

Exploring the Path of Practical Education in Industrial Colleges of Higher Education: Huizhou University ZhongKai College of Information Technology as an Example

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Abstract: Cultivating innovative and composite talents is the main theme of the current development of higher education. At present, the mode and level of practical cultivation in colleges and universities vary, and the practical cultivation in most colleges and universities still remains in the traditional mode, which greatly reduces the effectiveness of talent cultivation. Based on this, this paper will systematically explore the path of "practical cultivation" in the industrial colleges of universities under the new situation, explore how to use the platform of industrial colleges to strengthen practical cultivation, improve the working mechanism, give full play to the function of cultivation in industrial colleges, and try to draw up a new "practical cultivation" in the cultivation of talents in industrial colleges that can be learned, replicated and promoted. The new model of "cultivating people through practice".

1. Introduction

Practice education is an important part of the education system of colleges and universities in the new era, and it is the basic connotation of the "big thinking classroom" in the education of colleges and universities, which is a key link of talent training [1]. If education is not separated from practice, it will be unrealistic and impractical. The cultivation of talents of any profession requires good practical education and practical environment [2]. Especially in the talent training of applied undergraduate colleges and universities, the key core majors have a strong practical nature. To a certain extent, the level of practical education determines the quality of talent cultivation [3]. The practical education should be "changed according to the matter, advanced according to the time and new according to the situation", constantly innovate the education mode and highlight the effectiveness of education [4-5]. At present, with the needs of social and economic development, the development of industrial colleges in local universities in China is changing rapidly. The talent cultivation mode with the integration of industry and education has gradually matured, opening up a

new path for the practical cultivation of talents in colleges and universities. Integrate multiple resources to build a new platform for talent cultivation.

Huizhou College, as an ordinary undergraduate pilot transformation university in Guangdong Province, is building into a high-level application-oriented university. In order to cultivate high-quality applied talents with innovative thinking, the school proposed to combine the development characteristics of each county and district in Huizhou to create "one industrial college for each county and district". In 2018, Huizhou College signed a cooperation agreement with Zhongkai Hi-tech Zone in Huizhou City, and formally established "Huizhou College Zhongkai Information College" (hereinafter referred to as: Zhongkai Information College). At the same time, 21 governing units in Zhongkai Hi-Tech Zone, including TCL Group and Yiwei Li-energy, participated in the construction of the Industrial College. The formal establishment of Zhongkai Information College has built a new platform for Huizhou College to cultivate talents and opened a window for practical education with enterprises. Based on this, this paper attempts to take the Zhongkai Information Institute as an example. This paper explores the new path of practical education under the model of "school, government, industry and enterprise".

2. The Importance of Practical Education in Universities

2.1 A Main Channel for Linking Theory to Practice

It is an important goal of higher education to train college students to link theory with practice and thus adapt to social development. The Implementation Outline of the Quality Improvement Project of Ideological and Political Work in Universities clearly stipulates that practical education should be promoted [1]. Practice is the standard for testing the truth, and practice can clearly test whether the knowledge students have learned has integrity and scientificity. In China's basic education, under the background of long-term examination-based education, the effectiveness of practical education is obviously insufficient. Therefore, higher education is the main battlefield to make up for the practical education, which is the key stage and important period to carry out practical education. College students in higher education cannot still maintain basic education with theoretical learning as the main theme, and should be provided with more opportunities for practice and a broader platform for practice [6]. Students can be guided to use what they have learned to guide their practice and enhance their ability to solve practical problems. It can truly adapt to the pace of the ever-changing and rapidly developing society.

2.2 The Main site for "Nurturing Talent for the Nation"

To seek happiness for the Chinese people and rejuvenation for the Chinese nation is expressed in the field of education as "nurturing talent for the nation". The cultivation of talents in universities must provide the country with a continuous supply of high-quality talents. The country's demand for talent is complex, innovative and diverse. No matter what the talent is, it must focus on the all-round development of moral, intellectual, physical, social and aesthetic development. Education cannot focus on theoretical training. Labour practice is needed, and real skills need to be exercised from the hone of practice. In the practical teaching of teachers and the practical operation of students to enhance their professionalism. At the same time establishing good values, only by strengthening practice and focusing on guidance to combine theory and practice. Only then can practical and reliable modern and highly qualified talents be being cultivated.

3. Problems with Traditional Practical Education in General

Strengthening the mechanism of "practical education" in universities is an important part of improving the education system. Modern universities should focus on the cultivation and enhancement of students' practical ability, but the teaching of most majors still adopts the traditional teaching mode. Most of them focus on the teaching of courses and stay on the level of basic theoretical knowledge, but the cultivation of students' practical ability is not enough. As a result, practical teaching has become a weak link in the training of many majors.

