

Curriculum Reform and Teaching Optimization of Computer Majors in the Intelligent Era

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Abstract: *In the era of intelligence, also known as the Internet of Things, technological and industrial revolutions may occur in any country or corner at any time, and the key to these changes is the application of computer technology. Computer science is a national level discipline, which is highly valued by all sectors of society, Especially the setting and teaching mode of its professional courses are directly related to the strength of China's computer talent reserve. In this context, this article first analyzes the problems existing in China's computer professional education in the intelligent era, and then elaborates on its specific plans in curriculum reform and teaching optimization, hoping to be helpful for computer professional education work.*

Keywords: The era of intelligence; Computer professional education; Curriculum reform; Teaching optimization.

1. THE PROBLEMS IN COMPUTER EDUCATION IN THE ERA OF INTELLIGENCE

The education of computer science in China started relatively late and did not form a certain teaching system until the late 1990s. However, since its inception, it has carried the heavy responsibility of transporting advanced computer application technology talents to society, building a modern country and a technological powerhouse, with a glorious mission and a long way to go. Therefore, reforming the curriculum and teaching models of computer science majors in universities to meet the needs of the times has become a crucial issue in university education. With the popularization of higher education, local undergraduate colleges and universities have become the main force of national undergraduate colleges and universities. In order to enhance the characteristics of running schools, transformation and development have become the reform trend of local undergraduates in the new era. Based on this, there are more and more researches on the transformation of local universities in China in recent years, but a series of problems have emerged in the process of reform. Through to the transformation of local undergraduate colleges and universities of the connotation, causes and the problems existing in the transformation process transformation, and transformation of the path and practice research, the essay reflect on the current situation of the transformation of local undergraduate colleges and universities, can be found and expand areas in-depth research, provide some suggestions for the development of local undergraduate colleges transformation.

1.1 Weak faculty strength

According to relevant surveys, teachers majoring in computer science generally transition directly from their student status to their teacher status. Most of them do not have experience working in enterprises, lack project experience, and lack the skills to apply knowledge to specific practices. They have little understanding of the industry dynamics of computer science, and lack a clear understanding of emerging things such as cloud computing, artificial intelligence, and big data in the market, Although some teachers have professional qualifications such as network engineers and database engineers, these certificates are mainly obtained through exams and cannot demonstrate their practical and application abilities. Therefore, the low professional ability and comprehensive quality of the teaching staff is an important reason for the slow development of computer professional education. About the ministry of education, the national development and reform commission, ministry of finance issued the guiding parts of ordinary undergraduate course colleges and universities to applied guidance ", demand conditions, the will of the pilot college take the lead in exploring application development model. With the rapid development of higher education in China, a series of problems also arise, such as the university recruitment of students scale and the rapid expansion of colleges and universities objectively also led to a significant number of undergraduate colleges and schools lost characteristics, students' practical ability,

professional technical ability are dropped. In addition, the structure of higher education, the structure of talent training and the goal of talent training are all seriously out of line with the actual needs of society, and the overall quality of education declines.

1.2 Students lack practical training and computer thinking

As a key construction major in higher vocational colleges in China, computer education is responsible for outputting a large number of advanced computer application technology talents to society, in order to promote the construction of China's modernization and technological powerhouse. However, the knowledge, equipment, and skills in the computer industry are updating and iterating too quickly, and many schools' curriculum, teaching plans, professional equipment, etc. cannot keep up with the speed of professional development. In terms of curriculum design, subject to the hardware facilities of the school and the teaching level of the teachers, there are relatively few skills training courses offered, and students cannot receive sufficient practical training without the support of effective experimental platforms. In teaching design, too much emphasis is placed on understanding and verifying theoretical knowledge, while neglecting the cultivation of students' computer thinking. There is also a lack of experimental materials and practical guidance for practical training. In this way, what students learn will be shallow and superficial, lacking the underlying logic and thinking of computers. Students will be at a loss when faced with constantly updated textbook content, and the learning process will become very difficult.

1.3 Unreasonable course design

Research has found that the setting of computer science courses in universities often corresponds to one professional skill direction or supports one professional position. This has caused a situation where the curriculum is too scattered or overlapping excessively, causing huge difficulties for students' learning. Secondly, the courses offered in computer science in most universities are relatively broad, and the phenomenon of "setting courses according to individual needs" is quite prominent. Teachers can offer whatever courses they can, which has a great deal of blindness. This leads to students having to learn many courses that are not closely related to their career planning, which is hindered by credits. This type of course setting method cannot serve students' career development well and lacks strong professional direction specificity. According to the relationship of administrative subordination, China's ordinary colleges and universities can be divided into two types: those affiliated to the central ministries and commissions, and those affiliated to local colleges and universities. The local colleges and universities in this paper, starting from the administrative subordination relations, refers to the provinces (autonomous regions and municipalities directly under the central government) in colleges and universities and the provincial (city, state) belongs to the institutions of higher learning, namely by the local administration (province, autonomous region or municipality directly under the central government) transfer funds, to provide service for local (industry), fosters the talent, the ordinary undergraduate course colleges and universities.

