

The Practical Implications, Main Problems and Implementation Strategies of Modern Apprenticeship Training in China

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Abstract: The implementation of modern apprenticeship in vocational education is a practical choice for cultivating high-quality technical and skilled talents, inheriting corporate culture and technology, promoting the transformation of vocational colleges, and deepening school-enterprise cooperation, which is necessary to establish a student source organization mechanism, a resource construction mechanism for cultivation, a mentor team building mechanism, a collaborative teaching mechanism and a rights protection mechanism. In response to the prominent problems existing in the implementation of modern apprenticeship systems, strategies such as expanding the coverage of apprenticeship training, improving the standards of modern apprenticeship systems, strengthening the selection and assessment of dual mentors, enhancing collaborative teaching and evaluation, and reinforcing the governance of modern apprenticeship systems should be adopted.

Keywords: Vocational Education; Modern Apprenticeship; Integrated Enrollment and Recruitment; Alternation of Work and Study; Dual Mentor

1. Introduction

China is vigorously promoting the modern apprenticeship system with Chinese characteristics. Vocational colleges and enterprises jointly recruit students to cultivate modern apprenticeship talents in vocational education through the integration of work and study. In May 2019, the Ministry of Education issued the "Notice on Comprehensively Promoting Modern Apprenticeship System Work", requiring the summary of successful experiences of modern apprenticeship system and its comprehensive promotion in relevant majors [1]. So far, the Ministry of Education has taken the lead in organizing three batches of

over 550 units to carry out modern apprenticeship system pilot projects, covering more than 1,000 professional points and benefiting over 100,000 students [2]. Meanwhile, the reform of modern apprenticeship system talent cultivation at the provincial and prefectural levels in some places is being carried out simultaneously, and the number of units and specialties participating in modern apprenticeship programs has been increasing year by year, benefiting more students. Modern apprenticeship is a learning method for technical practical abilities based on a stable master-apprentice relationship, which has surpassed the traditional apprenticeship training mechanism and is a high-quality technical and skilled talent cultivation mechanism that combines work and study and features part-time work and study under the modern vocational education system [3]. At present, the country is promoting the construction of a high-quality modern vocational education system, which is necessary to further clarify the practical implications of modern apprenticeship from both theoretical and practical perspectives, rationally examine the problems existing in modern apprenticeship, and innovate the implementation strategies of modern apprenticeship to cultivate high-quality technical and skilled talents.

2. The Practical Implications of Modern Apprenticeship in Vocational Education

The modern apprenticeship system with Chinese characteristics, as a system for cultivating high-quality technical and skilled talents, has been included in the new Vocational Education Law, which requires that "enterprises with the ability to cultivate technical and skilled talents, especially those integrating industry and education," "jointly recruit students with vocational schools and conduct apprenticeship training through the combination of work and study. "The implementation of the new Vocational Education Law has laid a solid

foundation for the modern apprenticeship system in vocational education[2].Academic vocational education encompasses secondary vocational education and higher vocational education, and vigorously promoting the modern apprenticeship system in vocational education is not only about enabling students to enhance their technical and skill levels while obtaining academic certificates, but also represents the institutional design and strategic decision of the state in cultivating high-quality technical and skilled talents, inheriting corporate culture and technology, promoting the transformation of vocational colleges, and deepening school-enterprise cooperation.

2.1 It is Conducive to Cultivating High-Quality Technical and Skilled Talents

Modern apprenticeship in vocational education is an important way to cultivate high-quality technical and skilled talents [4].Through joint recruitment and collaborative education by schools and enterprises, apprentices can become high-quality technical and skilled talents, master the basic theoretical knowledge and practical operation skills of their positions, understand the quality standards, safety operation procedures and safety precautions of their positions, be proficient in using and maintaining commonly used tools and equipment in their positions, and apply the theoretical knowledge of their positions to solve problems that arise in actual work. Provide professional education to apprentices in terms of professional ethics, scientific culture, professional knowledge, vocational skills and action capabilities in accordance with the technical and skill standards of relevant positions, enabling them to be competent for production and management in enterprise positions and ensuring a seamless connection between learning and employment. In terms of enhancing technical skills, the focus of modern apprenticeship in vocational education lies in providing apprentices with on-the-job learning opportunities, enabling them to acquire practical skills through learning and practice with enterprise mentors, which lies in enabling apprentices to continuously accumulate experience in on-the-job practice, enhance their professional experience, and enrich their understanding of enterprise production and management, aims to enable apprentices to become professional talents in relevant positions through continuous learning

and practice, laying a solid foundation for their future careers, and aims to enable students to obtain the opportunity for targeted employment in enterprises while obtaining academic certificates, and to achieve the integrated operation of the education chain, talent chain and employment chain.

