suggestions for computer major in view of the existing problems in the teaching of computer major: The design of teaching objectives reflects basic cultural qualities; To guide students to conduct in-depth inquiry learning; To establish a practical teaching system based on school-enterprise cooperation; To integrate core competence training into curriculum teaching; To strengthen the construction of "double-qualified" computer teachers.

1. Introduction

With the development of information technology and the progress of computer technology, the application of computer has been deeply into every field, almost every industry, every unit and every department, and even every family can not leave the computer, followed by a large number of computer maintenance and repair, as well as technical personnel engaged in the work of information technology. And with the progress of society, the demand for computer professionals has changed from broad and general computer maintenance and repair to skilled technical personnel with special and special expertise in development and design. With the development of The Times and the increasingly fierce international competition, the society has put forward higher requirements on people's comprehensive quality and innovation ability, and education is facing greater challenges. Therefore, key accomplishments should be placed on the basis of deepening curriculum reform and implementing the goal of moral education. Key accomplishments refer to the necessary character and key ability that students should have to adapt to lifelong development and social development needs, with emphasis on personal cultivation, social care and national feelings, and more emphasis on independent development, cooperative participation and innovative practice. Key accomplishments are a combination of students' knowledge, skills, emotions, attitudes and values. It focuses on students' understanding in the training process, rather than result-oriented. Core quality has stability, openness and development. It is a dynamic optimization process with lifelong sustainable development and keeping pace with the times. It is the basic guarantee for individuals to adapt to the future society, promote lifelong learning and achieve all-round development. In the process of computer major education, it will be an urgent problem to transform key accomplishments into scientific quality, to cultivate students' key accomplishments from the aspects of knowledge acquisition, project analysis, content organization, language communication and exploration and innovation, and to supply computer professionals meeting the needs of the society.

The computer major should train high-end skilled professionals, who can adapt to the needs of the socialist market economy, develop in a comprehensive way in moral, intellectual, physical and aesthetic, and face the first line of production, management and service in the information

technology industry, and be familiar with the basic knowledge of computer software and hardware, have a good command of computer operation, and can be engaged in computer equipment installation and maintenance, computer text chart and image processing, website planning and web design, software application programming and testing, database application technology development and management, network construction management and maintenance, information skills related to sales and maintenance of technology-related software and hardware products, with the ability to solve practical problems, innovation, sustainable development and good quality. The information industry plays an important role in promoting China's economic development. The state has taken information technology as a key research and development field in the future. The new social situation puts higher demands on the teaching of computer science in colleges and universities. To this end, it is necessary to carry out a comprehensive computer professional teaching reform through careful instructional design based on core literacy education. Emphasis on theoretical knowledge and emphasis on practical operations. It is necessary to strengthen the awareness of independent development, consolidate the cultural foundation, enhance social participation, promote the improvement of students' comprehensive quality, and transport computer professionals with strong professional skills and application capabilities to promote comprehensive economic and social development.

2. Compositions on Core Accomplishments for Computer Major

Key accomplishments of Chinese students' development are based on the cultivation of people with all-round development, which are divided into three aspects: cultural foundation, independent development and social participation. The comprehensive performance is divided into six major literary qualities, such as humanistic heritage, scientific spirit, learning to learn, healthy living, responsibility, and practice innovation. The specific refinement is 18 basic points such as national identity. Each literacy is interconnected, complements each other, promotes each other, and plays a role in different situations. Based on key accomplishments of Chinese students, and focusing on the characteristics of computer science, key accomplishments of computer majors are summarized as follows:

(1) Information awareness, individual sensitivity to information and judgment of the value of information. Students with strong information awareness can voluntarily and actively seek to obtain and process information according to the needs of problem solving; They can sensitively feel the change of information, obtain relevant information, and use effective strategies to make reasonable judgments on the reliability of information sources, the accuracy of content and the purpose of pointing, and can sensitively feel the change of information, obtain relevant information, and use effective strategies to make reasonable judgments on the reliability of information sources, the accuracy of content, and the purpose of pointing, and can anticipate the impact of information and provide references for problem solving; In the collaborative problem solving process, they can share information with team members, realize the maximum value of information.

(2) Computational thinking, a series of thinking activities that individuals generate in the process of using the ideological methods in the field of computer science to form problem solutions. In the information activities, students with computational thinking can define problems, abstract features, establish structural models, and organize data reasonably in a way that computers can handle; They can use a reasonable algorithm to form a solution to the problem by judging, analyzing and synthesizing various information resources; They can summarize the processes and methods of solving problems with computers and migrate to other problem-solving related to them.