3.1 Poor Professional Practice

The content and modules of professional practice are not clearly defined in the traditional training programme. Most of the practice contents are non-specialist categories such as summer trips to the countryside and voluntary activities, which lack a good professional practice environment. Most students are not really deeply involved in the actual practice, and the effectiveness is not strong. In the case of science and technology majors, for example, there are not many opportunities for students to have hands-on professional practice in their daily teaching activities, and some of the experimental courses have become the main way and the main content of students' practice. It is also difficult to clarify the content of practical teaching and evaluate the effectiveness of practical teaching when conducting enterprise internships. There are obvious shortcomings in the arrangement of the entire practical content, and it is difficult to achieve good results in practical education.

3.2 Poor Student Coverage

Talent development programmes are developed for all students. Practical education is an important part of ideological and political education, and it is important to ensure that every student is put in place. At present, although universities carry out various types of practical training and practice activities, and launch a series of practical education system such as social practice and innovation and entrepreneurship. However, the proportion of the number of participants is small. In particular, some colleges and universities appear to be repetitive in their practical education activities and lack innovation and characteristics. This leads to low motivation of students when participating in practical activities.

3.3 Inadequate Arrangements

The curriculum does not take practical education as a key planning objective, and the emphasis on theory rather than practice is still a prominent problem in universities at present. Practical education should be carried out throughout the whole process of education and teaching, such as classroom practice, campus practice, off-campus practice, internship work and employment work, etc. In the professional practice teaching. There is a lack of using the platform of school-enterprise cooperation to carry out more enterprise apprenticeship, and there are few opportunities to experience real practice scenarios. At the same time, there is no combination of practical education and ideological education, which makes it difficult to achieve the effectiveness of practice to promote education.

4. The Connotation of Practical Education Mode in Industrial Colleges

Modern Industrial College takes the fundamental task of establishing moral education. With the

development of students as the centre, it breaks through the traditional path dependence, gives full play to the advantages of industry, plays the role of important educational subjects of enterprises and deepens the integration of industry and education. Take Zhongkai College of Information Technology as an example, the construction of this industrial college combines the training of applied talents with the development of local industries. It fully integrates the resources of academia, industry and society in many aspects, and relies on a collaborative platform including 30 governing units such as local leading enterprises driving small and medium-sized enterprises for practical education.

This industrial institute is positioned as a multi-party collaborative education base for the university, government, industry and enterprises. It is an experimental area of talent training mode reform, compared with the traditional talent training mode. The "3+1" mode of schooling at Zhongkai Institute of Information Technology has unique advantages. In other words, students receive general and professional education in the main campus in the first three years, and are jointly trained by the university and enterprises in the fourth year. The practical aspect is strengthened, and theory and practice are combined to bridge the last mile from school to society. Zhongkai College of Information Technology promotes the reform of talent training with the model of "3+1", focusing on the teaching of practical aspects. By integrating multiple resources, it builds a platform for practical education to make up for the deficiency of practical teaching in traditional teaching. At present, after nearly three years of construction, Zhongkai College of Information Technology has achieved some success in "cultivating people through practice". However, there is still a big gap in forming a more systematic or perfect working mechanism.

5. Analysis of Practical Education Paths in Industrial Colleges

Practical education through the construction of industrial college platform is an important channel and means of university education at present. It is also an important breakthrough to carry out talent model reform. Especially for colleges or majors that mainly focus on science and technology, industrial colleges play the role of bridgeheads in practical education innovation. The guidelines for the construction of modern industrial colleges clearly state. Cultivate high-quality applied, compound and innovative talents who adapt to and lead the development of modern industries. It is an inevitable requirement for higher education to support high-quality economic development. It is an important measure to promote the development of classification and characteristics of colleges and universities.

Therefore, how to optimise the practical education path of industrial colleges is a key concern of all industrial colleges at present. After three years of construction, Zhongkai College of Information Technology has been awarded the title of "Model Industrial College of Guangdong Province". It has accumulated certain experience in practical education, but there is still a big gap in the construction requirements of modern industrial colleges. In order to further promote practical education, it is necessary to combine the shortcomings of traditional practical education. It is necessary to analyse and think more deeply about the path of practical education in industrial colleges.

5.1 Take Advantage of Resources to Cover the Whole Education Process

The Industrial College is built on the basis of a large number of industries, enterprises, government and social forces, and has rich resources for educating people. By integrating resources and taking advantage of them, the Industrial College covers the whole process of university education through practical education. In addition to practical internship and practical teaching for graduates. It can also carry out practical activities for students from freshmen to juniors in the summer and winter months, such as topping up classes, project awarding, real-life problems,

practical training seminars, enterprise apprenticeship and other related aspects. On the one hand, it can strengthen the students' practical awareness, and on the other hand, it can lay the foundation and prepare for the job practice in the fourth year. This will achieve a good practical education effect.

