

# Research on the Implementation Path of Apprenticeship in Higher Vocational Colleges

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## ABSTRACT

In the context of globalization and technological innovation, the traditional education system is unable to meet the demand for highly skilled personnel in industrial upgrading, and apprenticeship has become an important way to connect education and employment. Since 2014, China has promoted the development of apprenticeships through a number of policies aimed at deepening cooperation between colleges and enterprises, optimizing the curriculum system and improving the quality of talent training. However, the current implementation still faces problems such as low participation of enterprises, lagging curriculum development, poor college-enterprise cooperation, complex student management and imperfect incentive mechanism. Through theoretical analysis, this paper discusses the operation logic of apprenticeship system from the four mechanisms of interest driving, communication and coordination, training realization and quality assurance, and emphasizes the necessity of balance and coordination of interests of multiple subjects. In view of the implementation path, it puts forward strategies such as optimizing policy support (such as funding guarantee, protection of students' rights and interests), strengthening the functions of industry associations (policy coordination, standard formulation), and deepening college-enterprise cooperation (joint management, curriculum construction, teacher training). The research holds that the government-led, industry supervision, college-enterprise collaboration and the institutionalized construction of progressive training mode are the key to the construction of high-quality apprenticeship system with Chinese characteristics, which can provide stable talent support for industrial transformation.

## KEYWORDS

Apprenticeship; Operation Mechanism; College-Enterprise Cooperation; Policy System; Optimization Path.

## 1. INTRODUCTION

With globalization and technological progress, the industrial structure of many countries is transforming from traditional manufacturing to high-tech and service industries. This transformation requires a workforce with higher skills and expertise that traditional education systems often fail to meet in timely. The traditional education system is often too theoretical and lacks practical links, resulting in graduates facing the problem of "unused education" when they enter the workplace. Apprenticeships are able to meet the needs of the job market better by combining education with practical work.

Many governments have recognized the important role of apprenticeships in addressing skills shortages and boosting economic development. Therefore many countries have introduced a series of policy support and funding to promote the development of apprenticeships. China is in a critical

period of transformation from a manufacturing power to an innovative country, and the upgrading of its industrial structure has an increasing demand for highly skilled personnel. Apprenticeships can help companies develop the skills needed for the new economy. In May 2014, Chinese State Council issued the "Decision on Accelerating the development of modern Vocational Education" (Guofa [2014] No. 19), which proposed: "To carry out the pilot of apprenticeships of joint enrollment and joint training by the colleges and enterprises, improving support policies, and promoting the integration of college and enterprise education." Since 2023, the Ministry of Education has repeatedly emphasized in policy documents and conferences to widely promote the apprenticeship training with Chinese characteristics.[1] The development of apprenticeship in China can be seen in the table 1. At this stage, the training of apprentice talents is driven and mutually promoted by the reform of field engineer training, industry-education integration and city-area industry-education consortium construction.

**Table 1.** The development of apprenticeship in China

Time	Policy	Issuing authority	Main content
2014/5/1	Decision on Accelerating the Development of Modern Vocational Education (Guofa (2014) No. 19)	The State Council	It is proposed to carry out pilot programs for joint enrollment and training of apprenticeships by schools and enterprises, improve supporting policies, and promote the integration of vocational education and industry.
2014/8/1	Opinions on Carrying out the Pilot Work of Modern Apprenticeship (Faculty Cheng (2014) No. 9)	Ministry of Education	Clarify the significance, guiding ideology and basic principles of apprenticeship pilot system, and emphasize that modern apprenticeship is conducive to industry enterprises to participate in the whole process of vocational education talent training.
2015/8/1	The first batch of apprenticeship pilot units was selected	Ministry of Education	A total of 165 units were selected as the first batch of modern apprenticeship pilot units and industry pilot units.
2017/8/1	The first batch of apprenticeship pilot units confirmed	Ministry of Education	203 units were identified as the first batch of modern apprenticeship pilot units.
2018/3/1	The second batch of apprenticeship pilot projects was launched	Ministry of Education	The second batch of 203 units will be piloted, and apprenticeship work will enter a stage of gradual promotion from point to point.
2021/10/1	Opinions on Promoting the High-quality Development of Modern Vocational Education	General Office of the CPC Central Committee and General Office of the State Council	The new requirements of "exploring the apprenticeship system with Chinese characteristics and vigorously cultivating technical talents" are put forward.
2022/9/1	Implementation Plan of Special Training Plan for Field Engineers in Vocational Education	The Ministry of Education and other five departments	It is required to "fully implement the apprenticeship system with Chinese characteristics, and jointly implement apprenticeship training between schools and enterprises", and train field engineers through apprenticeship.
2022/12/1	Opinions on Deepening the Reform of Modern Vocational Education System Construction	General Office of the CPC Central Committee and General Office of the State Council	It is required to "implement school-enterprise joint enrollment, commissioned training, order training and apprenticeship training" to provide stable human resources support for industry enterprises.
2023/1/1	Multiple policy papers and conference deployments	Ministry of Education	It emphasizes the extensive implementation of apprenticeship training with Chinese characteristics, and strengthens the collaboration between schools and enterprises in educating people.

