Exploration and Practice of the Construction of Provincial High-level Major Group in the Context of "Three Teaching Reforms"

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Abstract. Under the guidance of the school's philosophy of "adhering to the road of connotative development, adhering to the development of students as the basis and the cultivation of competence as the key to achieve high-quality development in the new era", we firstly analyze the problems that existed in the process of cultivating talents in the provincial-level major group of computer application technology, and then, in conjunction with the reform of the teaching mode of industry-teaching fusion courses carried out by the university, we focus on the requirements for vocational education in the new era, promote the "Three Teaching Reforms" to improve the quality of talent cultivation, enhance the competitiveness of graduates' employment, and achieve the goal of high-quality employment.

1. Introduction

As my country enters a new stage of development, industrial upgrading and economic structural adjustment continue to accelerate, the demand for technical and skilled talents in all walks of life is becoming more and more urgent, and the important status and role of vocational education are becoming more and more prominent. In 2019, the State Council issued the "National Vocational Education Reform Implementation Plan" document. The spirit of the document requires adhering to the guidance of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era and placing vocational education in a more prominent position in educational reform and innovation and economic and social development. Firmly establish new development concepts, serve the needs of building a modern economic system and achieve higher quality and more adequate employment, dock scientific and technological development trends and market demand, improve the vocational education and training system, optimize the layout of schools and majors, and deepen the reform of the school running system and education mechanism. The reform is oriented to promote employment and adapt to the needs of industrial development, encourage and support all sectors of society, especially enterprises, to actively support vocational education and strive to cultivate high-quality workers and technical and skilled personnel [1-2].

The Computer Application Technology Major Group of our school was approved by the provincial level in 2021. It has been under construction for 2 years. It has concentrated the faculty of the entire school, adheres to the integration of knowledge and action, and the integration of work and study, and actively explores professional construction in many aspects. Further leverage the characteristics and advantages of vocational education in higher vocational colleges, carry out the construction of the Internet Industry Academy (Huik Education Technology Group Limited), the All-Cloud ICT Industry Academy (Guangzhou Tengke Network Technology Co.), and create cloud computing, big data, etc. The high-level practical training base relies on the teacher training system of Huawei Information and Network Technology College, provincial training and national training projects to cultivate a group of high-level "double-qualified" teachers. Deeply carry out school-enterprise cooperation, build a "dual" education model that integrates industry and education with schools and enterprises, and use studios jointly built by schools and enterprises to build a studio education platform, and student training has begun to bear fruit. Graduates related to the major group have initially achieved the goal of high-quality employment, serving the electronic information industry chain of Dongguan and surrounding cities in the Pearl River Delta region, forming an educational experience that can be promoted and replicated [3-4].

2. Status of construction of major group

2.1. Basic situation

Our computer application technology major group mainly buttresses the vocational job groups in the electronic information new generation information technology industry chain in Guangdong, Hong Kong and Macao Bay Area, and the major group includes five majors of computer application technology, computer network technology, software technology, Internet of Things application technology and big data technology.
to cultivate and develop the emerging service industry pattern, and to accelerate the fusion of the intelligent terminal products with big data, the Internet and the Internet of Things. Strive to realize the effective construction of the major group of computer application technology in the areas of talent training mode, curriculum teaching resources construction, reform of teaching materials and pedagogy, teachers' teaching innovation team, practice teaching base, technical skills platform, social service, international exchange and cooperation, and sustainable development guarantee mechanism. It focuses on building high-quality practical teaching conditions for new-generation engineering specialties such as mobile Internet, Internet of Things, cloud computing, big data, artificial intelligence, etc., constructing electronic information teaching platforms based on new-generation information technology, and cultivating intelligent terminal technology talents in the information technology industry.

The major group of computer application technology was projected by the school as the first batch of school-level high-level major group in 2019, and was projected by the provincial department as the second batch of high-level major group of higher vocational colleges and universities in Guangdong Province in 2021. Currently, the major group includes 5 majors with enrolled students: 3599, including 2148 in Computer Application Technology, 441 in Computer Network Technology, 630 in Software Technology, 218 in Big Data Technology and 162 in Internet of Things Application Technology. After the construction in recent years, it has achieved certain construction results, and in October 2023, it passed the mid-term inspection of Guangdong Provincial Department of Education.