(3) Software development, the comprehensive capabilities required for software development. Demand analysis ability, that is, to understand the development purpose and development background of the project, analyze the function and performance, make the project planning and explanation; Software framework capability. The establishment of a good software framework is the guarantee of the success of a project, and the consistency and integrity of the whole software should be considered; Coding ability, that is, to have good programming habits, follow common programming specifications, good comments, can develop easy to understand and easy to maintain

the program; Management and control ability, that is, to effectively solve the requirements change and personnel change in the development process, ensure the completion of the project as planned.

(4) Interpersonal communication refers to the process of communicating certain information to others through certain means of expression such as language, words, body movements and facial expressions. The interpersonal skills of computer major students also play an important role. In the development of many large software projects, the division of labor and collaboration are required by the team, and people have to communicate with each other to solve the interface problem between each other. Only when individuals can express their own ideas and fully communicate with team members can project development be better completed. Improving communication efficiency can improve the work efficiency of the project team.

(5) Self improvement, the process of improving one's ability and level through one's own efforts. The computer major is an emerging industry, and the knowledge changes rapidly, which requires the majority of students to pay attention to the new knowledge, new technology, new materials and new methods in the field of computer, which is the premise and basic requirements of competent for their own work. Only by continuous self-learning and self-improvement can we adapt to the new job requirements. Actively improve your ability to work, only learning can progress, not only learn from books, but also learn from others, learn from work practice, learn from bit by bit nuances.

(6) Social responsibility, the individual's responsibility in cultural cultivation, ethics and self-discipline. Students with information society responsibility must have certain information security awareness, be able to abide by information laws and regulations, abide by the moral and ethical principles of the information society, and abide by public norms in real space and virtual space. They must be able to effectively safeguard the legitimate rights and interests of individuals in information activities, and actively protect the legitimate rights and interests of others and the security of public information; They should pay attention to the environmental and human problems brought about by the information technology revolution. Have a positive learning attitude, rational value judgment ability and responsible action ability.

3. Problems in the Teaching of Computer Major

The development of computer science is fast, new technologies are constantly emerging, and the core literacy of students has not been significantly improved. The following problems still exist in the teaching process:

(1) The teaching objectives are not targeted. When many colleges and universities develop computer major training programs, they rarely set the corresponding teaching goals based on local conditions, school characteristics and actual student conditions. It is to copy the teaching objectives of other key and well-known institutions, tinkering, what basic theories, basic knowledge and basic skills should be mastered by students, how to cultivate students' practical work ability, etc., and have not fully studied and demonstrated, leading to computers major talents do not match social needs.

(2) Teaching content updates are slower. The world today is the era of knowledge economy. The speed of knowledge renewal is very fast. The development of computer industry and computer technology is unpredictable. Computer technology has been widely used in various industries. However, the update speed of teaching materials is slow. Many teaching contents lag behind the development speed of computer technology. Many popular technologies and theories do not appear in the teaching materials, and they are rarely mentioned in the teaching process, which makes students unable to acquire new knowledge and new technology.

(3) Talent cultivation is out of line with market demand. All kinds of college computer majors have trained a large number of students, but employers have not found suitable talents. The phenomenon of talent training and market demand is out of touch. The teaching process does not pay attention to the practice link, the practice content arrangement is less, the students do not have sufficient practice opportunities, and the application ability of theoretical knowledge is seriously insufficient. Institutions lack communication and communication with enterprises. Enterprises do not understand the talent training methods of colleges and universities. Colleges and universities do

not know the specific requirements of enterprises for computer talents.

(4) Neglect the guidance and play of the characteristics of students' personality differences. Because each student's personal qualities are different and their interests and hobbies are different, the focus on computer professional knowledge learning is different, and the ability to understand and use knowledge is also quite different. Many computer teachers are limited and bound by instructional design and teaching programs. They adopt the teaching mode of “one thousand people” and “one thousand ones”, ignoring the students' interests and needs, and neglecting the characteristics of students' personality differences.