2.2 It is Conducive to the Inheritance of Corporate Culture and Technology

The modern apprenticeship system in vocational education not only directly benefits apprentices but also directly benefits enterprises. Through joint enrollment and collaborative education by schools and enterprises, the corporate culture can be passed down, and the technical skills of the enterprise can be inherited and innovated. As students of academic vocational education, apprentices, compared with on-the-job employees, have a higher cultural foundation and a stronger motivation to learn and succeed, therefore, they have greater potential to undertake the responsibility of inheriting and innovating the corporate culture and technical skills of the enterprise. Modern apprenticeship is a way to pass on corporate culture, through apprenticeship, traditional culture, the spirit of craftsmanship, the spirit of labor and technical skills are preserved and promoted, making "glory in labor and greatness in creation" the original aspiration and mission of apprenticeship talents. Modern apprentice system is a means of technical skills, innovation, apprentice under the guidance of tutor, participate in the enterprise of scientific research and production process reform, generate new technology and management methods, to promote the development of the enterprise and society. Some industry-education integration enterprises have expanded their workforce sources by participating in the pilot program of modern apprenticeship training, enabling the inheritance of their traditional culture and providing talent and skills support for their development, thus embarking on a sustainable development path.

2.3 It is Conducive to Innovating the Development Model of Vocational Colleges

From the perspective of the development of vocational colleges, modern apprenticeship is an important way to accelerate the transformation and development of vocational colleges. Some vocational colleges have closed at present, from

the industrial development demand, weaken the tendency of practice teaching, training of talents technical skill level is not high, lack of employment business competitiveness, its appeal of lack of students, because of lack of students into a survival plight. Modern apprenticeship systems require the establishment of professional and curriculum systems oriented towards occupational demands, strengthening the integration of industry and education, the combination of work and study, practical teaching, and the cultivation of students' technical skills, therefore, by participating in modern apprenticeship systems, vocational colleges can help transform their educational concepts, professional and curriculum systems, and educational and teaching models, to achieve its own transformation and development and enhance its social adaptability. Some vocational colleges have expanded their student base, deepened school-enterprise cooperation, provided high-quality technical and skilled talents, broadened their social influence and found new models for self-development by participating in the pilot program of modern apprenticeship training.

2.4 It is Conducive to Deepening the Integration of Industry and Education as Well as School-Enterprise Cooperation

The integration of industry and education is a school-running cooperation carried out by both schools and enterprises in order to achieve complementary advantages, resource sharing and common development, and modern apprenticeship is a powerful grasp for school-enterprise cooperation. Enterprises set a certain number of apprenticeship positions based on job requirements, clearly define the standards of ethics, knowledge, skills and abilities for the positions, and jointly implement the integration of enrollment and recruitment with schools, granting apprentices dual identities as prospective employees and students, meanwhile, apprentices receive systematic scientific, cultural and professional knowledge education at school, and follow enterprise mentors to conduct job cognition, job internships and job practices, master technical skills, and smoothly obtain corresponding job opportunities upon graduation, achieving seamless employment. This institutional arrangement of joint enrollment and training, as

well as alternating work-study teaching, helps to achieve in-depth integration between education and industry, and between the teaching process and the production process, further deepening the cooperation between schools and enterprises

3. Construction of the Operational Mechanism for the Modern Apprenticeship System in Vocational Education

The operation mechanism of modern apprenticeship system is a combination or manifestation of the high-quality cultivation of apprentice talents achieved through the coordinated efforts of elements such as enrollment management, resource construction, teaching staff, teaching implementation and student management. At present, in light of the practical need to cultivate high-quality technical and skilled talents, the modern apprenticeship system reform in vocational education should vigorously strengthen the construction of the student source organization mechanism, the construction mechanism of training resources, the construction mechanism of the mentor team, the collaborative teaching mechanism and the rights protection mechanism.