2.2. Problems

According to the inspection results fed back by the Guangdong Provincial Department of Education, as well as during the construction process in recent years, there are some problems, mainly including the following aspects:

(1) The quality of student employment has not been significantly improved. Judging from the employment situation of grades 19 and 20, the overall situation is similar to the employment data of graduates in previous years. The graduation rate, professional matching rate, starting salary, etc. of students have not improved significantly, so we can find the teaching reforms in recent years. The promotion is not enough, and it fails to significantly improve students' professional abilities and improve their employment competitiveness.

(2) The reform of the three religions has not been effectively promoted. During the construction process in recent years, the reform of the three religions has not achieved good results. In terms of the reform of teaching methods and methods, the professional basic courses and core courses of each major belonging to the major group focus on promoting project-based teaching, which is generally well received by students and has improved the quality of classroom teaching. Secondly, in terms of teacher construction, due to the impact of the epidemic in the past few years, teachers' various learning and training were mainly online, and the situation in enterprises has declined, and the training of "double-qualified" teachers has not been effective. promote. Finally, in terms of teaching material construction, it was mainly combined with project-based teaching, and a series of project-based teaching materials were developed and published. No obvious results were achieved in the construction of loose-leaf and workbook-style teaching materials.

(3) The landmark achievements are not outstanding.

Judging from the statistics of student skills competitions, teacher teaching ability competitions, provincial teaching reform projects, and teacher teaching and scientific research results in recent years, certain results have been achieved, including papers published by teachers and students, software copyrights, patents, etc., all have a certain number, but provincial or national curriculum reform projects, online courses, professional resource libraries, etc. are all lacking, and the landmark achievements are not outstanding enough.

Based on this, in the second half of the construction of the major group, in the context of the school's promotion of the reform of the teaching model of integrated industry-education courses, each major should carry out more in-depth "teachers", "teaching materials", "Teaching Law" reform has achieved richer results and welcomes the acceptance by the provincial department in 2025.

3. Reform initiatives

3.1. Preliminary preparatory work

(1) Research and argumentation, designation of implementation program. In order to thoroughly implement the "National Vocational Education Reform Implementation Plan", "General Office of the State Council on Deepening the Integration of Education and Industry" and other higher documents, before carrying out the reform of the teaching mode of the integration of education and industry courses, we carried out a multi-channel, multi-level research, visited similar institutions under the leadership of leaders at all levels, and conducted extensive research on the industry and enterprises, employers and graduates of various majors, and drew on the successful experience of the reform of similar institutions to hire industry and enterprise experts to validate the reform. The successful experience of the reform, employing industry and enterprise experts to carry out demonstration, formulated the guidance, implementation program and relevant management methods and other documents for the reform, and formed a practical and feasible comprehensive reform program and specific requirements[5].

(2) Conduct visits to discover high-quality enterprises. The school leaders led the secondary colleges and related departments to visit enterprises in their own way, and the secondary colleges also led the directors of professional teaching and research
departments and professional teachers in their own way to actively contact the cooperative enterprises and visit the enterprises, and signed the "School-Enterprise Industry-Education Integration and Collaborative Educational Cooperation Agreement" or the "School-Enterprise Cooperation Agreement" for the reform of the teaching mode of industry-teaching integration type curriculum, respectively, and the form of cooperative cultivation includes the order class, apprenticeship system, and work-learning combination, etc.. Many enterprises not only provide rich teaching resources (including venues, equipment, technology, instructors, etc.) for this industry-teaching integration course reform work, but also provide living subsidies or scholarships for students. In this process, the college and the professional teaching and research department even did a lot of liaison work, all kinds of enterprises can be accommodated by a total of about 1,500, providing nearly 1.5 times the number of positions for the number of students in the 21st grade major group, which provides a solid foundation for the reform work[6].