Apprenticeship is one of the most important ways for vocational education to serve industrial development and solve the shortage of talents in enterprises. It is an important measure to integrate the improvement of vocational skills with the cultivation of professional spirit, and to cultivate students' social responsibility, innovative spirit and practical ability. In western economically developed countries, apprenticeships is the leading mode of vocational education, which has been a magic weapon for the national economy to take off.[2]

## **2. THE PROBLEMS EXISTED IN THE APPRENTICESHIP IMPLEMENTATION**

At present, Chinese apprenticeship is at the stage of its infancy. It has the practical significance to study the talent cultivation goal, enrollment, teaching program, course system development, teaching process arrangement, standard construction and other aspects of Chinese apprenticeships, as well as the new problems in the operation of apprenticeship, the guarantee of apprenticeship identity, and the management of students. The main problems with current operations based on apprenticeships are the followings.

(1) Based on the input cost consideration, the willingness of enterprises to participate is not strong, and the degree of participation is not deep.(2)Companies fear that apprentices will drop out or be poached by other companies once they have perfected their skills.(3) Less development of new courses for apprenticeships.(4) The collaborative education between colleges and enterprises is not strong, and the communication between colleges and enterprises is not smooth.(5) Due to the expansion and externalization of apprentice education subjects and education places, the difficulty of student management has increased.(6) The incentive mechanism of enterprise teachers and college teachers are not in place, resulting in the quality of apprentice training can not be guaranteed.[3]

## **3. THEORETICAL ANALYSIS OF APPRENTICESHIP OPERATION MECHANISM**

If apprenticeship is essentially a cross-border cooperation system, then according to the logic of cooperation development, there are inevitably several key questions to be answered. First, why do entities with different organizational attributes and different interest demands cooperate, that is, why do they cooperate? Second, if cooperation is to be achieved, what ways and means will different interest pursuit subjects reach mutual compromise between interests, that is, how to achieve cooperation? Third, after the cooperation intention is reached, what are the roles of different cooperative subjects in the process of cooperation, and what tasks and responsibilities they need to perform, that is, how to carry out cooperation. Fourth, how to ensure that the cooperative subjects can fulfill the cooperation contract reached before due diligence and responsibility, and ensure that the cooperation goal can be successfully realized, that is, how to achieve the cooperation goal.

### **3.1. Profit-Driven Mechanism: Why Cooperation Is Carried Out**

Why do we cooperate? This is the first question that must be answered in the construction of apprenticeship in higher vocational colleges. Because different cooperative subjects have different organizational attributes and pursue different goals, the answer to this question is the starting point for the construction of apprenticeship in higher vocational colleges and the starting point for the interaction between all parties. According to the basic assumption above, the participants in the apprenticeship system of higher vocational colleges are all actors who maximize their own interests, and each subject is a rational behavior subject in order to maximize their own interests. According to this assumption, a necessary prerequisite for the construction of apprenticeship in higher vocational colleges is that all parties can obtain "benefits" through the construction of apprenticeship. The term

"interest" first came from the book "The Later Han Dynasty · Xun Chuan · Wei Sa", "teaching people to breed the genus of mulberry and hemp, advised to make silkworm weaving, the people have interests." Interest refers to benefits, things that are good for people. The benefits here refer to what benefits each participant can get from participating in apprenticeship, which is an effective prerequisite for the operation and implementation of apprenticeship. Therefore, the satisfaction of the interests of all parties, especially the satisfaction of the interests of enterprises, is an important prerequisite for the implementation of apprenticeship in our country. In view of the interaction between different subjects of this issue, it is called the interest driving mechanism.

