

Research on Practical Teaching Base Based on CIM-CDIO Concept

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Abstract—Based on the concept of CIM-CDIO, this paper analyzes the talent-training mode of the practice teaching base. And it analyzes the necessity of the reform of the practice teaching base from the enrollment quality, curriculum provision, hardware facilities, the present situation of private vocational schools, double-certificate teachers and etc.. It also studies the training mode of innovative talents, who are people with self-confidence, innovative thinking, management and communication ability. Based on this, this paper puts forward the idea of the talent-training mode of personnel in practical teaching base based on CIM-CDIO concept. And the author designs it from the campus and off-campus bases.

Keywords—*CIM, practical teaching, deep fusion, personnel training*

I. INTRODUCTION

The practice teaching base mode is a conventional mode of the integration of production and education. However, most schools only provide student internships in the unit and do not achieve in-depth integration of production and education. At the beginning of 2019, the Outline of the Development Plan for Guangdong-Hong Kong-Macao Greater Bay Area proposed: Establish a list system for talents in short supply, and issue regular demand for talents in short supply; Increase the introduction of innovative talents and professional service talents; Promote cooperation in training and skills competitions of vocational education in Guangdong, Hong Kong and Macao, support exchanges and cooperation among various vocational education training bases, and build a number of characteristic vocational education parks.

Under the new situation and new opportunities, the rapid development of Guangdong, Hong Kong and Macao has put forward higher requirements for vocational education. It also pays more attention to innovative talents and skilled talents, supports exchanges and cooperation between vocational education training bases, and the in-depth integration of production and education.

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3. Education Reform Project of Guangdong Provincial Higher Vocational Education Information Technology Education Committee in 2018, Research on the Training Mode of Private Colleges and Universities Talents with Skills Based on CIM-CDIO (XXJZW 2018059).

4. Teaching Quality and Teaching Reform Project of Guangdong Provincial Department of Education Higher Vocational Education in 2018, Research on the Training Mode of Private Colleges and Universities Talents with Skills Based on CIM-CDIO.

Focus on the construction of a practical teaching and rely on the CIM-CDIO concept, to actively carry out the reform of the talent-training mode with in-depth integration in education and production. Depend on enterprises, to jointly cultivate professional and skilled talents with self-confidence, innovative thinking, management and communication skills. Therefore, it will be better adapt to social development and serve the local economy[1].

II. ANALYSIS OF THE PRESENT SITUATION OF PRIVATE VOCATIONAL SCHOOLS

After more than 40 years of development, the private higher education industry has experienced an embryonic period, a period of rectification, and a period of standardization. After 2017, with the amendment of the new "Civil Promotion Law" has been reviewed, private schools and public schools have the same legal status. The Chinese education industry is in the general trend of consumption upgrading, and the penetration rate of private education is gradually increasing.

In recent years, while the number of schools has continued to decline, private schools have received continued positive national policies and the number has maintained a trend of rising shocks. In July 2018, the Ministry of Education has published the "National Statistical Bulletin for the Development of Education in 2017". Data shows that private education has developed rapidly. In 2017, the number of private schools accounted for 34.57 % of the national total, and the private school growth rate was much higher than the overall growth level. It is predicted that by 2020, the number of private schools will further increase to 188,400. Private colleges and universities are an important part in the composition of college enrollment. The private education industry grew from less than 798.3 billion in 2015 to 1057.9 billion in 2017, a compound growth rate of 15 % in three years. In the future, the demand for talents will further increase, and the public school in China has a limited number and the talents trained by public schools are far from meeting the needs. This has created opportunities and space for private education to develop and will surely achieve a rapid development. The outlook predicts that by 2020, the private education industry will reach 1.55 trillion Yuan. By 2025, this figure will be close to 2.45 trillion Yuan, and it will achieve an annual compound growth rate of about 10 %.

A. *Enrolment Indicators Have increased, and the Quality of Students Has Generally Declined*

Higher vocational colleges admit students with relatively low scores, especially at the current stage of enrollment

expansion. With more demand for students, the admission scores drop. Some students did not form good study habits in secondary school. After entering University, they have no study plan and no career plan, skip classes, don't participate activities, indulge in games, and even fail to obtain a diploma. The characteristics of higher vocational students determine that the training of professional quality is more difficult and requires more attention.

