

Optimization Path for Employment-oriented Training of Computer Majors in Higher Vocational Education

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Abstract: This article proposes an optimization path for the employment-oriented demand in the training of computer professionals in vocational colleges. A series of improvement measures have been proposed by analyzing the current situation. Firstly, focus on optimizing the practical teaching process and increasing internship opportunities for cooperation with enterprises, to enhance students' practical skills and work experience. Secondly, strengthen the cultivation of soft skills, including communication and teamwork abilities, and cultivate students' ability to adapt to the real working environment. At the same time, establish a close integration model between industry and education, offer courses closely related to the needs of enterprises, and improve the employment competitiveness of graduates. Finally, teachers should encourage students to participate in project practice, cultivate the ability to solve practical problems, pay attention to industry development trends, and flexibly adjust teaching content. Through these measures, it is expected to better meet the demand for high-quality talents in the computer industry, and enhance the employment competitiveness and career adaptability of graduates.

Keywords: Employment in computer science major; Vocational employment; Talent cultivation; Personnel training

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1. The employment status of vocational computer major students

Some large and well-known enterprises not only require job seekers to have a bachelor's degree or above, but also require them to have comprehensive qualities such as practical ability, communication ability, and teamwork ability, which undoubtedly brings huge challenges to vocational college students. Especially in the field of computer science, graduates still need strong practical skills and rich experience to find their ideal jobs^[1]. At the same time, the global economic and job market downturn has also brought certain pressure on the recruitment needs and budgets of enterprises, which further exacerbates the uncertainty of employment for vocational computer graduates.

2. Analysis of employment rate for computer majors in vocational colleges

The computer major mainly faces problems such as job and professional irrelevance, low income and low job satisfaction of some graduates, and a considerable number of students, although already employed, need to undergo secondary training from training companies before they can take up their positions. According to statistics released by Max, the overall employment rate of undergraduate computer majors is as high as 94.5%, ranking high, with a corresponding employment rate of 77%. However, the employment situation of vocational computer majors is not optimistic. Although the overall employment rate of computer majors can reach over 90%, the corresponding employment rate is relatively low. A large number of vocational college graduates are forced to engage in jobs unrelated to computer science. This indicates that the knowledge learned by students majoring in computer science in vocational colleges during their time in school cannot be fully applied in practical work. If this situation continues, the actual employment rate of computer majors in vocational colleges will significantly decrease, and the corresponding employment rate will further decline ^[2].

3. Current situation of talent training in computer majors in vocational colleges

3.1. Lack of textbook

In vocational computer education, the problem of lacking textbooks has become a serious challenge. This problem is mainly manifested in the disconnect between textbook content and industry development. Many textbooks are not updated promptly, which cannot effectively reflect the latest trends and needs of technology and industry. Therefore, students may come into contact with outdated concepts, tools, and technologies during the learning process, leading to difficulties in applying the knowledge they have learned in practical work. In addition, some textbooks are too theoretical and lack support from practical application cases, making it difficult for students to transform theoretical knowledge into practical abilities ^[3]. Solving the problem of lacking computer textbooks in vocational colleges is of great significance for improving teaching quality and student employment competitiveness. Therefore, it is important for schools to strengthen the regular review and update of textbook content, ensure that it keeps pace with the latest developments in the industry, and pay attention to the practicality and pertinence of textbook writing, to better meet the learning needs of students and the employment needs of the industry.

3.2. Outdated teaching modes and methods

The outdated teaching modes and methods are a typical characteristic of vocational computer majors in the teaching process, mainly manifested in multiple aspects. Firstly, traditional lecture-based teaching still dominates, lacking sufficient interaction and practical elements. This one-way method of imparting knowledge limits students' participation and initiative, making it difficult to stimulate their learning interests and motivation. Secondly, the teaching resources and tools are relatively old, relying on traditional paper textbooks and simple teaching equipment, but not making full use of modern technology and Internet resources, which leads to single and limited teaching content, unable to meet the diverse learning needs of students ^[4]. In addition, the implementation of personalized teaching is insufficient, and teachers often adopt a "one size fits all" teaching method to treat all students, ignoring their individual differences and learning abilities, resulting in poor teaching effectiveness. Therefore, the backwardness of computer teaching models and methods in vocational colleges not only affects the quality and effectiveness of teaching but also restricts the comprehensive development of students. To solve this problem, innovative teaching models and methods need to be adopted, such as introducing project-based learning, and collaborative learning, and actively exploring modern teaching technologies and resources. At the same time, personalized teaching and evaluation system construction should be strengthened to improve the

level of education and teaching and cultivate high-quality talents that better meet social needs.

