

# Research and Practice of Craftsman Spirit Cultivating for Big Data Talents from the Perspective of Curriculum Ideological and Political Education

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## Abstract

Ideological and political education requires professional courses and ideological and political theory courses to work together in a synergistic manner. In order to solve the separation problem, the big data technology major at Jiangsu Maritime Institute takes the cultivation of morality and talent as the foundation, and the spirit of craftsmanship as the starting point, integrating ideological and political education throughout the entire process of talent cultivation. Based on big data analysis of the current situation of information talent cultivation in higher vocational education, through project-based teaching that integrates value guidance and industry characteristics, integrating professional ethics into professional courses, promoting the implementation of the three-education reform to achieve the Three-All Education, skill competitions and many other carriers and paths, a talent cultivation model for cultivating the spirit of craftsmanship for information majors in higher vocational education is constructed, realizing the organic integration of ideological and political elements into talent cultivation, and achieving the effect of cultivating talents without any obvious influence.

## Keywords

Curriculum Ideological and Politics, Craftsman Spirit, Big Data Talents, Project-Based Teaching, Three-All Education.

## 1. Introduction

Professional spirit is people's occupational value orientation and behavioral performance based on a rational understanding of their profession. It includes elements such as professional ideals, attitudes, ethics, responsibility, skills, discipline, and style, closely linked to one's worldview and values. It is manifested in the process of employment as a passion, meticulousness, responsibility, and efficiency in behavior and demeanor. The craftsman spirit falls within the scope of professional spirit, representing a kind of occupational value orientation and behavioral performance of practitioners, closely linked to their life philosophy and values. Curriculum ideological and politics (CIP) refers to a comprehensive educational concept that integrates various courses with ideological and political theory courses in the form of building an all-staff, all-process, and all-round education pattern [2]. In 2020, China's Ministry of Education issued the Guideline for the Construction of Curriculum Ideology and Politics in Higher Education Institutions, emphasizing the need to deepen educational and teaching reforms, fully explore the ideological and political resources of various courses, enhance the educational role of each curriculum, and comprehensively improve the quality of talent training. Hence, CIP has transformed from spontaneous to conscious and from extension to connotation.

The School of Information Engineer of Jiangsu Maritime Institute is currently building a provincial-level high-level professional group for Big Data Technology and Application,

requiring the overall planning of the CIP teaching system for the professional group. It aims to promote the coordinated development of CIP and ideological and political curriculums, systematically construct an all-staff, all-process, and all-round education pattern, integrate ideological and political education with professional skill training into cultural curriculums and project-based teaching modules, strengthen value guidance, and cultivate students' patriotic sentiments, striving spirit, and craftsman spirit. Based on the development needs of the big data professional group, this paper studies how to implement the craftsman spirit in big data majors, integrate CIP elements, create an ideological atmosphere, and thereby enhance the professional skills and vocational quality of students in higher vocational big data majors.

## 2. Research Review

### 2.1. Domestic Research

Since 2016, the spirit of craftsmanship has been mentioned four times in the government work reports and the report of the 19th National Congress of the Communist Party of China. During the 45th WorldSkills Competition, General Secretary Xi Jinping made important instructions when commending the excellent achievements of Chinese competitors, emphasizing the need to promote the spirit of striving for perfection in the whole society and inspire the majority of young people to pursue a path of skill-based talent development and service to the country through their skills. The concept of Curriculum Ideology and Politics (CIP) was first proposed by the Shanghai Municipal Committee in 2014 as an educational philosophy, integrating ideological and political education into all aspects of educational and teaching reforms, to achieve a subtle and profound effect and implement the fundamental task of fostering character and civic virtue [3]. In 2017, the Ministry of Education first mentioned CIP in its documents. In 2020, the Ministry of Education proposed a comprehensive promotion of CIP construction in the Guideline for the Construction of Curriculum Ideology and Politics in Higher Education Institutions. The aim is to embed value guidance within knowledge transmission and capability cultivation, helping students to shape the correct worldview, outlook on life, and values, which is not only essential for talent cultivation but also a necessary component. Figure 1 presents the annual trend of literature published on CNKI (China National Knowledge Infrastructure) with the terms 'spirit of craftsmanship,' Curriculum Ideology and Politics,' and the combination of both in their titles.