B. Inadequate Curriculum Setting and Hardware facilities

The animation production and digital media majors set different training goals in the talent training program. The animation production major pays attention to the cultivation of two and three dimensions. While digital media pays attention to the cultivation of film, television and graphic. There are three professional training rooms for students. The practical training equipment is insufficient to meet teaching needs. The practicality of offering courses is not strong, so that students have the idea of "useless to learn". In the curriculum setting, it follows the regular course system and sets up professional courses according to the work process, with the course learning time is rather less, and professional skills are not outstanding. It is difficult to connect with the company, for students are not qualified for the project of the company. It is difficult to satisfy "precise docking and precise education."

C. Double quality teachers are fewer

a. From the perspective of quality, many teachers in higher vocational education are diverted from general education, especially teachers in professional courses. It is very difficult to achieve the requirement of double-quality teacher type of higher vocational education teachers. Many new majors have no teachers at all.

b. From the quantitative point of view, with the continuous expansion of higher vocational schools, the ratio of teachers and students decreases year by year. It results in that some teachers are overburdened and sometimes a teacher teaches 3 to 5 professional courses. With such a heavy workload, it is difficult to ensure the quality of teaching.

c. Teaching methods and means are not bold enough.

With the emergence of modern high-tech, resource bank, and fine courses, it emphasizes resource sharing and open teaching. At the present stage of higher vocational education, there are many means used, such as slide, projection, and video, but there are fewer online education platforms, let alone teaching interaction with information technology.

Most teachers teach based on classrooms, multimedia, and computer rooms and they have almost no lessons in companies and studios and are afraid to try new teaching environments. Enterprise projects can't be brought into actual teaching. It can't develop students' self-learning ability, self-confidence and management communication ability.

III. THE NECESSITY OF THE REFORM OF PRACTICAL TEACHING BASE

Based on the traditional practice base, the construction of the CIM-CDIO practical teaching base is to deepen the integration of production and education, and pay more

attention to the development of students' self-confidence, innovative thinking, management and communication skills. On the basis of the common aspiration of survival and development, taking talents, technology and benefits as the combination points, the two sides of our college and the enterprise take part in the process of vocational and technical talents training. We will make full use of the two different educational environments and educational resources of the school and the enterprise to achieve the realization of organic integration of classroom teaching and enterprise actual, professional education and vocational training, to train talents with self-confidence, innovative thinking, management and communication skills, who are first-line practical talents adapt to production, construction, service and management.

The construction of the CIM-CDIO practical teaching base is to put the company's projects into the school's weekly training, and to put the profit-oriented projects in the school's studio. In the practice of junior season, the classroom teaching of students is put into enterprises to make students and enterprises zero contact with each other and finally reach school-enterprise coordination education and pay attention to production, study, and research[2].

A. Development Needs of Guangdong-Hong Kong-Macao Greater Bay Area

In order to thoroughly study and implement Xi Jinping's Thought of Socialism with Chinese Characteristics in the New Era and the spirit of the 19th National Congress of the Communist Party of China and earnestly implement General Secretary Xi Jinping's important discourse on education and the spirit of the National Conference on Education, we will speed up the establishment of an institutional mechanism conducive to promoting the integration of production and education, give full play to the important role of enterprises, build a mode of talent-training that in-depth integrates production and education, trains students in cooperation with schools and enterprises, and improves demand orientation.

At the National Education Conference, it was proposed that the Lide Shuren should be integrated into ideological and moral education, cultural knowledge education, and social practice education, and that it should be integrated into all aspects of basic education, vocational education, and higher education. The discipline system, teaching system, teaching material system and management system should be designed around this goal. Teachers should teach courses around this goal, and students should learn around this goal. All practices that are not conducive to the achievement of this goal must be resolutely revised. The reform of education evaluation must break down the "five only", that is, "only scores, only admission, only diplomas, only thesis, only hats". The reform of the way of education pays attention to integration. During the meeting, it was proposed that education should pay attention to the development of students' self-confidence, innovative thinking, management and communication skills, especially in moral education and practice; it should pay more attention to their self-confidence. In the way with people, it should pay attention to the combination of production, study and research, emphasize on the role of practical teaching bases.