3.3. Insufficient teaching resources and outdated equipment

In the field of computer science, technology, and tools are constantly being updated, but traditional teaching methods cannot keep up with this change, which can lead to outdated teaching content and methods. In addition, insufficient performance of some devices often leads to slow operation speed and affects teaching efficiency. This not only affects the teaching enthusiasm of teachers but also weakens the learning enthusiasm of students, thereby affecting their ability to master computer skills and putting them at a disadvantage in the future job market.

3.4. Imperfect student evaluation mechanism

Although teaching work is important, teaching assessment and evaluation cannot be ignored. Only by fully performing teaching assessment and evaluation can the effectiveness of the teaching mode be further verified, providing adjustment directions for subsequent teaching work. The imperfect student evaluation mechanism is manifested in the following aspects:

- (1) Excessive reliance on traditional exam evaluation. This single evaluation method is difficult to comprehensively and objectively reflect the learning level of students.
- (2) Lack of diversified evaluation methods and indicator systems. Students' learning performance should not only be evaluated through exam scores, but also take into account factors such as classroom performance, practical ability, and teamwork. However, the current evaluation mechanism often overlooks these key factors, leading to insufficient evaluation of students' comprehensive abilities.

In addition, the opacity and unfairness of evaluation criteria are also important issues. Some schools or teachers may evaluate students based on subjective preferences or other factors, rather than objectively and impartially assessing their actual performance. Therefore, the imperfect student evaluation mechanism not only affects the learning enthusiasm and motivation of students, but also affects the quality of teaching and educational equity. The key to solving this problem lies in establishing a more diversified and fair evaluation system, including a comprehensive evaluation of exam scores, classroom performance, practical abilities, and other aspects, to better reflect the learning situation and potential of students, and promote the fairness and development of education.

4. Optimization paths for talent cultivation

4.1. Optimize professional courses to meet employment needs

In response to various teaching problems in current vocational colleges, the key issue of teaching reform is to start from the teaching philosophy of schools and teachers, emphasizing employment as the direction of education, and various educational and teaching activities should focus on cultivating talents needed by social enterprises. Adhere to the combination of teaching materials, teachers should update course content, optimize the teaching content system based on the latest technologies and development needs of the times, and add the latest courses related to artificial intelligence, cloud computing, big data, etc.^[5] To enhance students' technical competitiveness, teachers should strengthen practical teaching, introduce project cases and experimental courses, cultivate students' problem-solving ability and practical operation skills by establishing school-enterprise cooperation, carrying out internships, project research and development activities, while providing practical work experience, and enhance career adaptability. Besides, industry seminars and employment guidance lectures should be held regularly by inviting experts to share the latest technologies and employment

trends and guide students in planning their career development. Allowing vocational computer teaching to play its rightful teaching value, aligning with market demand, can also further improve the fundamental impression of the market on vocational education ^[6].

4.2. Innovative teaching methods to cultivate practical abilities

Innovative teaching methods and cultivating practical abilities are the two core goals of modern education. To enhance students' abilities, the following innovative teaching methods can be adopted:

- (1) Project-based teaching allows students to complete practical projects through teamwork.
- (2) Set up virtual experiment courses, giving access to simulation software or virtual experiment platforms to learn, and improve practical operation skills with the ability to cope with technical challenges.
- (3) Collaborate with enterprises to organize internship activities both on and off campus, exposing students to a real work environment and cultivating their professional qualities.
- (4) Using information technology teaching methods to expand the scope of learning and practice for students, providing more learning resources and practical opportunities ^[7]. Teachers can also boldly innovate teaching modes and replace the traditional teaching mode of imparting theoretical knowledge. Based on the interests, hobbies, and development direction of students, simulate the work scene of enterprises appropriately and give students a sense of immersion. The teaching content should also refer to the scope of responsibilities required for daily work in enterprises, actively communicate with classmates, and conduct teaching through group cooperation and exploration, simulating daily work scenarios ^[8].