(3) Propaganda and mobilization, unified understanding. In order to unify understanding and update concepts, strengthen teachers and students' awareness of reform and participation, enable teachers to actively support and participate in the reform and become the leading force in the reform; enable students to fully understand the purpose and significance of the reform and become the ultimate beneficiaries of the reform. First of all, at the school level, key elements among teachers and students are mobilized, and the relevant leaders of the school and members of the reform work leading group are the keynote speakers to carry out policy propaganda; secondly, at the secondary college level, the leaders of the secondary colleges give lectures and Members of the school reform leadership group will guide separately and carry out policy propaganda, so that every full-time teacher and students participating in reform practice activities will be covered by all members. Finally, at the professional level, led by the leaders of the college, the professional directors of the major groups undertake professional propaganda tasks, laying a broad ideological foundation for the smooth advancement of the reform work. Through studying and understanding the spirit of the reform and the requirements of the implementation plan, as well as extensive publicity and mobilization and in-depth and meticulous ideological work, the whole school has formed a game of chess and gained broad consensus and strong support from teachers and students, thus ensuring the smooth advancement and organizational implementation of the reform [7].

3.2. Implementation stage of curriculum reform

(1) Develop teaching materials and provide implementation guarantees. In response to the reform-related courses, the Academic Affairs Office has formulated the "Standards for the Development of Integrated Industry-Education Curriculum and the Compilation of Loose-leaf Teaching Materials" and conducted special training. In the preparation of the specifications, it is first emphasized that the integration of industry and education courses is to connect job capabilities; secondly, comprehensive corporate training courses are designed to enhance corporate practice links and strengthen students' hands-on abilities; finally, special ability courses are used to integrate on-the-job courses. Each major in the major group takes this as a guide to make full use of the course resources and teaching materials provided by the enterprise, combine the professional characteristics, focus on docking new processes, new technologies, and new standards of industry enterprises, and carry out corresponding teaching material construction tasks.

(2) Two-way choice to achieve students' personalized development. The implementation of the reform will realize a two-way choice system. According to the needs of enterprises and students, students are organized to go to target enterprises for reference inspections, so that each student has a full understanding of the enterprise. To implement students' connection with enterprises, each student and the corresponding enterprise will sign a school-enterprise industry-education integrated collaborative education cooperation agreement to implement the purpose of school-enterprise collaborative education.

(3) Implement the guidance of dual instructors and jointly carry out online and offline teaching. Firstly, each course is carefully organized according to the teaching materials developed in the previous stage, making full use of practical and project-based resources provided by the company, building a course learning website on the Chaoxing platform, and providing loose-leaf electronic teaching materials, teaching guides, and course learning tasks by category. Books, teaching videos, teaching courseware, etc., and at the same time provide dynamic guidance and management of students' course learning, and provide guidance and management for students' study attendance, study task assignments, homework inspection, question answering, course assessment, etc. Secondly, actively carry out offline teaching and management. While in the company, students' course learning relies on the company's real production process and real positions, and is carried out using the methods of "class-post integration" and "learning by doing, learning by doing". Through the careful guidance of corporate tutors, every student will benefit a lot during the corporate learning stage. Finally, according to the nature of the integration of industry and education courses, establish an appropriate assessment mechanism to conduct phased assessments of students' learning status. According to the number of tasks in each course, appropriate proportions are allocated. Enterprise tutors and school tutors will be graded separately, and then according to the enterprise The ratio of 70% tutors and 30% on-campus tutors provides each student with a comprehensive course assessment score[8].
3.3. The connection stage between curriculum reform and internship

In the later stage of the curriculum reform implementation stage, in order to make a good connection with the subsequent internship stage. Both the school and the enterprise jointly carry out the following tasks:

(1) Job analysis and resume preparation coaching courses. Based on each student's learning situation, we provide targeted industry technology and corporate recruitment needs, and analyze and teach various positions. At the same time, each student's resume and interview etiquette will be analyzed to prepare the job search status in advance.

(2) Mock interview. Provide one-on-one real-scenario simulated interviews to feel the atmosphere of the interview. Instructors will make comments, correct your shortcomings in a timely manner, and participate in the interview in the best condition.

(3) Internal promotion and talent selection meeting within the enterprise. Based on the company's recruitment needs, from time to time we will organize corresponding professional and high-quality companies to the base for special promotions or directly recommend resumes to cooperative employment companies to reduce everyone's time and cost of going out for interviews. At the same time, we will also use the resources of cooperative companies in the industry to regularly organize other companies with recruitment needs to go to the base to conduct on-site special double recruitment meetings. Corresponding professional positions can be selected, which can achieve high job search efficiency and accurately match professional knowledge [9].