In October 2018, General Secretary Xi Jinping visited Guangdong and delivered an important speech. It should further strengthen the sense of synergy, accurately grasp the unique position and advantages of Guangdong, Hong Kong and Macao in the reform and opening up, strengthen complementarity of advantages, focus on misplaced development, and forge a model of high-quality development. In the speech, it was proposed that education should be promoted, and with the help of geographical and economic advantages, it should actively develop a high-quality talent system.[3]

Higher vocational education has always been a top priority in education. In recent years, new requirements have been put forward in higher vocational education. It is hoped that new breakthroughs will be made to achieve collaborative education and common education. Therefore, higher vocational education needs to grasp the needs of society, the social situation, the guidelines of policies, and complete the depth education mode of the practice teaching base.

B. The brand construction and the apprenticeship construction encourage the talent-training mode of school-enterprise collaboration in education

Every year, the education department of Guangdong province needs to implement the "innovation and strengthening school project" of higher education. The "innovation and strengthening school" project is also a scientific research project that our school attaches importance to. It is a major deployment made by the provincial party committee and provincial government, which is in conjunction with the new situation of higher education development in Guangdong province. The implementation of the "Innovation and Strengthening Schools" project for higher education is also a concrete measure for the provincial education department and the Ministry of Finance to implement the spirit of the Third Plenary Session of the 18th Central Committee, and to effectively transform government functions, reform the way of allocating resources, and further implement and expand the autonomy of universities in running schools.

Brand construction is a project that our college needs to declare every year in recent years. With the goal of "brand", we need to innovate the talent-training mode, cultivate first-class talents, strengthen the construction of course resources, produce first-class results, strengthen practical training and teaching, and build a first-class platform. We also need to highlight the construction of teaching teams, create first-class teachers, enhance the contribution of universities to economic and social development. By cultivating and strengthening the characteristics of colleges and universities, to strengthen the core competitiveness of universities, highlight our specialty[4].

This year, our college is applying for the animation system, the talent-training mode of apprenticeship, which is the guarantee for schools and enterprises to cooperate with others and deepen the integration of production and education.

The college encourages cooperation between schools and enterprises in the construction of brand and apprenticeship, and applies school and enterprise resources jointly to realize the reform of the talent-training mode for the construction of

practical teaching bases. Only in this way, the professional construction of higher vocational colleges can gradually achieve results, and finally achieve the goal of brand effect and Benchmark effect. Talent training can also better meet the needs of enterprises and society, and provide a "talent dividend" for China's economic growth.

C. The demand of social talents urges colleges and universities to carry out the construction of practical teaching base

The animation industry has become a "sunrise" cultural industry with great potential for development, which is intellectually intensive, labor-intensive, technology-intensive and capital-intensive. It has all the characteristics of the current knowledge economy and has a complete industrial chain. It is in the leading position in the cultural industry. At present, although the animation industry, as a fashion and fresh industry, has become a rising star, it is playing an increasingly important role in our province and our cultural industry. However, looking at the animation industry, the talent gap between animation design and production is huge. In particular, the composite technology application talents with creation and technology implementation are fewer.

The shortage of animation talents, especially composite animation talents with the combination of art performance and computer multimedia technology, has become a key factor restricting the development of Chinese animation industry. This contradiction causes our country animation industry development of our country to be difficult to continue.

Thus, talents for animation design and production are in a very large demand.

With the economic development of Guangdong, Hong Kong and Macao, and the demand for industrial development, the demand for animation industry has gradually increased, and the demand for technical and highly skilled talents is even greater, especially those first-line practical talents who can adapt to production, construction, service, management with self-confidence, innovative thinking, management and communication skills.

Therefore, the construction of off-campus practical teaching base can meet the needs of social talents.

IV. THE REFORM CONTENT OF THE CONSTRUCTION OF PRACTICAL TEACHING BASE

Based on CIM-CDIO, it is a brand new mode for enterprises and schools to jointly cultivate talents. The construction of practical teaching base is divided into the construction of on-campus practical training base and off-campus practical training base. Students are scholars in the school, while employees in the company, and they are part-time workers in the school training base. Employee and student identities are exchanged between enterprises and schools[5].

A. The construction of on-campus practical training base

The productive on-campus training base is the basis of curriculum reform and construction, and it is an important guarantee for the effective interface between professional

curriculum content and post skills standards, and an important carrier for cultivating students' post skills. It can build a real vocational environment and training situation for students. Only by relying on the practical training base can we carry out curriculum development and teaching mode reform in depth and create preconditions for the in-depth curriculum reform. Bring enterprise project to school, can carry out professional teaching according to actual job work requirement[6].

