

# Research on the Cultivation of CNC Carving Talents under the Background of “Eastern Integration”

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**Keywords:** Eastern Integration, CNC carving, Talent cultivation, Vocational education

**Abstract:** Guangxi’s “Eastern integration” strategy has put forward a new direction for the vocational training of higher education talents in Guangxi. Strengthening the cultivation of numerical control carving talents in Guangxi can not only improve the overall level of vocational training, but also provide more excellent practical talents for local areas and inject vitality into the local economic development. “Eastern integration” background provides a new opportunity for the cultivation of CNC carving talents in Hezhou, Guangxi. The cultivation of talents needs to be continuously improved from the aspects of education system, professional curriculum and school-enterprise cooperation, so as to cultivate more high-tech and high-level skilled talents for Guangxi and effectively improve the professional ability of CNC carving talents. Based on “Eastern integration”, this paper discusses how to take effective measures to improve the quality of CNC carving talents.

## 1. Introduction

Hezhou, located at the junction of Guangdong, Guangxi and Hunan, is an important channel for Southwest China to enter Guangdong, Hong Kong and Macao. In accordance with the general requirements of “giving full play to advantages, highlighting characteristics, fully integrating with the East and accelerating development”, Hezhou put forward a new positioning and new mission of “building a leading demonstration zone for the east of Guangxi”[1]. Hezhou has become the bridgehead of “Eastern Strategy” due to its location advantage. The economic development of the whole city has shown a good trend of speeding up, optimizing the structure and upgrading the business form. In 2018, the city’s GDP grew by 8.9%, ranking the third in Guangxi. The growth rate of a number of major economic indicators ranked among the first in Guangxi, exceeding the required rate of “Eastern integration”. In the process of economic development, talents occupy the core factor. In order to promote the rapid development of local economy, we must attach great importance to the cultivation of talents. The background of “Eastern integration” pointed out the direction for the cultivation of CNC (Computerized Numerical Controlled) carving talents in Hezhou. This paper mainly analyzes the current situation of the cultivation of CNC carving talents in Hezhou. Under the background of “Eastern integration”, it puts forward a new idea for the cultivation of CNC carving talents, hoping to cultivate high-quality, skilled and compound talents for Hezhou through further exploration.

## 2. Demand for CNC Carving Talents

With the rapid development of social economy, the demand for high-quality skilled talents is growing in all walks of life. In order to meet the social demand, local governments and relevant education departments must attach great importance to talent training, mostly for the society to cultivate new innovative talents. In 2015, the government work report pointed out that “made in China 2025” should be implemented, hoping to transform China from a manufacturing producer to a manufacturing power through efforts. It can also be seen that China attaches great importance to the manufacturing industry. At the same time, it can be found that the manufacturing industry has become the pillar industry of China. In this context, in order to promote the further development of China’s economy, we need to cultivate a group of skilled talents who can both understand and

operate technology. According to the relevant survey, the demand for mechanical and electrical application-oriented talents is increasing, while CNC carving talents are in short supply. Hezhou also encountered this problem in its development. At present, there are still many problems in the training mode of CNC carving talents in Hezhou, which poses great obstacle to the actual demand of high skilled talents in Hezhou. Therefore, in order to meet the needs of manufacturing industry in Hezhou for CNC carving talents, we must deeply explore a suitable CNC carving talent training mode for Hezhou to speed up further development of manufacturing industry in Hezhou.

The first priority to cultivate talents is to make full efforts to cooperate with the Eastern regions and introduce talents. Hezhou has established and improved the talent exchange and cooperation mechanism with economic and trade liaison offices in Guangdong, Hong Kong, Macao and Dawan District in Shenzhen. Hezhou also set up talent recruitment and talent introduction workstations in Guangzhou and Shenzhen respectively, signing cooperation agreement with Shenzhen University, Guangdong University of Finance and Economics and Guangzhou University of Traditional Chinese Medicine. Furthermore, Hezhou hired experts, scholars and excellent entrepreneurs from Guangzhou, Shenzhen, Macao and other places to Hezhou to build their business, thus making full use of their resources and advantages to promote the transfer and transformation of scientific research achievements. Adhering to the concept of “production-oriented”, adopting the “talent + project” mode of flexible talent introduction, more than 30 high-level talents with technology, projects and funds in Dawan district have been introduced. At the same time, Hezhou has implemented the leader training project of “integrating into the construction of Dawan district and improving the professional ability”, select and send excellent talents to Guangzhou, Shenzhen and other regions for on-the-job training. Hezhou also formulates the work plan of promoting competent and responsible employees to the leadership, and encourage excellent talents to take the leading role in the process of Hezhou’s “East integration” [2].