3.1 Student Source Organization Mechanism

The student source organization mechanism is a fundamental factor of modern apprenticeship in vocational education. In order to expand the scale of apprentice training, we should strengthen the overall guidance of the state and implement the integration reform of enrollment and recruitment. The main purpose of establishing the student source organization mechanism is to ensure the gradual expansion of the apprentice source and to guarantee a seamless connection between the graduation and employment of apprentices, thereby achieving the expansion of the scale of apprenticeship training. The key points of building a student source organization mechanism are as follows: On the one hand, in terms of expanding the scale of apprenticeship training, the state should strengthen overall guidance to support the balanced regional development of modern apprenticeship. Strengthen policy guidance and support more enterprises and vocational colleges to participate in modern apprenticeship systems. On the other hand, in terms of joint enrollment, promote the integration of student recruitment and recruitment, and explore diversified enrollment and admission. Strictly

adhere to the standards and procedures for selecting apprentices to ensure the quality of their selection. Strengthen publicity and guidance, enhance the social recognition of apprenticeship, and create a friendly social support environment.

3.2 Cultivate a Resource Construction Mechanism

The mechanism for cultivating resource construction is a fundamental factor of the modern apprenticeship system in vocational education. In order to ensure that the development of apprenticeship is consistent with the needs of enterprise development, we should not only formulate modern apprenticeship standards, but also play a positive role in the collaborative education of enterprises. The main purpose of establishing a mechanism for the construction of training resources is to improve the standards of modern apprenticeship and strengthen the construction of modern apprenticeship resources, so as to ensure that the development of apprentices is consistent with the development needs of enterprises. The focus of the construction of training resources construction mechanism is: on the one hand, in the implementation of modern apprenticeship standardization, improve the subject system of talent training standard formulation, and form a pattern of government, industry, enterprises and schools participating in the formulation. The school and enterprises jointly design and refine the standards for modern apprenticeship and the talent cultivation plan, and determine the specific cultivation plan and teaching schedule. Schools and enterprises collaborate to formulate professional teaching standards, course standards, job standards, enterprise mentor standards and quality monitoring standards, ensuring that these standards are in line with industrial demands, production processes and vocational qualification certificates. On the other hand, in terms of giving full play to the vitality of enterprise participation, the cooperative enterprises should enhance their consciousness of participation and protect their economic interests. We will explore diversified ways of participation in enterprises and deepen participation in the whole process of modern apprenticeship. Broaden the activity space of apprentices in enterprises and society, and enhance their comprehensive cognition of

enterprises and society.

3.3 The Mechanism for Building a Mentor Team

The mechanism for building a mentor team is a key factor in the modern apprenticeship system of vocational education. In order to strengthen the construction of dual mentors, we should strengthen the selection of dual mentors and the assessment of dual mentors. The main purpose of establishing a mechanism for building a mentor team is to improve the mentor team, enhance the quality of mentors, and urge mentors to fulfill their duties, thereby ensuring that apprentices receive high-quality guidance. The key points of building a mechanism for the construction of the mentor team are as follows: On the one hand, in the selection of dual mentors, the selected academic mentors should have high professional teaching quality requirements and also possess high academic guidance capabilities. The selected enterprise mentors possess excellent technical skills and at the same time have a high ability to provide work guidance. Schools and enterprises should improve measures for talent mobility, support the mutual employment and sharing of dual mentors, two-way job rotation for training, horizontal joint technological research and development, and participation in professional construction, etc. On the other hand, in terms of the assessment of dual mentors, the content of the assessment of on-campus mentors should be clarified, and the assessment of apprentices' academic guidance and enterprise practice and technical services should be strengthened. Clarify the assessment content of enterprise mentors, strengthen their work guidance to apprentices and the assessment of teaching tasks. Attach importance to the application of assessment results, establish a linkage mechanism between assessment and incentive, and urge tutors to perform their guiding duties.