4. Proposals on Teaching Reform of Computer Major Oriented by Core Accomplishments

Strengthen the core literacy training of students, and through the education and teaching activities to cultivate students' noble moral sentiments, excellent professional skills, in-depth professional knowledge, necessary personality and key life skills. Based on the core literacy of computer science, aiming at the problems existing in computer teaching, combined with the author's many years of computer professional teaching experience, this paper proposes the core literacy-oriented computer professional teaching reform proposals as follows:

(1) The design of teaching objectives reflects basic cultural qualities. The cultural foundation is the basic ability, emotional attitude and value orientation formed by students in the aspects of learning, understanding and applying knowledge and skills in the humanities. The cultural foundation is the foundation of core literacy. Social participation can reflect the value of a person and accumulate from the precipitation of the cultural foundation. Through the study of humanistic heritage and scientific spirit, they can learn to learn and live healthy, in order to lay a good foundation for future responsibility and practical innovation. The design of computer professional teaching objectives should integrate knowledge and ability, process and method, emotional attitude and values, and reflect and pay attention to the overall improvement of cultural literacy. Respect the value of students, subtly cultivate students' humanistic feelings, so that students gradually have a people-oriented consciousness, can concern about their own and others' survival, development and happiness.

(2) To guide students to conduct in-depth inquiry learning. Inquiry learning is a kind of learning mode under the premise of students' active participation, according to their own conjectures or assumptions, under the guidance of scientific theories, using scientific methods to study problems, obtaining innovative practical ability and thinking development in the research process, and constructing knowledge system independently. Inquiry learning is conducive to giving full play to students' subjectivity, to students' independent learning of knowledge needed for individual development, to effectively transform human group's intellectual resources into individual intellectual resources, to cultivate students' sustainable development ability, to cultivate healthy social emotions and positive creative spirit. Teachers should change educational concepts, create problem situations, carefully design tasks, drive group cooperative learning with tasks, provide time and space for students to question, stimulate students' thirst for knowledge and curiosity, and let students experience the joy of success.

(3) To establish a practical teaching system based on school-enterprise cooperation. Under the background of school-enterprise cooperation, colleges and universities should make full use of social resources, strengthen exchanges and cooperation with excellent enterprises, jointly explore innovative and diversified computer practical teaching mode, enrich the content and teaching methods of computer practical training, stimulate students' interest in learning, and improve the effect of computer practical teaching. Optimize and adjust the content of practical teaching, jointly formulate scientific and perfect process quality control plan, and earnestly implement various practical teaching quality management measures. Establish a perfect practical teaching assessment mechanism, hire outstanding technical talents from enterprises to guide teaching, organize and arrange teachers to study in enterprises, and improve the overall practical teaching level of teachers. The university and the enterprise shall work together to improve the conditions of practical teaching,

broaden the financing channels of teaching resources, and introduce practical training equipment and technology to ensure the provision of high-quality technical services.

(4) To integrate core competence training into curriculum teaching. The course construction should give full consideration to the actual situation of students, strengthen their operational ability, carry out project-based teaching, adopt "Internet +" teaching mode, and implement online and offline mixed teaching; Implement the simulation of enterprise environment, carry out group cooperative learning, stimulate students' initiative and sense of teamwork. Based on the original practical teaching system of "classroom teaching project + ability improvement project + work creation", the practical teaching system of "classroom teaching project + ability development project + comprehensive improvement project + extracurricular actual combat project" is reconstructed. Give full play to the role of information technology and network resources, use mobile Internet technology to carry out online and offline teaching, extend the learning time and place from extracurricular to extracurricular, increase students' extracurricular autonomous learning tasks, cultivate students' self-learning ability, and improve their ability to analyze and solve problems.

(5) To strengthen the construction of "double-qualified" computer teachers. "Double-qualified" teachers are not only competent for theoretical teaching, but also able to guide students to practice. Computer professional teachers should not only have strong practical ability, but also must master the general rules of education and teaching, realize the effective connection between theoretical teaching and practical teaching, and establish "double-qualified" teachers is the fundamental guarantee of teaching quality. Specific measures include: To formulate the "double-qualified" teacher team construction plan, improve the development of teachers policy measures; To provide practical conditions for teachers by utilizing the advantages of school-enterprise cooperation, off-campus internship base and industry-teaching integration base; To encourage teachers to participate in national or provincial teacher training and participate in special competitions at all levels; To provide conditions for teachers to participate in professional forum lectures to learn cutting-edge knowledge; To do a good job in career planning, improve the knowledge structure of "double-qualified" teachers.

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