In the process of college-enterprise cooperation in the past, the reason why there will be a "razor head hot" situation is that the interests of enterprises are often difficult to be guaranteed, that college-enterprise cooperation is a "thankless" thing, not only difficult to get the talent they need, but also often interfere with the normal production order of enterprises. Therefore, enterprises will think that this is a "thankless" thing, and lazy to participate in college-enterprise cooperation. If we compare and analyze the apprenticeship system between the coordinated market economy countries such as Germany and Switzerland and the apprenticeship system between the non-coordinated market economy countries such as Britain, Australia and the United States, it will be obvious that the enterprises in Germany and Switzerland are much more active in participating in apprenticeship than the latter, and the reason for this difference is because "coordinated market economy countries (Germany, Japan). It is through inter-firm or intra-firm alliance and negotiation (such as guild organization) that market intervention, relying on joint networks between firms to limit vicious competition among firms in the labor market, that the social foundation for the emergence of intra-firm apprenticeship training system is laid." Through the intermediary of the state and guilds, it ensures that a "credible commitment" can be reached between enterprises and apprentices, and prevents the interests of relevant enterprises to invest in apprenticeship from being damaged because of the "externality of hiring", thus stimulating the endogenous motivation of enterprises to participate in apprenticeship, and these countries will provide financial subsidies and tax relief to enterprises participating in apprenticeship. It is a true portrayal of how different subjects interact with each other to achieve the interests of all parties, and this interaction can be called an interest-driven mechanism, which is an effective prerequisite for cooperation.

### **3.2. Communication and Coordination Mechanism: How to Achieve Cooperation**

When subjects with different interest demands have the willingness to participate in apprenticeship based on their own interest considerations, it is necessary to further explore how to reach cooperation among various subjects, that is, how to coordinate and communicate among various subjects. Because, in the process of cooperation, higher vocational colleges belong to public institutions providing public services, while enterprises belong to profit-oriented private institutions. The two have completely different organizational attributes, and there is a very obvious organizational boundary. If there is no authoritative and normative communication platform to provide a platform for the interest game of both sides to ensure that the interests of all parties are fully satisfied separate expression and effective communication, it is difficult to ensure that both parties can achieve the goal of cooperation. In foreign countries, building a communication and cooperation platform between the industry, enterprise sector and education sector is an important way to ensure the realization of cooperation, and this platform is often established at the national and state levels, and then these institutions composed of multiple subjects to formulate or influence the formulation of relevant laws and regulations, so as to ensure that the demands of different stakeholders can be effectively guaranteed. The establishment of coordination bodies at the national and state levels also avoids the excessive transaction costs caused by repeated communication between vocational colleges and enterprises in the course of practice.

For example, Guan Jing pointed out that in Germany's dual system, different subjects such as the government, trade unions, industry associations and colleges played different roles and represented the stakeholders involved in the dual system respectively, but these subjects reached consensus on

the implementation of the dual system through consultation, and eventually formed various norms for the dual system (Guan Jing,2014). In the implementation of the dual system of many organizations and management agencies and even the formulation of relevant norms, everywhere can also reflect the mechanism of balanced cooperation of interests, such as the dual system to play a guiding and coordinating role of the federal vocational Education Institute leadership committee, is composed of 11 employers, 11 trade union representatives, 5 representatives of the federal government and 5 representatives of the state government. The Vocational Training Committee, which advises the State government on matters related to vocational education, is composed of six representatives of employers, six representatives of employees and six teachers of vocational colleges. The examination board is composed of an equal number of employer representatives, union representatives and at least one teacher from a vocational college. The achievement of apprenticeship cooperation also needs to ensure that the interests of all parties can be realized in the concrete implementation process, so it is necessary to build a communication and coordination mechanism to ensure that the interests of all parties can be expressed.