3.4 Collaborative Teaching Mechanism

Collaborative teaching mechanism is the core factor of modern apprenticeship in vocational education. In order to improve the teaching quality, we should not only implement the work-study alternating teaching, but also promote the reform of apprentice training quality evaluation. The main purpose of constructing the school-enterprise collaborative teaching mechanism is to promote the

implementation of the alternating teaching of apprenticeships and explore the collaborative evaluation of schools and enterprises, so as to ensure the quality of apprentice talent training. The focus of the construction of school enterprise collaborative teaching mechanism is: on the one hand, in the implementation of work study combination and work study alternation teaching, carry out the teaching reform of combining theory with practice based on post situation and typical tasks, and strengthen the integration of work and study, and align the curriculum with job positions. Implement the teaching plan of alternating work and study, strengthen the mode of half study and half work. Strengthen vocational labor, enrich apprentices' on-site experience, and cultivate their ability to flexibly use technical skills to solve practical problems. On the other hand, in terms of the quality evaluation of apprentice training, we should explore the collaborative evaluation between schools and enterprises, and jointly formulate talent evaluation standards and implement talent evaluation programs. Carry out multidimensional evaluation, and implement the evaluation with comprehensive quality and technical skill level as the core content. Using multiple evaluation methods to improve the authenticity of the evaluation process and the accuracy of the evaluation results.

3.5 Rights and Interests Protection Mechanism

Rights and interests guarantee mechanism is the guarantee factor of modern apprenticeship system in vocational education. In order to protect the rights and interests of apprentices, we should make clear the responsibilities of all parties and strengthen the management of apprenticeship system. The main purpose of constructing the rights and interests protection mechanism is to clarify the responsibilities of all parties and strengthen the governance of apprenticeship system, so as to protect the rights and interests of apprenticeship study and work. The key points of building a rights and interests protection mechanism are as follows: On the one hand, in terms of clarifying the responsibilities of all parties, the tripartite agreement on modern apprenticeship should clearly stipulate the responsibilities, rights and obligations of vocational colleges, cooperative enterprises and apprentices, and recognize the dual identities of apprentices as trainees and

prospective employees. The signing of the agreement shall be based on the model text of the apprentice talent training agreement issued by the government department, and a supplementary agreement shall be drawn up. On the other hand, in terms of the standardized management of apprentices, we should strengthen the education of professional ethics, scientific culture and professional knowledge, and protect the learning rights and interests of apprentices. Provide jobs to ensure the reasonable labor rights and economic interests of apprentices. The implementation of dynamic and meritbased supplement will guarantee the free participation and withdrawal of apprentices.

4.The Main Problems of Modern Apprenticeship in Vocational Education

Through the exploration and practice in recent years, the modern apprenticeship system in some local vocational education has formed a reproducible and popularized mechanism, built a scientific training mechanism, created new ways for the cultivation of technical and skilled talents, and opened up a new realm of education and a new pattern of development. However, in the investigation, the author found that there are some problems in the development process of modern apprenticeship system in some local vocational education, such as narrow coverage, low clarity of talent training standards, uneven quality of tutors, difficulties in the implementation of work-study alternating teaching and poor implementation of training agreements.

4.1 The Coverage is Narrow and the Number of Benefiting Students is Insufficient

The modern apprenticeship system of vocational education needs to expand the number of participants and the size of the beneficiary student group. However, from the pilot situation of modern apprenticeship system, although the eastern, central and western regions are all involved, regional imbalance still exists, with the eastern provinces and regions participating more actively, while the central and western provinces and regions participating less. The modern apprenticeship system of vocational education in some places is small in scale, only limited to individual schools, individual majors, and only limited to the joint enrollment and training of a few enterprises and schools. Many students who intend to participate in the modern

apprenticeship system lack ways to participate, and many small and medium-sized enterprises and vocational colleges who intend to participate in the modern apprenticeship system lack opportunities to participate.

4.2 The Clarity of Talent Training Standards is Low, and the Main Role of Enterprise Education is Not Prominent

The modern apprenticeship system of vocational education needs the relevant departments of local governments and industry organizations to lead the formulation of talent training standards. However, the progress of this work is uneven, and the development of standards for the training of apprentice talents in some specialties is slow, and it is difficult to reach a standard consensus in professional teaching, curriculum, post, enterprise master, quality control and other aspects. Enterprise participation is the core of the effective promotion of modern apprenticeship resource construction. However, some enterprises lack the motivation to participate in modern apprenticeship, and their participation in modern apprenticeship goal setting, course content adjustment and teaching process organization is not deep enough and becomes a mere formality. Technical team resources, practice teaching resources and technology research and development resources are less open to apprentices. The depth of participation in apprentice management is insufficient, and the effect of school-enterprise cooperation education is not ideal.