2. MEASURES FOR THE REFORM OF COMPUTER EDUCATION CURRICULUM IN THE ERA OF INTELLIGENCE

"Transformation" refers to "social economic structure, cultural forms, values change", we often say things form structure, operation mode and the concept of people, such as the development of the fundamental shift. "Transformation" not only means the form "adjust" and "change", its essence is a kind of deformation and qualitative change "change" and "reform", it is from one type to another type, from one system to another system, from one model to another model. In a sense, this transformation is to go deep into the bone marrow, to change the bone, to break the bone, and to reconstruct the existing pattern of interests. Transformation mainly includes three aspects: (1) transform to a new direction on the original basis. (2) a process of changing the original structure. (3) as a process with uncertainty, benign results are not necessarily formed. It needs to be pointed out that the reason why we don't use words like "change" or "change" is mainly because "transformation" contains the connotation of a kind of mastery of the dominant nature of things. The essence of transformation is the change of the dominant nature of things, not the change of things.

2.1 Adjusting the Talent Training Model

With the accelerated evolution of the technological revolution and industrial transformation, the demand for computer talents in the market is also constantly changing. Therefore, when formulating talent cultivation models

and curriculum systems, it is not only necessary to combine the teaching syllabus and textbook content of computer science, but also to conduct empirical investigations on the talent development needs of computer science and the employment needs of enterprises in advance. At present, there is a demand for computer talents in many industries such as computer, industry, communication, and administration in the market, and many enterprises have also set up many positions related to computers. The positions with high demand include Android programmers, website developers, web front-end designers, software development, testing, maintenance engineers, and e-commerce engineers. Schools can use this as a reference to adjust their talent cultivation mode and professional curriculum settings. Enable students to proficiently apply skills such as computing operations, website development, system maintenance and development. Ultimately, advanced applied talents in computer application technology, software development, network technology, network information security technology, and e-commerce will be cultivated.

In addition, it is necessary to develop talent development strategies that are suitable for students in different majors, such as big data technology and applications. Their employment direction generally focuses on big data management, application, analysis, and research. Therefore, when cultivating talents in this major, it is necessary to focus on network and computer science, statistics, mathematics, and other content.

2.2 Optimize course offerings

In this era where everyone pursues visual and auditory experiences, if it products cannot provide a better aesthetic and user experience, they will soon be eliminated by the market. Therefore, when setting up courses, corresponding literacy courses should be added to each major, such as graphic design, graphic design, aesthetic theory, music foundation, etc. Form a "three legged" curriculum model of literacy courses, knowledge courses, and skills courses in each professional direction. On the basis of scientifically setting literacy courses, knowledge courses, and skill courses, the proportion of skill courses should be appropriately increased. Attention should also be paid to the integration of the three, such as integrating cultivation courses and knowledge courses can help students form solid professional literacy, and integrating knowledge courses and skills courses can help students form strong professional and technical application abilities. Make it a characteristic curriculum for sustainable development in schools. In addition, the "1+X" certification certificate standard should be introduced into the talent cultivation process, and the "1+X" certificate network course resources should be integrated into professional course teaching. To deepen the reform of computer education courses and teaching.

2.3 Reducer

The multi rope friction hoist adopts planetary gear reducer. Because planetary gears use several planetary gears to transmit loads at the same time so that power splitting can reasonably use internal meshing, they have a series of notable advantages, such as compact structure, small size, light weight, large transmission ratio range, high transmission efficiency, concentric input and output, power splitting and variable speed. As a result, it meets the above requirements and has been widely used in light industry, aviation, ship, power, metallurgy, mining, crane transportation, and other equipment as deceleration, speed increase and speed change transmission. However, due to the complex structure of planetary gear transmission, the design, manufacture and maintenance of the planetary gear drive are required. Especially the high-speed planetary gear transmission requires higher dynamic characteristics of load sharing mechanism, vibration characteristics of system, structure of parts and manufacturing accuracy.