The work of talent introduction is accompanied with retaining talents. Hezhou implements the talent vocational training plan by constructing a talent policy, management and evaluation platform. Adhering to the concept of “industry-enterprise-project orientation”, Hezhou builds the “mass entrepreneurship and innovation” incubation platform with industrial parks to encourage local talents to retain in Hezhou.

The “Eastern integration provides a new opportunity for the cultivation of CNC carving talents in Guangxi. Therefore, this paper starts with the current situation of CNC carving talents cultivation in Hezhou, analyzes and discusses the problems encountered in the current situation, and then puts forward targeted talent cultivation programs to effectively improves the CNC carving talents cultivation in Hezhou.

### **3. Current situation of CNC Carving Graduates in Hezhou**

#### **3.1 Situation**

According to the investigation into previous graduates in secondary vocational schools and consultation with relevant enterprises, the students cultivated under the current education mode do not fully meet the requirements of the enterprise post, nor can they meet the future personal career development of students, mainly because of the following reasons:

First, the graduates can not work independently in practical operation. Because the students were not attentive in learning relevant knowledge and operation in school, and lack of relevant work experience after graduation, they are unable to operate the machine independently and have poor practical ability. It requires the enterprise to train them again before they take up the post, which not only prolongs the time of post orientation, but also wastes the human and material resources of the enterprise.

Second, the graduates’ comprehensive ability needs to be improved. There is a phenomenon commonly existing among most students that the graduates may behave excellent in one aspect, but poor in other. Xiao Li, Dong Jia and Zhang Yizhe pointed out in the course teaching discussion of industrial design laboratory in the new situation that “If graduates’ comprehensive ability is not up

to the standard, they will not meet the actual work requirements of the post.”[3] For example, some students are very proficient in the use of CNC woodworking carving machine tools, but they are not so handy in operating various software of CNC carving machines. This phenomenon is not rare among graduates, which seriously hinders the working efficiency of students when they carry out CNC carving work independently.

Finally, the graduates are not proficient in draft drawings. Most of the graduates’ carving draft, are of low vectorization precision, resulting in low processing efficiency.

### **3.2 Causes for the Situation**

Most of the reasons for the above situations are that the current education mode and talent training direction are not fully in line with the current market demand. The specific causes are as follows:

First, the teaching tasks and objectives of the course do not meet the actual needs of the enterprise. As the current CNC Carving curriculum design is not in line with the actual needs of related enterprises, the graduates of the secondary vocational school can not completely meet the demands of the enterprise for NC carving talents. The school and teachers need to reformulate relevant professional curriculum according to the actual needs of the current market.

Second, the traditional teaching method need to be innovated. Up to now, some teachers are still using the traditional teaching mode to train the students in CNC carving. The teacher only transfers knowledge unilaterally, without caring about the degree of students’ absorption, thus they cannot arouse students’ interest and enthusiasm in learning. Although some teachers are aware of the problems in the teaching mode and use multimedia equipment for teaching, they are too dependent on multimedia equipment, or some of them cannot use multimedia equipment reasonably. The multimedia equipment is used as a tool to play PPT, which will only make students feel boring in the learning process. In such a way, the learning atmosphere the ideal teaching effect cannot be achieved. So teachers need to adjust and improve the teaching methods.

Third, the knowledge teaching at school is not in accordance with practice at work. It is necessary to combine theoretical knowledge with practical operation in the professional training of CNC carving talents, but there is always a disconnection in the current teaching process. For example, in the teaching process of carving software, there are both theoretical knowledge in the textbook and practical operation of the students. But because the teacher who teaches theoretical knowledge is not the same one who teaches practical operation, in the process of guiding students to learn, it is frequently seen that the teaching content is not connected, and there are differences between theoretical learning and practical operation. At the same time, as the theoretical teaching and practical operation courses are taught separately, students can’t well integrate the two kinds of knowledge together, which leads to some students’ superficial understanding of theoretical knowledge and poor mastery of practical operation skills.