B. On-campus practical training system

The on-campus practical training system includes professional course teaching, project weekly training, and studio project training. In combination with enterprise post skills standards, it has a docking to carry out practical training projects. In the actual on-campus practical training, a training phase package is established. The initial stage is the course training, the intermediate stage is the semester training, and the advanced stage is the enterprise project training. Through the gradual implementation of the on-campus practical training base, it can let students transform from the basic knowledge acquisition to the work ability. In the on-campus practical training base, quality development and open thinking training, innovative thinking psychology, creative learning and creative development have been added to the corporate enterprise project to provide students with values and self-confidence training opportunities [7].

The chart of the on-campus practical training system as shown below:

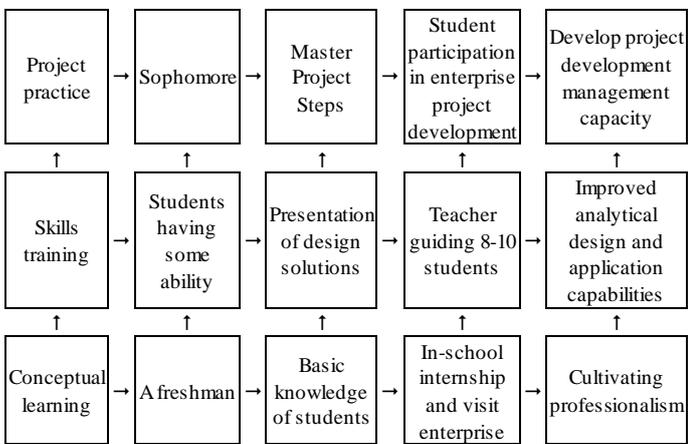


Fig. 1. On-campus Practical Teaching Mode

C. The construction of off-campus practical training base

The construction of off-campus practical training base needs to further increase the cooperation between schools and enterprises, improve the cooperation agreements between schools and enterprises, and clarify the responsibilities of both sides. It should use the form of "Work and study combined, in-post practice" to teach, mainly to cultivate job skills. Enterprises are required to implement associate-employee management, so that students can get a certain amount of work remuneration in skills training, and the school and enterprises jointly evaluate the students' performance on their in-post practice. The school should expand the in-post practice positions through multiple channels; actively understand the needs of enterprises technology and majors, broaden the

internship channels. By signing up in-post practice agreements with various associations, the school should develop in-post practice group, and closely integrate the in-post practice with the graduation design of students. At the same time, it must strengthen the process management of the in-post practice. Through the construction of a standardized management system of the in-post practice, the organization and management of it should be strengthened. It should improve the assessment and evaluation system of both schools and enterprises participating in the in-post practice[8].

Our school has now cooperated with Guangzhou Manyuan Painting Road Computer Technology Co., Ltd., Guangzhou Ruziniu Culture Co., Ltd., Guangzhou Painting Culture Co., Ltd., Guangzhou Huihuo Culture Co., Ltd., Zhuhai Zero Culture Communication Co., Ltd., Shenzhen Baudoudou Culture Media Co., Ltd. and other companies. We have cooperated with Guangzhou Manyuan Painting Road Computer Technology Co., Ltd. to build an off-campus training base to provide students with job internships. Students have at least half a year of internship in the company. After graduating, students can go to the company, where they have internship, directly to get employment, which can achieve zero distance employment for graduates.

The construction of the off-campus practical teaching base provides students with enterprise-level training and practice environment in courses, practices, and practical training. Students can directly enter the team of enterprise project development, which has consolidated the foundation for the improvement of students' practical ability. As shown in Fig. 2.

Content	School	Enterprise
Role conversion	On-campus student	Enterprise assessment → Booking staff
Course Links	Elective courses	Credit substitution → Customized courses
Teaching integration	Teaching by teachers	Part-time teacher → Joint guidance
Training docking	On-campus practical training	Enterprise support → School-enterprise training
Evaluation	Curriculum assessment	Evaluation acceptance → Enterprise employees

Fig. 2. Teaching mode for Off-campus practical training

V. CONCLUSION

The talent-training mode of the practical teaching base based on the CIM-CDIO concept has a good breakthrough in the practical teaching base and can improve students' self-confidence, innovative thinking, management and communication skills.

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