2.4 Digital Depth Indicator

In order to prevent the deviation caused by the slip elongation and creep of the steel wire rope from harmful effect on the system, a zero adjusting mechanism is usually used to eliminate the error between the actual stopping position of the lifting container and the predetermined zero position of the depth indicator pointer caused by the above reasons after each operation of the lifting container. Depth indicator. When the hoisting wire rope does not slip elongation and creep, then zero adjusting motor does not run, so the screw connected with it, the turbine does not turn. At this point, the main shaft and gear of the hoist make the bevel gear of the differential gear train rotate, and then drive the bevel gear to rotate through the shaft and gear. When the screw rotates, the pointer of the depth indicator moves up or down, indicating the position of the lifting container in the wellbore. A pointer is called a thick needle. In order to accurately reflect the position of the container before stopping, a fine needle is driven by several stages of gear transmission, and a geomagnetic induction disconnecter controlled by an electromagnetic

clutch is installed 10 meters ahead of the unloading position of the lifting container in the shaft. When the container passes through the magnetic induction breaker in the wellbore, the electromagnetic clutch is closed to connect the gear and shaft. So when the container is lifted to 10m at the unloading location, the needle starts to rotate. There is a scale on the precision needle dial, and each column represents an elevation of 1 m, so that the position of the container before stopping can be accurately reflected.

3. OPTIMIZATION MEASURES FOR COMPUTER PROFESSIONAL EDUCATION AND TEACHING IN THE AGE OF INTELLIGENCE

Mine hoist is one of the main mine equipment, used for lifting personnel and materials, used to contact the underground and ground transportation tools. In China, the hoisting equipment whose drum diameter is more than 2m is called hoist (except explosion-proof hydraulic winch), and the hoist whose drum diameter is less than 2m is commonly called winch.

The working characteristic of mine hoist is to run reciprocating at a higher speed within a certain distance. In order to ensure high efficiency, safety and reliability, mine hoist should have good control equipment and perfect protection device. Once mechanical and electrical faults occur in the mine hoist, it will seriously affect the production of the mine, and even cause personal casualties.

Mine hoist and air pressure, ventilation and drainage equipment constitute the four major mine fixed equipment, is a complex mechanical and electrical group. So reasonable selection of mine hoisting equipment is of great significance. Nowadays, the main structure forms of our country's production are single-rope winding single-barrel and double-barrel mine hoist, friction multi-rope landing and tower multi-rope friction hoist, drag mode selection needs to be designed, in addition to the underground mine hoist with hydraulic transmission. The main types of mine hoists commonly used in China are single rope winding and multi rope friction. Compared with the developed countries in the world, the mines in our country have smaller shaft type, higher mine lifting height, more coal mines, less metal and non-metal mines in other mines, and less proportion of inclined shaft lifting. Therefore, in the 1980s, multi-rope friction mine hoist began to use more, because multi-rope friction is more suitable for this mine.

3.1 Strengthening the cultivation of teaching staff

In today's era of rapid development of intelligence, the computer industry has a fast pace of iteration and updates, and new things are emerging in the industry. This has brought huge challenges to the teaching work of computer teachers. Teachers should change their traditional teaching concepts, not only focus on students' ability to reproduce and verify knowledge, but also focus on cultivating students' computer thinking and practical training, implementing project teaching models, and driving students' learning with tasks. We also need to actively improve our teaching level through various channels such as on-the-job visits, on-the-job training in enterprises, and pursuing degrees, striving to become a "dual teacher" teacher who balances theoretical and practical abilities. The multi-rope friction hoist is composed of several hoisting wire ropes to bear the load together, so each wire rope only bears $1/n$ of the load at the end of the rope (n - the root of the hoisting wire rope), so that the smaller diameter wire rope can be used and the diameter of the main wheel can be reduced accordingly. With the decrease of the main wheel diameter, the multi-rope friction hoist can adopt high-speed motor at the same lifting speed. Therefore, the multi-rope hoist has many advantages - small size, small transmission torque, small motor power, light weight, low price, low construction investment, low power consumption in operation, low cost, etc. The multi-rope friction hoist is installed on the shaft tower, which simplifies the layout of the hoisting system and the wellhead floor, reduces the area occupied, and improves the force condition of the shaft tower. The shaft tower has no oblique pulling force. Because it does not need to be set up as a supporting leg to counteract the oblique pulling force, the steel is saved and the reinforced concrete is used in the construction of the shaft tower. Building materials create favorable conditions. The number of hoisting ropes is even, so the same number of left-twisted and right-twisted ropes can be used. In this way, the torsional force produced by the hoisting rope in operation can be cancelled each other, thus reducing the lateral tension of the hoisting vessel to the tank passage caused by the torsional force of the wire rope, and reducing the influence of friction resistance in operation. The unidirectional wear between the tank and the tank can be reduced, and the service life of the cage and the tank ears can be prolonged.