These measures can effectively enhance students' practical abilities and competitiveness, and better adapt to future career development needs.

4.3. Carry out innovation and entrepreneurship education

The aim of carrying out innovation and entrepreneurship education is to cultivate students' innovative thinking, entrepreneurial spirit, and practical ability so that they can better adapt to the needs of future career development. Here are some suggestions on how to carry out innovation and entrepreneurship education:

- (1) Establishment of a "maker laboratory", which provides advanced equipment and resources, encourages students to explore and innovate independently and cultivates their creativity and practical abilities.
- (2) Establishment of an "Entrepreneurial Mentor Program" by inviting successful entrepreneurs or industry experts to serve as mentors, guiding students in developing entrepreneurial plans, solving problems, and providing practical guidance together with resource support.
- (3) Organize "Innovation and entrepreneurship competitions", which establish awards and financial support, stimulate students' entrepreneurial enthusiasm and competitive awareness, and cultivate their teamwork and innovation abilities ^[9].
- (4) Establishment of an "Entrepreneurial incubation center" to provide incubation services for potential entrepreneurial projects and help students transform their creativity into business practice.
- (5) Promotion of "School-enterprise cooperation and innovation projects", which collaborates with enterprises to carry out scientific research projects or product research and development by providing practical work experience and innovation and entrepreneurship opportunities, and cultivating students' practical abilities and innovation awareness.
- (6) Universities should reform and improve their student management system, and strive to explore new ways of "strict management" and "active management", to create more time and space for students to

start their businesses ^[10].

- (7) Schools should provide students with the necessary psychological counseling, which can not only help them master psychological adjustment methods but also enhance their ability to withstand pressure and adapt to society, allowing them to face various pressures and setbacks encountered in the process of entrepreneurship.

4.4. Strengthen school-enterprise cooperation and achieve deep integration of industry and education

Strengthening school enterprise cooperation and achieving deep integration of industry and education is of great significance for improving students' practical ability, innovation ability, and employment competitiveness ^[11]. Establishing a blockchain technology-based school-enterprise cooperation platform to ensure information security and transparency can promote resource sharing and cooperation. This is an effective measure for vocational computer majors to achieve deep integration of industry and education. Besides, schools can improve cooperation efficiency, introduce artificial intelligence technology, and design a personalized ability evaluation system to accurately match the strengths of students with the needs of enterprises. The utilization of virtual reality technology to create a virtual reality internship platform that simulates real-life work can also help in cultivating students' practical operational skills. In addition, the establishment of a joint laboratory for cutting-edge technology research and innovation projects can promote deep integration of industry, academia, and research. These measures will provide new ideas for promoting the two-way method of talent cultivation and technological innovation in vocational and technical computer major school-enterprise cooperation ^[12].

4.5. Strengthen vocational planning education and provide employment guidance

To enable students to have a deep understanding and grasp of the job market and personal development direction, schools should carry out employment guidance activities ^[13]. Offering career planning courses to cover both industry trends and career path planning, including training in resume writing and interview skills, can enhance students' job search competitiveness. The establishment of a career development center aids in providing personalized career counseling and planning services, tailored career development plans to students, and increasing their employment competitiveness. Schools should actively promote school enterprise cooperation to establish internship bases, to enhance students' professional qualities. In addition, the school also needs to track and evaluate the employment status of the graduates and make corresponding adjustments and updates to employment guidance strategies to ensure the smooth employment of students. The above measures have a very positive effect on achieving students' career planning and employment goals ^[14].

5. Conclusion

Placing employment at the core of vocational computer major talent cultivation is an inevitable choice to meet the needs of this era. This article proposes measures such as optimizing professional courses, strengthening school enterprise cooperation, carrying out innovation and entrepreneurship education, and strengthening career planning education by analyzing the employment and talent cultivation status of vocational computer students ^[15]. These measures will cultivate high-quality talents that better meet market demand, provide support for their future career development, and inject new blood into the industry's development. May this optimization path contribute greatly to the sustainable development of vocational computer majors.

Disclosure statement

The authors declare no conflict of interest.

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