4. Implementation effects of curriculum teaching model reform

During the reform activities from September last year to November this year, a total of 1,047 students participated in the five majors of the computer application technology major group, and there were 217 cooperative enterprises. The cooperative enterprises provided a total of 225 corporate tutors. On average, each enterprise received and trained about 5 students. During the implementation process, both schools and enterprises have benefited a lot, mainly reflected in the following aspects.

4.1. Majors benefits

First of all, in terms of professional resource construction, the school and enterprises jointly developed loose-leaf teaching materials for 15 courses, providing about 1,200 online teaching videos, electronic courseware, materials and other resources, and the cumulative duration of various teaching and demonstration videos is about 22,000 minutes.

Secondly, through enterprises' participation in talent training such as curriculum development, course teaching, and practical guidance, customized training is carried out for students, so that education is more in line with the needs of enterprises and the market, and the purpose of collaborative talent cultivation is achieved.

Finally, in order to promote school-enterprise collaborative education and deepen industry-university-research cooperation, we carry out professional co-construction activities with school-enterprise cooperative units. Schools and enterprises jointly carry out construction projects such as training rooms and practice centers to integrate the company's excellent cultural atmosphere and equipment and facilities. It is arranged on campus to allow students to fully experience corporate culture, become familiar with business processes, master various professional skills, and fully realize the purpose of resource sharing.

4.2. Teachers benefit

Firstly, improve the teaching ability of teachers in schools. Through this reform, on-campus tutors have more opportunities to get in touch with the actual situation of enterprises, keep abreast of the latest trends in the industry, and have an in-depth understanding of the professional knowledge and technology requirements of industry enterprises, so that the teaching content of the courses is closer to actual needs, allowing teachers to Make timely improvements in subsequent course teaching to enhance teachers' personal teaching abilities and make teaching more targeted and practical.

Secondly, improve teachers' professional capabilities. Through this reform, teachers can maintain closer ties with industry companies and gain more learning and development opportunities. In cooperative enterprises, on-campus tutors can participate in more corporate projects, technology research and development and other cooperation to broaden teachers' professional knowledge.

4.3. Students benefit

This reform has moved the classroom from school classrooms to real workplaces such as enterprise production workshops and construction sites. The learning content is closer to actual work. Students are placed in real work environments and exposed to practical problems and challenges. Thereby cultivating students’ problem-solving and practical abilities. Through practical cooperation with enterprises, students apply the knowledge they have learned to practice and deepen their understanding and mastery of theoretical knowledge. When faced with learning problems, you can consult either school tutors or corporate tutors to solve various problems in the learning process in a timely manner, improve your comprehensive professional quality in actual combat, and understand the direction of career development in corporate practice. Gain work experience and be fully prepared to enter the workforce after graduation.
4.4. Others

This reform work has promoted the better matching of educational content, teaching methods, and evaluation systems with market demand, improved students’ comprehensive quality and practical work ability, and also contributed to the construction of the teacher team and the deepening of education and teaching reform. These changes will help build a talent training system that is efficient, mutually beneficial and adaptable to the needs of industrial development in school-enterprise cooperation, and is of great significance to promoting the improvement of education quality and sustainable development of our school.

In terms of major group construction, on-campus tutors can introduce school scientific research topics, corporate mentors can introduce corporate research projects, and schools and enterprises can jointly undertake topics and projects. Schools and enterprises jointly carry out scientific research, which not only solves problems such as enterprise production technology, but also improves teachers’ professional and teaching abilities during the project construction process, and also allows students to improve their technology application capabilities and innovation capabilities.

5. Conclusion

In the context of the “three-teaching reform” and the exploration and practice of this time, the construction of the provincial high-level major group of computer application technology of our university can be the starting point and landing point of the reform of the teaching mode of the curriculum of the integration of industry and education, and in the subsequent construction process, we can rely on the advantages of the location of the Guangdong, Hong Kong and Macao Bay Area, raise the awareness of the ideology, closely contact with the enterprises, and push forward the in-depth implementation of the reform of the integration of industry and education, go deeper in the direction of reform of the teaching mode of the curriculum and reform of the talent cultivation mode, set up a long-term mechanism for integration of industry and education, and create a richer professional achievements, improve the quality of talent cultivation, and help to realize the high-quality employment for the graduates.

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