3.2 Adopting a mixed online and offline teaching mode

In the context of the intelligent era, the use of 5G technology, mixed reality, augmented reality, virtual reality and other technologies to promote the reform of teaching modes has become a major trend. Relying on virtual reality operating platforms, combined with VR and 3D three-dimensional teaching resources, to create experiential and immersive classroom teaching modes, which can present abstract concepts that are not easy for students to understand, as well as key and difficult points in textbooks in a three-dimensional and intuitive manner, This greatly improves the dull and tedious teaching methods of the past, which not only facilitates the teaching work of teachers, but also reduces the difficulty of students' learning. In addition, schools can also purchase VR helmets, holographic projection equipment and other teaching equipment, bringing students a new learning experience, allowing them to feel the value of their future industry and be confident in their future.

3.3 Conduct practical training relying on intelligent technology

At present, computer experimental teaching in various universities has preliminarily developed intelligence and informatization. However, due to the relatively fixed experimental environment and time, students' creativity, computer thinking ability, and writing ability are difficult to fully exercise in practical training. Based on this, schools need to rely on intelligent technology to conduct practical training for students. Taking the experiment of "database operation" as an example, teachers can share the experimental resources used with students in their spare time, Then design the experiment as a project on "database operations", allowing students to complete it in a team collaboration manner, where each member of the team can claim a virtual master. Through communication and cooperation, we work together to create new databases, connect databases using Java, and perform basic CRUD operations, deepening our computer thinking through independent exploration. The main shaft of multi rope friction hoist is composed of main guide wheel, main shaft and two bearings. The main guide wheel and brake disc can be welded by 16Mn steel plate. For the hoist above JKMD-2.8/4, the main wheel also has a supporting ring to increase the rigidity of the main wheel. Because of the different capacity (maximum static tension difference) of various hoists, the number of pairs of disc brakes used in hoists is also different, so a main wheel has a brake disc welded, there are also two brake discs welded. The main shaft is forged from 45 steel and its ultimate strength is 4.2-5.6 Mpa. It is connected with the reducer by rigid coupling. The main shaft and the cast steel hub are connected by hot pressing.

3.4 Exploring the mode of school enterprise cooperation

Establishing cooperation between vocational colleges and related enterprises is also an important measure to optimize the teaching mode of computer science. Universities can work together with enterprises to write course textbooks, integrating the actual workflow and work content within the enterprise into the textbooks. This way, the teaching of the school will be more targeted and highly in line with the employment conditions of the enterprise. Enterprises can also be used as extracurricular training bases for schools, allowing students to engage in on-the-job internships with the help of their professional counterparts, and to rely on advanced technology and real-world projects for practical training. Universities can also provide targeted professional and technical talents to cooperative enterprises every year, which not only solves the employment problems of enterprises but also helps students solve employment problems. The multi-rope friction hoist installed on the shaft tower can reduce the bending times of the hoisting wire rope, especially for the multi-rope friction hoist without guide wheels, so the service life of the hoisting wire rope can be prolonged. At the same time, because the hoisting wire rope only operates in the wellbore and does not contact with the outside, it is almost unaffected by climate change. The hoisting wire rope of multi-rope friction hoist is not wined on the main wheel, and there is no requirement for the width of the main wheel. Therefore, the width of the main wheel is smaller than that of the single-rope hoist, and the winding position is fixed, so it has nothing to do with the depth of the well. It makes the multi-rope hoist better adapt to the actual needs of deep mine and mine with large load, which is also the greatest advantage of multi-rope hoist. In summary, the width of the main wheel is small, and the span of the shaft is small, which improves the load performance of the spindle.

4. CONCLUSION

The industrial transformation in the era of intelligence is affecting the direction of reform in computer education in universities, and various technological achievements in its development process can also be used for computer education, adjusting the course structure and teaching mode to adapt to the development of the times. However, the

successive generations of computer application technology talents emerging from computer education in universities will also be introduced in the future. Leading the trend of the times is a crucial virtuous cycle for the development of society.

REFERENCES

- [1] Chen Yi. Digital Technology Assists Innovation and Practice in University Computer Courses - Review of "Curriculum Reform and Teaching Optimization of Computer Basic Education" [J]. News Enthusiast, 2021 (05): 117
- [2] Tong Lidan. Exploring the Reform Path of Practical Training Teaching for Computer Majors in Secondary Vocational Schools [J]. Digital Communication World, 2021 (06): 253-254+284
- [3] Yu Rongjuan, Zhu Peng. Analysis of the Reform of Mathematics Curriculum Teaching Mode in Universities Based on Innovative Ability Cultivation - Taking Computer Science Majors as an Example [J]. Computer Knowledge and Technology, 2021,17 (04): 154-156
- [4] Wu Jian, Xu Liangliang. Current Situation and Reform of Computer Network Technology Teaching in Higher Vocational Education [J]. Network Security Technology and Application, 2021 (02): 86-88
- [5] Lv Hong. Research on project-based and modular teaching reform of computer science courses [J]. Digital Communication World, 2020 (02): 252