Last, the overall level of the faculty needs to be improved. At present, most of the teachers of theoretical courses are fresh graduates. Although they have good command in theoretical knowledge, they lack practical operation experience and correct cognition of operation skills. On the contrary, practical operation teachers have strong practical skills, but they lack professional theoretical knowledge and efficient teaching methods. Therefore, it is difficult for students to integrate the same knowledge taught by teachers with two different teaching styles. This requires the school to strengthen the training of teachers.

## **4. Research on the Training Mode of CNC Carving Talents in Hezhou**

Because of the current situation of the cultivation of CNC carving talents in vocational schools and the causes of the problems, we will start to reform the curriculum system, adjust and improve the teaching mode, strengthen the faculty and other aspects of the cultivation of CNC carving talents in all aspects through the cooperation and exchange with the enterprises in combination with the actual situation of the school.

#### **4.1 Reform the Curriculum System**

Xu Hui pointed out in her research that the best way to cultivate CNC carving talents is to “reconstruct the curriculum system and update the curriculum content to adapt to the transformation and upgrading of the manufacturing industry”. [4] Schools and teachers should strengthen communication and exchange with local CNC carving related enterprises to understand the needs of enterprises for talents and the requirements of positions for recruiters. At the same time, the school can also work with the relevant personnel of the enterprise to customize the talent training program of CNC carving. Through the participation of enterprises, colleges and universities can timely understand the needs of relevant positions for talents, so as to carry out targeted teaching for students. Only in this way can we ensure that the graduates can meet the needs of the enterprise.

#### **4.2 Adjust and Perfect the Teaching Mode**

In order to raise the students’ consciousness of independent learning, teachers need to adjust and improve the teaching mode according to the actual situation of students. Teachers can lead students to observe and understand the structure, programming, equipment maintenance and other related knowledge of CNC carving through various teaching methods; they can also guide students to independently operate, process, production and other processes in the practical operation process [5]. In the process of teaching, we should strengthen the examination of students’ practical teaching and the mastery of theoretical knowledge, so as to ensure that students have fully mastered professional theoretical knowledge and practical skills.

#### **4.3 Strengthen the Construction of Teachers’ Team**

Schools need to train teachers with both theoretical knowledge and practical skills to operate. They can employ experts, technical experts and famous teachers with rich practical operation experience, drawing design and analysis in the industry to form a teaching team. The purpose is to promote professional construction, provide technical guidance and training to professional theory teachers in the form of “mentoring”, and pass team projects. With the purpose driven approach, the teachers’ comprehensive ability can be effectively strengthened.

#### **4.4 Introduce Workshop for Modern Apprenticeship**

Fu Yingjun believes that “traditional sculpture is a divergence of handicraft industry. It takes a long time for an apprentice to become a master, and many superb skills can only be constantly molded and understood in the future practice, so the development of traditional sculpture is too slow.”[6] Therefore, the education institution can also strengthen the cooperation between the school and the enterprise, introducing the modern apprenticeship workshop to improve the practical ability of the students. The school can make full use of the real working environment of the enterprise to provide on-site teaching and guidance of the enterprise master, so that students can avoid detours and acquire pre experience for the work after graduation. In the process of practice, the concept of modern apprenticeship is introduced a new teaching mode in which students work as apprentices and enterprise personnel as masters. Thus students can learn through various work practices and accumulate work experience.

### **5. Conclusion**

CNC carving talents, as technical talents in urgent need in the current context of “Eastern integration”, are of great shortage in Hezhou. Relevant colleges and universities must invest great resources in talent cultivation and shoulder the responsibility and obligation of training high-quality CNC carving talents. Through the close contact with enterprises and the improvement of the teaching mode of the school itself, the theoretical knowledge and professional skills of training talents are strengthened. With the students’ comprehensive ability and professional quality improved, and the current demand of Hezhou for CNC carving technical talents met, Hezhou’s rapid economic development will be seen in the very near future.

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