4.3 The Quality of the Dual Mentors is Not Good, and the Mentoring Activities Become a Formality

The dual mentoring team is a key factor in the implementation of modern apprenticeships. However, in some places, the construction of dual mentors' guidance team is slow, it is difficult to establish the mutual employment and sharing mechanism between schools and enterprises, the number of dual mentors is seriously insufficient, and it is difficult to mobilize the enthusiasm of mentors. In some places, the standard of dual mentors is not high, the selection process of dual mentors is a formality, there is the phenomenon of appointment, the mentoring ability of dual mentors is not strong, lack of guidance experience and guidance methods. In some places, the assessment of dual mentors is not

strict, the incentive mechanism for dual mentors is insufficient, the dual mentors are "mostly in name", and there are not many dual mentors who actually perform the guidance duties. The guidance of apprentices becomes a formality, the work is not in place, and the guidance effect is not good, resulting in the free growth of apprentices.

4.4 The Implementation of Work Study Alternation is Difficult, and the Reform of School Enterprise Collaborative Evaluation is Slow

In some places, the reform of modern apprenticeship teaching lags behind, teaching methods that integrate production with education, combine work with study, and align courses with job positions are insufficient, the teaching of alternation of work and study is insufficient, the class hour arrangement of "learning by doing" is insufficient, and the separation between learning and work is serious. The cultivation of apprentices' basic operating skills is ignored, and the cultivation of apprentices' ability to flexibly use technical skills to solve practical problems is ignored. In some places, the reform of school enterprise collaborative evaluation of apprentice learning and development quality is slow. The evaluation subject is still based on school evaluation and enterprises' participation in the evaluation is insufficient. The evaluation standard is still based on the effect of theoretical learning and ignores the evaluation of technical skills. The evaluation method is relatively simple, which is difficult to ensure the authenticity of the evaluation process and the accuracy of the evaluation results.

4.5 The Poor Implementation of the Training Agreement Makes it Difficult to Protect the Rights and Interests of Apprentices

Some localities do not have strong legal awareness of running schools, and vocational colleges, cooperative enterprises and students have not signed apprenticeship training agreements. Each party does not have a clear understanding of the relevant provisions of its own rights and obligations, does not have a strong sense of performance, and does not perform its duties and obligations properly. The two identities of apprenticeships as vocational college students and enterprise employees cannot be implemented in place, and it is

difficult for schools and enterprises to form a long-term mechanism of joint training and integrated education. Some places modern apprenticeship system management lax, individual schools relax the ideological and political education and education teaching of apprentices, emphasizing "prioritizing work over learning", individual enterprises "arrange students to engage in simple labor on the production line for a long time, resulting in students become cheap labor" [5], the study and work rights and interests of apprentices are often infringed.

5. Implementation Strategies of Modern Apprenticeship System in Vocational Education

Apprentices have a legal status of both prospective employees and students, embodying the roles of both corporate employees and learners. Only by expanding the coverage of apprenticeship training, improving the standards of modern apprenticeship, strengthening the selection and assessment of dual mentors, enhancing collaborative teaching and evaluation, and reinforcing the governance of modern apprenticeship can vocational education establish and improve a vocational education model that ADAPTS to and promotes the development of apprentices.

