

Research on the Reform of Diversified Practical Teaching System of Computer Specialty under the Background of New Engineering

Yanrong Zhang

Harbin University of Commerce, Harbin 150000, Heilongjiang, China. E-mail: zhangyanrong_5@163.com

Fund Project: Diversified Teaching Methods of Computer Specialty Courses under The Background of “New Engineering” General Research Project of Higher Education Teaching Reform of Heilongjiang Provincial Department of Education SJGY20200351.

Abstract : In the Internet age, higher education is facing new challenges. The basic requirements of the construction of new engineering also open up new ideas for the teaching mode of colleges and universities. Under the background of the construction of new engineering, realizing the diversified practice of computer majors in colleges and universities puts forward new requirements and directions for the talent training system of colleges and universities. This paper first analyzes the problems existing in the current practical teaching of computer majors in colleges and universities, puts forward innovative and diversified measures to carry out teaching practice, and provides a new method for the reform of practical teaching system under the requirements of the construction of new engineering.

Keywords : New Engineering; Computer; Diversification; Teaching System Reform

1. Introduction

In the current computer practice teaching, the talent training of most colleges and universities focuses on group training. For the improvement of professional ability, there is a great difference between class teaching and paying attention to the development of students' individual differences. For computer majors, practical teaching should focus on the overall strength to develop teaching according to the individual needs of students, cultivate compound talents for the society, and innovate the reform of teaching system, in order to strengthen students' practical ability and carry out diversified development, which is a new exploration of teaching reform. This paper analyzes the problems existing in the practical teaching of computer specialty in colleges and universities, discusses the corresponding reform direction, and gives the corresponding strategies, so as to explore the new ways of teaching system reform.

2. Problems existing in practical teaching of computer specialty

2.1 The concept of education needs to be updated

The educational concept is relatively backward and cannot meet the current development of science and technology and the needs of future technology. In the talent training plan, the learning concept focusing on personalized development is still lacking. In computer majors, we need to integrate multi-disciplinary contents and strengthen the learning of multi-disciplinary knowledge. We should also adhere to practical learning and give full play to students' learning subject status.

2.2 Education has strong theory and few practical links

Computer related courses are mainly theoretical knowledge, with abstract concepts, which need students to learn on a certain basis. There are few professional practical operation courses, which cannot well cultivate students' practical operation ability and professional level.

2.3 Insufficient professional training

The structural awareness of talent training is not strong, and there is a lack of top talents in the industry. In the training of

computer professionals, there is a lack of talent training planning. Although colleges and universities have interpreted the professional norms, standards and relevant guidance issued by relevant departments in recent years, they still lack the standard planning of talent quality and the understanding of the structure of training professionals.

2.4 Educational model lags behind

The current educational models in colleges and universities do not match the development speed of computer majors. In the current engineering education curriculum system, the theoretical knowledge is complicated and outdated, which is out of touch with the talent quality required in the actual social development process, and the professional practice lags behind the market development speed, so that the talents do not meet the current market needs and are difficult to cope with the development of the computer industry.

3. Specific reform direction under the requirements of new engineering construction

The construction of new engineering is to cultivate high-quality compound new engineering talents with strong practical and innovative ability and competitive advantages. Therefore, when building a new engineering discipline, we should pay attention to the innovation of ideas, strengthen the integration of disciplines, and build the knowledge structure of the new engineering discipline. In computer majors, we should pay attention to cultivating students' innovative spirit and practical ability, cultivate students with diversified evaluation standards, and improve talent quality, in order to reserve talents for the new round of scientific and technological revolution. Under the background of the new engineering, the reform direction of the specific teaching system is as follows.

3.1 Teaching ideas are often more new

The new engineering mainly emphasizes students, adheres to students' practice as the main teaching content of computer majors, and points to the actual effect of learning results. However, from the current model of teachers' teaching knowledge, the evaluation of students' professional ability of computer technology and ability to solve practical problems is still relatively lack, and teachers' understanding of students' professional skills is not enough. Students cannot improve their professional ability only by passive learning, so they must update their teaching ideas in real time and study guided by improving their practical ability, which is conducive to the cultivation of students' ability.

3.2 Reform and innovation of teaching content

The practical teaching courses of computer majors still focus on the traditional theoretical learning. Most of the practice is demonstrated or verified by teachers. The experimental content is limited to the old projects in books, which cannot cultivate students' innovative ability and practical ability. New engineering focuses on cultivating students' comprehensive quality and practical ability. We must reform the teaching content and increase the practical teaching of students' hands-on operation, so as to cultivate compound talents needed by the development of computer industry.