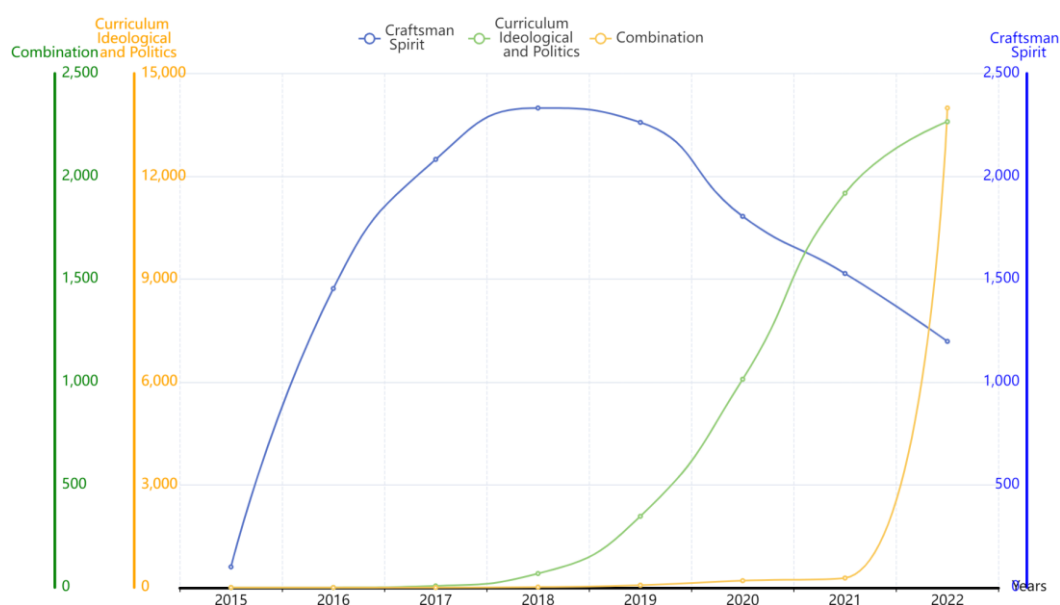


Figure 1: The annual number of literatures issued

From Figure 1, it can be observed that research on the spirit of craftsmanship was not published extensively before 2016, and it was primarily found in journals related to handicrafts and arts. In March 2016, Premier Li Keqiang first mentioned the spirit of craftsmanship in the Government Work Report. Subsequently, the concept of craftsmanship has been included four times in government work reports, leading to a surge in related academic papers. In 2018, the number of related papers reached 2,332 for the entire year. Starting from 2017, many scholars began to research Curriculum Ideology and Politics (CIP), with the related literature showing rapid growth year by year, culminating in 13,592 publications by 2022. Currently, scholars have started researching how to cultivate students' spirit of craftsmanship under the concept of Curriculum Ideology and Politics (CIP). Wang has incorporated the cultivation of the spirit of craftsmanship into the construction of CIP, effectively aligning it with the cultivation of professional skills, enhancing students' motivation to actively practice the spirit of craftsmanship, and laying a solid foundation for training vocational talents that meet the requirements of socialist construction [4]. Zhang and others, from the perspectives of teacher training, teaching design, and student practice, have proposed effective approaches to cultivate the spirit of craftsmanship in students through CIP. These approaches aim to foster in students a spirit of enduring hardship, striving for excellence, willingness to contribute, meticulousness, and daring to innovate, laying a good foundation for their future learning and social development [5].

## 2.2. International Research

The cultivation of the spirit of craftsmanship in vocational college students has also received high attention internationally. In developed countries like Japan, Germany, and the United States, the exquisite workmanship and high quality of products are due to the companies' emphasis on excellence and the workers' pursuit of perfection in their attitude towards work. Japan implements a vocational qualification system, which is very strict, but once a qualification is obtained, it is highly regarded [6]. Schools use this system to motivate students to study hard and cultivate their spirit of craftsmanship. Among Western countries, the German approach to cultivating the spirit of craftsmanship is quite representative. Germany has 837 companies that have been in business for over 200 years, and the spirit of craftsmanship is one of the secrets to the longevity of these family businesses [7]. Germany's dual-system vocational education plays a significant role in cultivating the spirit of craftsmanship in students.

The lessons from the cultivation of craftsmanship abroad are:

Firstly, the spirit of craftsmanship is the foundation and guarantee for high-end manufacturing industries to stand firmly in the global market. It is precisely because Japan and Germany have applied the spirit of craftsmanship to its extreme that their products have a significant competitive advantage, allowing their high-end manufacturing industries to maintain an unbeatable position in the international market and become true manufacturing powerhouses. Secondly, the spirit of craftsmanship is crucial for the career development of practitioners. Only those with the spirit of craftsmanship can meticulously sculpt their products, maintain independence, and avoid blind following. At the same time, the spirit of craftsmanship can significantly enhance the professional pride and competitive employability of practitioners, thus leading to a successful career development.