5.1 Expand the Coverage of Apprenticeship Training and Enhance the Social Appeal of Apprentices

5.1.1 Expand the scale of apprenticeship training to promote balanced regional development

Expanding the scale of apprenticeship talent cultivation has a solid student source foundation. The research found that many students are willing to participate in modern apprenticeships and hope to expand the scale of apprenticeship training. Today, in the face of a severe employment and entrepreneurship situation, the modern apprenticeship system in vocational education enables students to have the opportunity for targeted employment after graduation, alleviating the difficulties they encounter in job hunting and finding employment. First, the state should enhance overall guidance and encourage the balanced development of modern apprenticeship systems in different regions. In the eastern provinces, the modern apprenticeship system has developed

rapidly, benefiting a large number of students. However, in the central and western provinces, the modern apprenticeship system has started more slowly and is on a smaller scale. Therefore, the state should take measures such as strengthening overall planning, giving priority to pilot projects, and providing financial support to guide the central and western provinces to expand the scale of modern apprenticeship pilots and expand the scale of apprenticeship training, so as to achieve balanced development of modern apprenticeship in all regions of our country. Second, the government should enhance policy guidance and encourage more enterprises and vocational colleges to participate. The scope of modern apprenticeship should be expanded from secondary vocational education to junior college and undergraduate vocational education, from academic vocational education to non-academic vocational training, and from graduating junior and senior high school students to groups such as veterans and laid-off workers, so that more students can receive modern apprenticeship training in vocational education.

5.1.2 Strengthen joint enrollment and implement the integration of enrollment and recruitment

Enterprises and vocational colleges have a strong willingness and motivation to cooperate in expanding the scale of apprenticeship training. Modern apprenticeship systems need to integrate the advantages of joint enrollment and training by schools and enterprises, and cultivate high-quality technical and skilled talents under the educational philosophy of "enrollment means employment, learning means taking up a position, and graduation means getting a job ". Firstly, implement the integration of enrollment and recruitment. Vocational colleges should, based on the employment demands of enterprises, jointly develop enrollment and recruitment plans with enterprises, co-design apprenticeship program categories, enrollment quotas, and talent training objectives, and carry out enrollment and examination work in collaboration with enterprises. The implementation of modern apprenticeship systems in secondary vocational education, higher vocational education and undergraduate education should adapt to local conditions and adopt diversified approaches. The recruitment targets should include junior and senior high school graduates, vocational school graduates or enterprise employees. The

recruitment methods should include simultaneous enrollment and recruitment, enrollment followed by recruitment, and recruitment followed by enrollment. Admission channels include the regular high school entrance examination, regular college entrance examination, vocational college entrance examination, junior college to undergraduate program, and single enrollment for higher vocational colleges and junior colleges. Second, strictly adhere to the selection criteria for apprentices. To cultivate high-quality apprentices, it is necessary to improve the examination and enrollment method of "cultural quality + vocational skills", focusing on assessing students' practical experience, operational skills and problem-solving abilities, as well as their professional qualities, hands-on skills and innovative capacity, to ensure that they meet the talent standards and specifications of cooperative enterprises and enhance the quality of selection. Third, enhance publicity to raise the understanding of modern apprenticeship among all sectors of society, and help establish a talent view in society that labor is glorious and skills are valuable. Enable enterprises to establish a personnel view that relies on and respects technical and skilled talents. Guide students to establish the concept of "Every trade has its champion", choose appropriate career plans and academic advancement paths, and take the path of establishing, developing and achieving success through technical skills.

5.2 Improve the Standards for Modern Apprenticeship and Strengthen the Construction of Resources for Modern Apprenticeship

5.2.1 Formulate standards for talent cultivation to ensure the standardized implementation of modern apprenticeship systems

Standardization is one of the significant hallmarks of modern apprenticeship and a key breakthrough. The implementation of vocational education standardization based on apprenticeship training should improve the standard-setting subject system, modern apprenticeship system standards, and professional teaching standard system, and enhance the quality of apprenticeship training through the standard system. First, a main system for formulating talent cultivation standards should be established, with relevant

government departments and industry organizations taking the lead and vocational colleges and enterprises actively participating. Change the traditional practice of vocational colleges operating in isolation and the current situation where enterprises have insufficient say. Leverage the professional knowledge advantages of relevant government departments, standardization experts, various industry guidance committees, education guidance committees, vocational education experts, and enterprise technology and management experts to develop "hierarchical apprenticeship training standard systems" at the national, local, industry, and school levels [6]. Second, modern apprenticeship standards and talent cultivation plans are the foundation for implementing education and teaching. Schools and enterprises should jointly design and refine them in accordance with the principles of win-win cooperation and shared responsibility. Based on the actual job requirements, production technology, equipment performance, and enterprise development trends, specific and feasible talent cultivation standards, plans and teaching schedules should be determined to enhance the targeting and effectiveness of talent cultivation. Third, effectively implement the talent cultivation plan. To implement the talent cultivation plan, schools and enterprises should jointly formulate job standards, course standards, teaching standards, enterprise mentor standards and quality monitoring standards, and jointly strengthen the construction of the course system, textbook system and teaching mode centered on work content and process, so as to achieve the alignment of course content with industrial needs and teaching processes with production processes, and cultivate high-quality technical and skilled talents who can be retained, utilized well and develop rapidly.