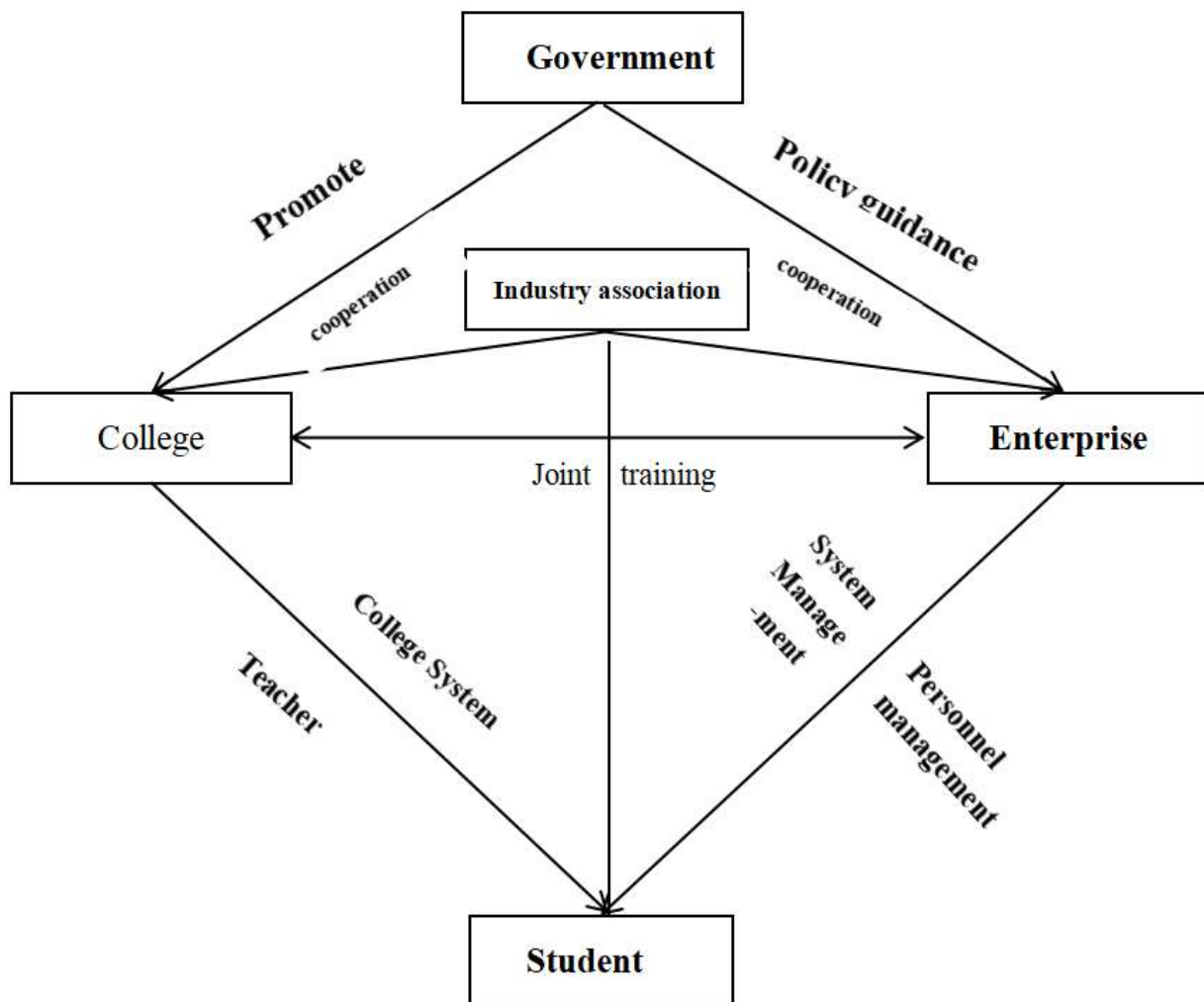
### **3.3. Apprenticeship Training and Realization Mechanism: How to Cooperate**

The core content of the construction of apprenticeship operation mechanism in higher vocational colleges is the apprenticeship training and realization mechanism. Whether it is the interest driving mechanism or the communication and coordination mechanism mentioned above, the ultimate purpose is to clarify the responsibilities of different participants in the process of realizing the common goal of talent training, that is, what responsibilities each subject should shoulder in the process of talent training, and the specific implementation of talent training. How to accomplish the goal of education through cooperation in the process of goal. From its connotation, the apprenticeship training and realization mechanism involves three aspects: what to teach, how to teach, and who to teach. In view of the problem of what to teach, the answer is how to develop the course content, who decides what kind of knowledge and skills to learn, what are the main responsibilities and permissions between different subjects in deciding what to learn, and who has the dominant position. The process of how to develop curriculum content through mutual cooperation can also be summarized as the apprenticeship training mechanism. For the question of how to teach, the answer is who will implement the developed curriculum after the course content is determined, how to ensure the smooth implementation of the curriculum planning through cooperation among various subjects, how to ensure the smooth implementation and operation of the curriculum planning through the integration and development of resources, and what teaching means to impart the corresponding knowledge, this process can be summarized as course implementation mechanism. As for the third question, who is to teach, the main answer is who is responsible for imparting knowledge and skills to students, what responsibilities and powers they should shoulder in the process of imparting knowledge and skills to students, and what kind of mutual relationship exists between them. This composition can be summarized as the cooperation mechanism of teachers. It can be seen that the teaching and operation mechanism of apprenticeship in higher vocational colleges is the core content of the whole apprenticeship in higher vocational colleges, because it is directly related to how students (apprentices) are trained, and the way of talent training is directly related to the quality of talent training, and whether apprenticeship can achieve the expectations of its talent training goals system is not a simple grafting of colleges and enterprises, only to achieve close cooperation in talent training to achieve the expectations of cooperation, if only to achieve the external form of cooperation, without scientific design and rigorous planning in talent training, even if higher vocational colleges and more enterprises to establish a apprenticeship cooperation relationship, it is simply unable to guarantee its talent training goals.