5.2 Aligning with the Reform Objectives and Developing New Paths of Education

The innovation of talent training mode of Zhongkai Institute of Information Technology is connoted by the concept of "3+1" education, which focuses on changing the lack of traditional internship practice. The aim is to make full use of the last year of practical education to improve the quality of talent training. The focus is therefore on practical education in the final year. Students are guided to combine theory and practice in practical positions. To achieve the effect of practical education is an important reform goal of the School of Industry. In the past three years of construction of the School of Industry, there is still much room for improvement in the practical education methods for final year students. There is a need to further broaden the new path of practical education. For example, we need to cooperate with the engineers of enterprises to set up scientific and reasonable internships for students, arrange practical teaching, participate in projects and complete graduation designs in conjunction with the actual problems of enterprises. To achieve "practical education" through the whole process, the whole staff to participate in, to strengthen the practical education.

6. Problems Facing Practical Education in Industrial Colleges

6.1 Inadequate Top-Level Design Synergies and Guarantees

Collaborative education in industrial colleges is a favoured means of education in universities, especially in applied universities. However, most of the industrial colleges are crossing the river by groping for stones in collaborative education. The experience of practical education needs to be further accumulated and improved. There is no relatively perfect nurturing system established. Therefore, a normalised and standardised education model will not be sustainable. It is difficult to form an effective nurturing synergy. In addition, the content and form of practical education in industrial colleges are still not rich enough. It is also affected by the institutional mechanism of the university, and the working mechanism is not flexible and innovative enough. There is a lack of sound long-term mechanism in terms of system and financial guarantee.

6.2 Enterprises Play an Uneven Main Role

The practical education platform of the Industrial College relies on various cooperative enterprise units. As we all know, a lot of human, material and energy needs to be invested in the process of cultivating talents. In the traditional talent training, practical education mainly relies on the strength of the school. The Industrial College, on the other hand, gives more prominence to the practical aspects of the enterprise side to strengthen practical nurturing. This may have a difference in the effectiveness of practical nurturing for enterprises that are in urgent need of talents. With companies aiming to maximise profits, effective practical education for students means that companies will need to invest more financial resources and time. Practical education is not simply a top-up job. It requires guidance in the practical process. Combining theory and practice. This results in a complex educational tool that achieves a nurturing effect in the practical process. A common problem arises in this process, namely among the many co-operative units. How many enterprises that can really participate deeply in the training of talents through school-enterprise cooperation can guarantee the effect of practical education. Therefore, how to make the students of industrial

colleges get a good practical education in this platform. It is an important challenge for the College of Industry to truly realise practical education in practical positions.

6.3 Lack of Involvement of University Instructors

The education model of the Industrial College is to achieve the effect of education through the cooperation between the school and the enterprise. In addition to the main role played by enterprises, the practical education of students in industrial colleges is also influenced by the involvement of university instructors. In addition to the main role played by enterprises, the participation of university instructors also affects the effectiveness of students' practice in enterprises. In the practical aspect of the Industrial College, a double tutor system is adopted, i.e. the enterprise tutor and the school tutor. Generally speaking, instructors from enterprises have more social experience and practical experience. However, they lack professional theoretical knowledge of education, while university teachers, as the dominant group in higher education, have a higher level of education and theoretical knowledge. Both the educational tools and the theoretical level are higher than that of the enterprise instructors. Therefore, the degree of involvement of university instructors determines the effect of student education in practice positions.

Currently, the motivation and involvement of instructors in universities is not high. On the one hand, they are under the pressure of teaching and research work, and are unable to devote more time and energy to the practical teaching of students. On the other hand, most instructors do not know enough about the enterprises. In particular, there are no good communication channels and in-depth collaborative programmes with the instructors from the enterprises. In addition, school instructors rarely visit enterprises on site. This also has a lot to do with the construction and improvement of the financial security system mentioned above. The above various reasons have led to a generally low level of participation of the school instructors in industrial colleges, and there is a disconnection between the school and enterprises in the process of practical education in industrial colleges, which makes it difficult for the effect of practical education to be strongly guaranteed.

6.4 Undergraduates Are Not Very Motivated to Participate in Practice

Most of the post-zero university students have yet to increase their awareness of practical work. On the one hand, under the background of exam-oriented education, the practical education they were exposed to during their basic education was obviously insufficient. On the other hand, with the economic and social development, students do not participate much in social practice and labour. For example, the proportion of students using winter and summer vacations to participate in top-up practice will be reduced compared to the past. In the actual process of practical education in industrial colleges, there are reasons such as the difference between students' majors and specific job work, the lack of reasonable job practice arrangements in enterprises, and the long overtime hours of top-up practice. It also leads to the low enthusiasm of students' participation in practice. Therefore, the main participation of students is also an important factor affecting the practical education of industrial colleges.