5.2.2 Give full play to the vitality of enterprise participation and strengthen the construction of modern apprenticeship system resources

Modern apprenticeship systems differ from traditional student training models. Apprenticeship learning is a kind of "learning integrated with work", which takes place in an alternating environment between schools and enterprises. While schools provide theoretical knowledge teaching, the participation of cooperative enterprises in the entire process of education and teaching is indispensable. First, cooperative enterprises should enhance their

awareness of participating in modern apprenticeship systems voluntarily. Enterprises are the main players in the market economy, pursuing economic benefits. However, profits and social responsibility should be integrated. Fulfilling necessary social responsibilities helps enhance the enterprise's reputation and social image. Enterprises participate in modern apprenticeship systems despite incurring financial, time and management costs. However, recruiting high-quality employees and reserving high-quality technical and management cadres from it can enhance the development potential and market competitiveness of the enterprise. The Party and the government should introduce relevant encouraging and guiding policies, and through incentive measures such as tax reduction and exemption, financial assistance, and government purchase of services, safeguard the legitimate economic interests of enterprises, stimulate their motivation to participate in modern apprenticeship, and reshape the "corporate responsible behavior" in modern apprenticeship [7]. Second, cooperative enterprises should fully participate in the development of training resources. Enterprises participating in modern apprenticeship systems have rich experience in employee training, diverse practical teaching and educational service resources, and thus are able to participate in modern apprenticeship systems throughout the entire process. Cooperative enterprises should provide feedback on employment criteria and job requirements, participate in the formulation of apprenticeship talent training plans, and clarify the goals of modern apprenticeship systems, and participate in the development of enrollment and recruitment plans, and be involved in the compilation of apprenticeship professional categories and enrollment plans, the construction of courses, teaching materials and information-based teaching resources to enhance the practicality, pertinence and industrial adaptability of teaching content, and the selection of teaching methods, approaches and forms, take part in the implementation of work-study integration and work-study alternation teaching, and promote the in-depth integration of industry and education. Third, cooperative enterprises should expand the scope of apprenticeship activities. Modern apprenticeship systems not only require strengthening the construction of educational

and teaching spaces within schools but also expanding the activity spaces for apprentices in enterprises and society. Cooperative enterprises should make use of their own resources to provide apprentices with opportunities to engage in vocational cognition, vocational experience, vocational internships, on-the-job work, technological research and development, and process transformation, so that apprentices can integrate knowledge with practice and combine learning with application. Cooperative enterprises should make use of their related social resources such as the markets, customers, services and sales to provide apprentices with opportunities for practical training, research visits, volunteer services and other social participation, so that apprentices can understand society, know themselves and promote their social development.

5.3 Strengthen the Selection and Assessment of Dual Mentors to Enhance the Efficiency of Mutual Employment and Shared Benefits

5.3.1 Strengthen the selection of dual mentors and improve the mentor team

Selection is an important condition for forming an outstanding mentor team. The selection of dual mentors should adhere to the selection standards and strictly manage the appointment. First, academic mentors are an indispensable part of the teaching staff in vocational colleges. Academic mentors selected from the school's teachers should have high professional teaching quality requirements, including being familiar with the laws of vocational education and talent cultivation, mastering professional knowledge and skills, and having professional and course teaching abilities, etc. At the same time, they should have a high level of academic guidance ability, including guiding apprentices to clarify long-term and short-term learning goals, guiding apprentices to choose learning methods that suit them, guiding apprentices to analyze problems encountered in learning and provide corresponding solutions, providing personalized academic tutoring for apprentices, and doing a good job in psychological counseling for apprentices, etc. Secondly, enterprise mentors are an important part of an enterprise's outstanding technical and skilled talent team. When selecting enterprise mentors from the enterprise's technical and skilled talent team, they should possess high practical teaching capabilities, including having relevant