If we examine the development of apprenticeship in Western countries, we will find that the teaching operation mechanism has always been the focus of the reform of apprenticeship in various countries. For example, in the development of the "dual system" curriculum in Germany, vocational colleges

organize teaching according to the "framework teaching plan", while enterprise training follows the "vocational training regulations" promulgated by the federal government. The so-called "framework teaching plan" refers to a plan that specifies the scope, objectives, content and time of learning according to the training year. The "Regulations on vocational training" are the detailed regulations on the name, skills and knowledge, schedule and examination requirements of vocational training. Moreover, since vocational education takes place in both enterprises and vocational colleges, it inevitably involves the coordination and communication between the updating of teaching content and curriculum development. In response to this problem, Germany's "dual system" has made very detailed provisions: the formulation of training regulations and framework teaching plans is generally divided into four stages: the research stage, the element determination stage, the coordination stage and the promulgation and implementation stage paragraph. It can be seen that the construction of the teaching operation mechanism plays a very key role in the apprenticeship, which will directly determine whether the talents cultivated through the apprenticeship can meet the expectations.

### 3.4. Quality Assurance Mechanism: How To Achieve The Goal



**Figure 1.** Schematic Diagram of the Operation Mechanism of Apprenticeship

Because apprenticeship is a talent training process involving the participation of multiple subjects, it is very easy to occur in the cooperation process. Because the interest demands of different cooperative subjects cannot always ensure the coordination and balance, the interference of external environment and partial changes of internal structure may interfere with the operation of apprenticeship, thus making it difficult to achieve the goal of talent training. Therefore, in order to ensure the quality of

talent training, different cooperative subjects will also establish a quality assurance mechanism through various ways, which involves many aspects, some countries through vocational qualification certificates to ensure the quality of apprentice training, and some countries through real-time quality monitoring of the process to practice the bottom line of quality protection. Therefore, the so-called quality assurance mechanism of apprenticeship is the interaction relationship formed by various participants in order to ensure the quality of talent training, that is, who holds the right to speak on the quality of student training, who is specifically responsible for monitoring the quality of training, and what are the responsibilities, obligations and rights of colleges and enterprises as subjects of talent training in ensuring the quality of talent training. Through the investigation of the construction practice of apprenticeship in various countries, it can be seen that the quality assurance mechanism has become the main content of the construction of apprenticeship, especially after the country increasingly realizes the important effect of apprenticeship in promoting economic development and social stability, it has become an important member of maintaining the quality of talent training of apprenticeship. For example, in the implementation of the "dual system" in Germany, a relatively complete supervision system has been established for the implementation of vocational training regulations and state teaching plans, in which enterprise training is supervised by industry associations, while the teaching of vocational colleges is fully supervised by the state Ministry of Education and Cultural Affairs. Therefore, the analysis of the operation mechanism of apprenticeship in higher vocational colleges must take into account the measures and actions taken by each participant in order to achieve the goal of talent training, what are the rights, responsibilities and obligations of each participant in ensuring the quality of apprenticeship training, and what interaction relations between each participant to maintain and guarantee such a quality standard.[4] The apprenticeship operation mechanism has been shown in the figure 1.

## **4. THE IMPLEMENTATION PATH OF APPRENTICESHIP**

### **4.1. Optimize Apprenticeship Policy**

Improving policies and systems is critical to regulating stakeholder behavior, balancing interests, and incentivizing enterprise participation in apprenticeships. The way to optimize the implementation path including the following.