3.3 Teaching mode highlights talent training

At present, there is a lack of standard and structural model in talent training, and the new engineering requires training talents from a new model. The traditional teaching practice is designed by teachers and operated by students in the classroom. Due to the great difference in students' learning ability, students will waste time or cannot keep up with the teaching progress, and the classroom cannot meet the needs of different students, so it is necessary to actively reform the teaching mode. Talent training requires teachers to carry out personalized customized teaching according to students' differences and strengthen the guidance of talent development. The new teaching model needs to highlight the differentiated teaching of students and formulate new teaching plans and talent training structure.

3.4 Diversified development of teaching evaluation mechanism

The quality of education and teaching directly affects the quality of students. At present, the assessment standard of practical teaching courses is mainly students' actual operation written report and classroom attendance rate. Little attention is paid to students' situation in the actual operation process, and some courses even have no written report. Such an evaluation mechanism cannot evaluate students' professional ability. If the teaching evaluation mechanism should conform to the construction of new engineering, it should carry out diversified development according to the talent training standards.

3.5 Teachers need to be renewed

As the society pays more attention to students' practical ability, teachers of professional practice courses need to have rich experience and professional discipline quality. At present, the practical teaching teachers in colleges and universities lack the experience of relevant practical projects, focus on theoretical courses, and the practical ability of teachers is weak. A considerable part of the energy of college teachers will focus on scientific research and theoretical teaching, ignoring the operational ability of

practical projects.

4. Measures to realize the reform of diversified practical teaching system

4.1 Innovative ideas, open teaching

Teaching philosophy is closely related to the formulation of teaching objectives. It is particularly important for the development of classroom teaching to improve the concept of practical teaching and innovate the work of practical teaching. To implement the requirements of the new engineering construction, first of all, change the theoretical classroom into a student-centered learning classroom, reduce the teaching of theoretical knowledge in the practical teaching classroom, and actively guide students to carry out practical operation. Building an open teaching concept can open students' thinking, break through the traditional teaching mode, strengthen students' awareness of autonomous learning, and help guide students to explore computer practical teaching courses.

4.2 Establishing a scientific curriculum system and talent training mechanism

At present, curriculum learning is no longer a simple professional learning. We should divide and restructure the basic courses of computer specialty, optimize them in combination with multi-disciplinary knowledge, and cultivate professional talents scientifically. From the perspective of the requirements of the talent market in the development of the industry, students majoring in computer can become "senior engineers" required for development only a few years after graduation. Teachers need to update the curriculum content in real time, subdivide the training requirements for senior professionals, and reasonably allocate them to specific classroom practice, so as to establish a scientific curriculum system and talent training mechanism.

4.3 Establishing and improving diversified teaching evaluation mechanism

In view of the new pattern of all-round and long-term training required by the new engineering and the single teaching evaluation mechanism, it is very important to establish and improve a diversified teaching evaluation mechanism. When comprehensively evaluating the ability of students and teachers, we should start from all-round and multi angles, such as evaluating students' professional ability, marginal discipline learning ability, thinking ability and personalized development, as well as teachers' evaluation, students' mutual evaluation and students' self-evaluation; For teachers, we should also enable students to evaluate each other, colleagues to evaluate each other, teachers' self-evaluation and relevant abilities. Whether for students or teachers, making an all-round and diversified evaluation will help to improve their professional quality and comprehensive ability.

4.4 Establishing a professional team of teachers

In order to meet the new requirements of computer professional practice courses, schools need to establish a more professional teacher team. First of all, the operation training involved in practical teaching should be in line with the current development progress of the computer industry. At the same time, when guiding students to participate in off campus practice, teachers not only investigate students' ability, but also have high requirements for teachers' own professional level and practical ability. Therefore, in addition to a solid theoretical foundation, teachers also need to have rich project practice ability. Schools can pay attention to this when hiring teachers, and appropriately select teachers with engineering practice experience to participate in the actual practice teaching classroom.

5. Conclusion

New engineering is not only the product of the development of the times, but also a new response made by higher education to deal with the development of the times. This is a new challenge and opportunity for the traditional teaching mode. Computer specialty is an important link between traditional engineering and new engineering because of its discipline characteristics. Under the background of new engineering, strengthening the diversified practical teaching of computer specialty is conducive to improve the traditional teaching mode of engineering specialty, improve the comprehensive level of discipline teaching in colleges and universities, and cultivate high-quality compound talents needed for the development of the industry.

References

1. Peng Y, Zhang Q. Research on the reform of diversified practical teaching system of computer specialty under the background of new engineering. *Experimental Technology and Management* 2019; 36(11): 222-224+233.
2. Liu D, Ma S, Sun D. Research and practice of practical teaching reform of computer specialty under the background of new engineering. *Journal of Henan Electromechanical College* 2019; 27(03): 73-77.
3. Chen J, Lu H, Zhou H, et al. Reform and exploration of computer specialty construction under new engineering background. *China Information Technology Education* 2018; (18): 95-98.