Constructing the Comprehensive Practical Teaching System for the Training of Applied Talents in Computer Major

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Abstract. The construction of the comprehensive practical teaching system is an inevitable requirement to strengthen the training of applied talents, and it is very important to improve the practical application ability of computer professionals. Facing the training of applied talents, this article focused on the general ideas and specific methods of constructing the comprehensive practical teaching system in computer major.

Introduction

The comprehensive practical teaching system is the important content and component of the construction of the training system of applied talents in computer major, which directly determines the training quality of applied talents in computer major. To build the comprehensive practical teaching system for computer major, it is necessary to closely integrate the applied curriculum system construction, construct practical teaching and practical courses, and strengthen the construction of practical teaching conditions.

Strengthening Intramural Practical Teaching for Application Ability Training

The practical teaching can follow the three-level division of applied practice areas, applied practice units, and skill points, that is, the practice curriculum (including several experimental practice items) should correspond to specific applied practice areas. The practice project should correspond to the teaching content of specific application practice units and applied courses, and the specific content of the practice project should cover the main skill points of application training for students.

The construction of the practice teaching system needs to combine the expression system of the core application ability and the application points of the specialty, and systematically review the setting of the practice courses and practice items. We can focus on the layered design of practice projects, and divide the experimental items offered in the practice courses into four levels: basic experiments, intensive experiments, comprehensive experiments and research experiments (including optional experiments). Basic experiments are mainly used for training basic application skills. Intensive experiments are mainly used for the training of skills and applied abilities. Comprehensive experiments are to test the comprehensive degree of students’ knowledge in stage learning, and whether they have the comprehensive ability to flexibly use the knowledge they have learned for independent application practice or application design. Research experiments can be selected by students, which are used to stimulate students' interest in active learning or research, and cultivate students' creative thinking and ability. The practical teaching can adopt a combination of task-driven and real project development, with the main application problem solving or core application points of computer major as the main line. The professional problems would be solved through related software or hardware design by professional or general-purpose tools. The design of the practice project should emphasize the solution to professional application problems, highlight the training process of logical thinking and innovative thinking, so that the students can complete a series of experimental tasks in depth. At the same time, the students are encouraged to conduct
research experiments of their choice in combination with applied course learning or professional needs.

**Promoting Practical Teaching by School-enterprise Cooperation Platform**

To construct the comprehensive practical teaching system oriented to the cultivation of application ability, it is also necessary to coordinate various types of practical teaching resources, and practically strengthen the conditions for practical teaching and the construction of practice bases outside the school. In accordance with the engineering education requirements of combining engineering with learning and knowledge and practice, it is necessary to build practical environment according to the actual production or service technology and process.

We need to adopt an innovative and open talent training model, focus on introducing well-known domestic enterprises to carry out in-depth school-enterprise cooperation, and build a school-enterprise cooperation and collaborative education mechanism and platform. In the end, a school-enterprise cooperation and collaborative education model with complementary advantages of school-enterprise cooperation and personnel training is formed.

Relying on the school-enterprise cooperation and collaborative education mechanism, we should focus on the construction of practical teaching conditions and create off-school practice platforms. Focusing on improving students' application ability and engineering innovation ability, by bringing together the advantageous resources of industry departments, scientific research institutes, and enterprises, by introducing research and development and production bases of cooperative enterprises, large-scale off-campus practice bases are established with the characteristics of school-enterprise integration, production-university-research integration. And we should focus on building professional practice bases for resource sharing, full openness, intensive functions, and efficient operation, in order to achieve sharing of teaching resources and complementary advantages, and further enhance the talent training ability of the specialty.

It is necessary to introduce well-known enterprises through school-enterprise cooperation, introduce digital factories and laboratories into classroom, and launch digital curriculum plans. Through digital platforms, the knowledge of basic principles, design, experimental operations, and engineering management are combined, which makes digital curriculum presented to students as factories, laboratories or companies that would effectively improve the efficiency and effectiveness of engineering education.

**Giving Play to the Important Supplementary Role of Second Classroom Activities in Practical Education**

The students' extracurricular scientific research activities, maker practice activities, various scientific and technological competitions, and the students' innovation and entrepreneurship training are used as the second classroom education system for the cultivation of applied talents in computer major. The second classroom education is used as the important supplement and extension of professional education, engineering education and vocational education, which makes the inside and outside class closely integrated to complement each other and promote each other. By developing a variety of second classroom education, the students can form a positive interaction between the learning and application of knowledge, solve the problem of lack of practical experience when students are employed, solve the problem of lack of pertinence in teaching, internship, and practice, which would comprehensively improve students' basic engineering knowledge, personal ability, interpersonal team ability and engineering system ability.

**Conclusion**

Constructing the comprehensive practical teaching system is the inevitable requirement for strengthening the cultivation of applied technical talents. Relying on the school-enterprise cooperation mechanism and platform, the development of practical teaching conditions and the
construction of comprehensive off-campus practice bases is an effective way to improve the training ability of applied talents in computer major, which is able to significantly improve the training quality of computer applied technical talents.

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References

[1] Li Wangguo. The exploration and reform of the undergraduate applied talents training mode based on the CDIO engineering education concept [J]. Economic Research Guide, 2012 (23): 286-288.

[2] Lu Guodong and Li Tuoyu. Reflections of the paths of constructing and developing emerging engineering education [J]. Research in Higher Education of Engineering, 2017 (3): 20-26.

[3] Zha Jianzhong. Three major strategies for engineering teaching reform in China [M]. The Press of Beijing Institute of Technology, 2009.