7. Exploring the Thinking of Strengthening the Practical Education of Industrial Colleges

7.1 Improve Top-Level Design and Innovative Mechanisms

On the macro level, any action and work process will be regulated under a sound top-level design. On the basis of benchmarking the tasks and objectives of the Modern Industrial College Construction Guide. Industrial colleges should continuously improve the construction of

institutional mechanisms. Under the premise of the existing system, we should be bold and innovative, and try to reform and breakthrough. Give strong support and high priority to the construction of policies and mechanisms. For example, the issue of balancing the value and interests of multiple parties in the "university, government, industry and enterprise" multi-party collaboration. The workload of teachers inside and outside the university in guiding practical teaching, the financial support, and the evaluation of titles. All of these issues need to be clarified one by one, and practical solutions need to be proposed. Only by starting from a top-level design can we create a good environment and conditions for the practical education of industrial colleges.

7.2 Optimising Practice Programmes to Improve Standards

In the middle view, the main function of the Industrial College is talent cultivation. The fundamental task is to establish moral education, and to improve the quality of students' ability as the core. In order to improve the level of practical education in industrial colleges, the primary problem is to understand and clarify what qualities the industrial colleges should cultivate in students and how to cultivate them, and how to reasonably arrange and implement practical teaching links. Therefore, the College of Industry should further optimise its practical teaching programme and explore the idea of introducing "curriculum thinking and government" while carrying out practical education. It is a key step to enhance the practical education through the platform of the Industrial College.

7.3 Improving Practice Methods and Successfully Implementing Practical Education

On the micro side, practical teaching in all phases and forms is successfully carried out. It is a concrete expression of the practical education carried out by the industrial colleges. Therefore there is a need to continuously optimise and improve the methods of practical education. Ensure that practical education is implemented in every aspect of the implementation of the Industrial College.

7.3.1 Proactive Matchmaking to Provide More Students with Targeted and More Specialised Practice Opportunities

Continuously develop the platform of practical education, this process needs to strengthen the main role of collaborative enterprises or units. The qualifications of the enterprises and the integrity of the enterprises should be strictly examined in a responsible attitude towards the students, and the social responsibility of the enterprises should be assessed. To ensure that the units or enterprises of collaborative education have a better sense of social commitment and social responsibility, and to ensure the effectiveness of practical education.

7.3.2 Continuous Motivation of Mentors or Key Players in Practice Teaching, Both on and off Campus

Support is given in the construction of policies and mechanisms to guide the active participation of experienced engineers from enterprises, young doctors and expert professors from universities. Only with the active participation of the actual instructors can practical education achieve good results.

7.3.3 Do a Good Job in Guiding Students' Thoughts and Motivating Them to Participate in Practice

Students from first to third year can be guided through practical training with the help of class

teachers, full-time teachers and tutors. For senior graduates, they can also be guided by internship supervisors, thesis supervisors and enterprise personnel. This will help students to change their mindset from not wanting to practice to accepting practice to actively participating in practice.

7.3.4 Establishing a Systematic and Collaborative Feedback Mechanism and Evaluation system

There is no perfect feedback synergy mechanism and evaluation system for both the practical work of current students and the practical teaching of graduates. There is no implementation tracking and effective summary work for each practice activity carried out. There is no good communication mechanism between on-campus and off-campus supervisors. For the fourth-year graduates, there is no good communication channel between the supervisors on campus and the supervisors off campus as well. The two sides do not even know each other, which leads to the failure to produce practical effects in conducting practical teaching. In addition, the evaluation system of practical teaching has not been fully established, and there is no evaluation of students' participation in each practical activity, instructors' enthusiasm and students' actual achievement. The effectiveness of practical education has yet to be confirmed. Therefore, there is still a need to establish a close collaborative feedback mechanism and evaluation system in practice.

8. Conclusion

Strengthen practical education with the help of the platform of industrial college. It is an important means and way in the cultivation of talents in universities at present. There are many drawbacks in the traditional practical education. Relying on industry colleges for practical teaching of new-age students not only highlights the cultivation effectiveness. It also further promotes the sustainable development of industrial colleges. Although there are still shortcomings in the operation of industrial colleges, the results are obvious. Universities can try to explore the combination of their own advantages and local industrial chains, actively promote the construction of industrial colleges, and ultimately implement effective means of talent training by building a platform for practical education.

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