#### **(1)Funding System Enhancement**

Governments should establish dedicated funding mechanisms to alleviate financial burdens on vocational colleges and enterprises. For instance, Guangdong Province's "Three-Year Action Plan" subsidizes enterprises meeting internship standards by 200–400 yuan per student monthly. Similar models can be replicated to ensure sustainable funding for apprenticeship programs.

#### **(2)Clarification of Student Identity**

Apprentices hold dual identities as students, trainees, and quasi-employees. A legally binding "tripartite agreement" between colleges, enterprises, and apprentices should define rights and obligations, ensuring apprentices are neither treated as cheap labor nor regular employees. This agreement must address insurance coverage, working hours, safety protocols, and access to core skills training. [5]

#### **(3)Protection of Student Rights**

Policies must safeguard apprentices' learning, safety, and compensation rights. Enterprises should provide safe working environments, fair wages, and adherence to labor laws. Colleges must educate apprentices on legal rights (e.g., labor laws) and establish feedback channels to resolve disputes. Examples like Zhejiang Province's annual subsidy of  $\geq 4,000$  yuan per apprentice highlight effective compensation frameworks.

#### (4) Incentivizing Enterprise Participation

Financial incentives (tax breaks, subsidies) and policy recognition (e.g., whitelisting exemplary enterprises) can boost engagement. Enterprises should co-design curricula, contribute to certification standards, and retain autonomy in apprentice management (e.g., evaluating performance or dismissing underperforming apprentices).

### **4.2. Bolster the Role of Industry Associations**

Industry associations bridge governments, enterprises, and colleges by fulfilling four core roles:

#### (1) Policy Coordination

Associations translate national policies (e.g., \*Made in China 2025\*) into industry-specific apprenticeship frameworks. For example, the China Electronic Commerce Association integrates cross-border e-commerce training into vocational curricula.

#### (2) Standard Setting

Collaborating with stakeholders, associations develop skill certification systems. The China Cuisine Association's "Chinese Cook" certification standardizes culinary apprenticeships, aligning training with industry demands.

#### (3) Resource Integration

Associations foster college-enterprise partnerships through matchmaking events and shared training bases. The China Light Industry Federation's "Intelligent Manufacturing Training Bases" exemplify resource pooling for skill development.

#### (4) Quality Supervision

Associations monitor apprenticeship quality, mediate disputes, and evaluate compliance with industry standards. The China Federation of Logistics and Purchasing assesses the "dual tutor system" to ensure training aligns with logistics sector needs.

### **4.3. Strengthen College-Enterprise Collaboration**

#### (1) Joint Management and Assessment

Colleges and enterprises must co-manage apprentices through integrated enrollment ("enrollment as recruitment"), curriculum design, and mentorship. A shared evaluation system should blend theoretical knowledge and practical skills, emphasizing formative assessments (daily performance, skill growth) and terminal exams (vocational certifications). (Cheng Yuli, 2022)

#### (2) Curriculum Co-Development

Curricula should align with real-world job tasks. Strategies include: integration of Enterprise Projects: use actual production tasks as learning modules; cloud platforms: develop shared digital resources (micro-courses, virtual training simulations) to bridge theory-practice gaps; dynamic evaluation: use smart systems to track learning outcomes and adjust teaching strategies.

#### (3) Teacher Training

Enterprise masters: ensure technical experts receive pedagogy training and incentives (e.g., certifications, stipends) to mentor apprentices effectively. College tutors: encourage industry experience for tutors through part-time roles or partnerships. Certification standards should emphasize updated technical knowledge (Lai Liping, 2024).

#### (4) Progressive Talent Training Model

Adopt a three-stage "practice-theory-application" approach: Post Practice: Hands-on skill acquisition in real work environments; Theory Promotion: Classroom learning to deepen technical understanding; Comprehensive Application: Project-based tasks to integrate knowledge and innovate.

#### (5) Communication Mechanisms

Establish college-enterprise collaboration centers to coordinate curriculum design, resource sharing, and dispute resolution. Regular feedback loops ensure alignment with industry trends. [6]

## 5. CONCLUSION

A successful apprenticeship system requires the following. Firstly, government leadership: funding, policy frameworks, and legal safeguards. Secondly, industry association oversight: standardization, resource integration, and quality control. Thirdly, college-enterprise synergy: joint management, curriculum co-development, and teacher training. Fourthly, progressive training: a structured "practice-theory-application" model to cultivate adaptable, skilled professionals. Finally, by institutionalizing these elements, China can achieve a sustainable, industry-driven apprenticeship ecosystem.

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