## 3. Practice Of Cultivating Craftsman Spirit for Big Data Talents

### 3.1. The Goal Of Cultivating Craftsman Spirit

(1) Enhancing the professional qualities and abilities for big data technology major students at higher vocational colleges

The goal is to enhance the professional qualities and abilities of students majoring in big data technology at higher vocational colleges, and to encourage these institutions to cultivate more high-quality big data technology professionals for society. Currently, students in higher vocational big data programs often exhibit restlessness and an eagerness for quick success. The spirit of craftsmanship, which includes the principles of integrating knowledge with action and continuous innovation, is beneficial for cultivating students' practical and grounded approach in design and for promoting the development of their innovative abilities. As a firm ideal and belief, the spirit of craftsmanship influences a person's entire life, encouraging them to be continuously enterprising and innovative, subtly improving their professional qualities and abilities. Therefore, big data education in higher vocational colleges should focus more on the spirit of craftsmanship, inheriting and exploring its inherent spiritual traits, to cultivate more high-quality technical talents for society.

(2) Advancing high-level majors group construction, and cultivating modern high-quality talents with the craftsman spirit

By 2023, the big data professional group aims to establish a series of vocational education and curriculums with ideology and politics that are highly regarded by the industry and popular among students, featuring distinct maritime characteristics. In the new era and with new concepts, research on how to keep pace with the times and reform curriculum education is crucial. The aim is to realize the dream of modernizing socialism with Chinese characteristics and to cultivate modern high-quality, technically skilled software professionals.

### **3.2. Problems Of Cultivating Craftsman Spirit**

#### **3.2.1. The Problem of Supply Side of Big Data Talent**

As vocational education in big data strives to solve current developmental challenges and enhance educational quality, supply-side reform is also necessary. Despite the expansion of higher education and the leap in scale of vocational education, the rapid development of higher vocational education has not gained sufficient social recognition, and the overall level of students remains subpar. The contradiction between the rapid development of information technology and the level of higher vocational students has led to a lack of initiative and autonomy among big data students, a deficiency in diligent study and striving for excellence, and a lack of professional goals and ideals. Therefore, it is even more necessary to strengthen the cultivation of the spirit of craftsmanship among students in higher vocational big data programs. With the "Vocational Education 20 Articles" revitalizing vocational education, the big data major should seize this opportune moment to actively explore ways to cultivate big data talent that meet the needs of the times.

#### **3.2.2. Lacking Overall Plan in Big Data Course Construction**

Firstly, schools require big data majors to align Course Ideology and Politics (CIP) with ideological and political courses in the process of promotion, but have not truly implemented the formation of teaching teams jointly by professional and ideological and political teachers. Secondly, the value-leading elements of the big data major are not clear, preventing professional teachers from deeply mining the implicit ideological and political elements in courses, thereby affecting the integration of professional courses and ideological and political education. Thirdly, the CIP teaching methods incorporating the spirit of craftsmanship need to be updated. Limited by traditional teaching methods, CIP teaching that integrates the spirit of craftsmanship often remains confined to the classroom or laboratory, relying on traditional teaching methods, with an emphasis on theoretical indoctrination by teachers and less on case teaching. Therefore, integrating the cultivation of the spirit of craftsmanship with CIP construction to enhance the professional qualities of big data students still faces significant challenges.

### **3.2.3. Problems of Information Technology Upgrades Traditional Industries**

The high-end development of traditional industries requires not only the spirit of striving for perfection but also information technology as an important means to promote the transformation and upgrade of the manufacturing industry and complete structural reforms in supply. The upgrade of traditional industries means that China's future big data industry needs more high-quality, excellent technical and skilled talents. Without the foundation of the spirit of craftsmanship, the role of big data technology in promoting the upgrade of traditional industries becomes empty talk. Higher vocational big data education must take the demand for industrial upgrading as a breakthrough point, actively plan the cultivation of new-era big data skilled talents, comprehensively serve industrial upgrading, and contribute to the journey towards becoming a manufacturing powerhouse.

### **3.3. Pathways of Cultivating Craftsman Spirit**

In order to align professional courses with ideological and political theory courses and create a synergistic effect, the big data major needs to base its approach on fostering character and civic virtue, with a focus on cultivating the spirit of craftsmanship, and integrate ideological and political education throughout the entire talent training process. Based on the analysis of the current situation of vocational information technology talent cultivation, through project-based teaching that integrates value guidance and industry characteristics, incorporating professional spirit into professional courses, advancing the reform of 'three teachings' to implement holistic education, and using various carriers and pathways such as skills competitions, a talent training model for cultivating the spirit of craftsmanship in students of higher vocational big data technology is constructed. This approach aims to organically integrate ideological and political elements into talent training, achieving a subtle and profound educational effect.

#### **3.3.1. Integrating Ideological and Political Education Throughout Talent Training Process**

Focusing on cultivating core professional qualities as the main theme, simultaneously training students in and out of class, and building a system that fosters professional spirit throughout the entire talent training process.

Integrating socialist core values into talent training, constructing a vocational quality curriculum system that covers modules like ideological foundation, physical and mental health, innovative thinking, and labor education. The 'Career Planning' course incorporates training objectives such as job requirements, industry standards, and the spirit of craftsmanship. The assessment of professional qualities is integrated into the conduct point evaluation system, promoting development through assessment.

Focusing on students' career planning goals and professional employment requirements, implementing a professional class headteacher system (full-time teachers and enterprise mentors), providing developmental guidance in aspects such as academic planning, professional education, learning guidance, and entrepreneurship education. Using 'Career Planning Competition' as a lever, the cultivation of students' spirit of craftsmanship is strengthened, enhancing their confidence in professional learning.

#### **3.3.2. Integrating Ideological and Political Education into Project-Based Teaching**

In order to reflect maritime characteristics and implement the task of fostering character and civic virtue, the big data technology major has chosen project-based teaching cases that integrate value guidance with industry characteristics. Project-based teaching uses the ship shore power system as a carrier, threading the technologies applied in the project throughout the entire professional course system through technology decomposition and iteration. It deeply explores the ideological and political theory education resources of a strong maritime nation, guiding students to fully understand the industry and social development status,

continually enhancing their sense of professional honor and industry pride. Students are encouraged to consciously serve the construction of a strong maritime nation and national strategies, integrating their individual selves into the greater self of the motherland and the people, and actively contributing to the development of the nation and the nation's glory.

### **3.3.3. Integrating Ideological and Political Education Into Workshop Construction**

The School of Information Engineering has built a shipping big data workshop through deep collaboration with enterprises. The workshop uses real enterprise projects as materials and features personalized training and learning through practice. The workshop emphasizes the 'spirit of craftsmanship' and the concept of 'skillful operation, understanding craftsmanship, capable management, good collaboration, and ability to innovate'. It requires an integration of value guidance, knowledge impartation, and capability cultivation, making ideological and political education a necessary measure. The workshop systematically reforms in areas such as student project development and skills competition, improving the ability to solve complex problems in a real environment while completing value guidance. The workshop uses various competitions like 'Internet+' and 'Challenge Cup' as a driving force to cultivate students' innovative projects and research topics, transforming students' innovative abilities into competition awards, research papers, national patents, and other innovative achievements. Implementing standards for replacing related professional courses with achievements such as competition awards and research inventions, the workshop aims to stimulate students' initiative and enthusiasm for innovative practice.

In the workshop, students are encouraged to aim for high-level skills competition awards and obtain high-level professional skills certificates. Through the teaching and example of enterprise craftsmen, skill masters, and school teachers, the workshop strengthens students' spirit of innovation and sense of responsibility, inspiring them to aspire to be great craftsmen of the new era.

In the workshop, students participate in completing enterprise projects undertaken by teachers, organically combining station construction and cultivation of the spirit of craftsmanship, serving as an important supplement to the project-based curriculum system. The workshop features mixed collaboration between schools and enterprises in terms of data, development environment, and resource sharing, undertaking campus informatization construction projects internally and enterprise projects externally. By establishing real work scenarios in the workshop, students are trained in skills and professional spirit, enabling them to adapt to job requirements ahead of time.

## **4. Conclusion**

The spirit of craftsmanship is not only a need for national strategy but also essential for every member of society and every industry. Cultivating the spirit of craftsmanship is an inherent duty of higher vocational colleges in their commitment to fostering character and civic virtue. The big data major focuses on changing the past tendency in talent training that overly emphasized knowledge transmission and skill development while neglecting the cultivation of professional spirit. In professional teaching, more emphasis is placed on education-oriented approaches, with the cultivation of professional ethics and spirit taking a prominent position. This approach aims to build a comprehensive ideological and political education system that encompasses all courses, thereby cultivating more well-rounded big data professionals skilled in moral, intellectual, physical, aesthetic, and labor education.

Human society is rapidly developing through continuous creation, and the value of the spirit of craftsmanship evolves and improves along with the times. In cultivating the spirit of craftsmanship among higher vocational big data talents, it is essential to always adhere to the principle of fostering character and civic virtue. This cultivation should keep pace with national

development, reforms in vocational education, and the evolution of social concepts, continuously inheriting and developing the spirit.

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