professional backgrounds and practical experience, the ability to design and organize practical activities, and the ability to implement and evaluate practical teaching, etc. At the same time, they should possess a high level of work guidance ability, including effectively guiding apprentices to enhance their personal skills and career development, having communication and coordination skills, the ability to inspire and encourage apprentices, and the ability to help apprentices solve practical problems, etc. Thirdly, vocational colleges and cooperative enterprises should establish flexible talent mobility measures, improve the staffing for teacher mobility, set up part-time teacher positions, support the mutual dispatch and concurrent employment of on-campus mentors and enterprise mentors, conduct horizontal joint technological research and development, and participate in professional construction, so as to enhance the practical quality of on-campus mentors and the teaching ability of enterprise mentors.

5.3.2 Strengthen the assessment of dual mentors and urge them to fulfill their guiding responsibilities

Assessment is an important means to urge mentors to fulfill their guiding duties. The assessment of dual mentors should highlight the awareness of job performance orientation and implement classified assessment. First, vocational colleges should incorporate the academic guidance provided by on-campus mentors to apprentices, as well as their practical experience in enterprises and technical services, into the assessment of teachers. They should urge on-campus mentors to earnestly fulfill their duties of academic guidance and education for apprentices, as well as their responsibilities for practical experience in enterprises and technical services. Second, the cooperative enterprises should incorporate the work guidance provided by the enterprise mentors to the apprentices and the completion of the teaching tasks undertaken by the enterprise mentors into the assessment, urging the enterprise mentors to earnestly fulfill their job skills training responsibilities for the apprentices and their practical teaching duties. Thirdly, vocational colleges and cooperative enterprises should attach importance to the application of the assessment results of mentors, link assessment with incentives, and use it as the main basis for distributing mentor guidance allowances, as the main basis for mentors'

promotion of positions and titles, and as an important indicator for the annual assessment, commendation and awarding of employees. Mentors who violate professional ethics, fail to perform their guiding duties, or infringe upon the rights and interests of apprentices should be removed from their positions.

5.4 Integrate into Work Scenarios and Improve Collaborative Teaching and Evaluation

5.4.1 Integrate into the working context and promote the implementation of work-study integration and work-study alternation teaching
To cultivate technical and skilled talents for the corresponding occupation (trade), it is necessary to learn and practice in the working context of the corresponding occupation (trade). The combination of work and study and the alternation of work and study are conducive to training apprentices into talents who can complete occupational labor tasks and achieve workplace work goals by applying specific technical skills. First, we should vigorously carry out teaching reforms that integrate theory with practice based on job scenarios and typical tasks. Classroom teaching should not merely expound theories, and practical teaching should not mechanically repeat labor. On the basis of clarifying the basic theories, classroom teaching should thoroughly explain the technical skills principles, operation procedures and requirements of process equipment under the guidance of theories. Practical teaching should, on the basis of training apprentices' operational skills, thoroughly explain the basic theories in new technologies, new processes and new equipment, and consolidate the teaching mechanism of integrating work and study and integrating courses with positions. Second, we should vigorously implement the teaching plan of alternating work and study. The forms of half-day study and half-day work, half-week study and half-week work, half-month study and half-month work, and three-month study and three-month work, as well as the "sandwich" teaching mode of two theoretical days and three practical days per week, or four working days and one study day per week, should be flexibly arranged in accordance with the characteristics of the courses and the annual teaching plan. The work of an apprentice is part of the talent cultivation plan. They need to be subject to both the job management of the enterprise and the

process management and assessment of the school. Third, efforts should be made to cultivate apprentices' ability to flexibly apply technical skills to solve practical problems in professional labor. Employees should not only be proficient in operation, understand the process, be good at management, be good at collaboration and be innovative, but also make timely judgments, take appropriate actions and solve problems satisfactorily in complex working situations. Therefore, apprentices should actively participate in various experimental groups, interest groups, innovation groups, technical transformation groups, etc., and take part in activities such as product research and development, technological breakthroughs, process transformation and production management. Enrich on-site experience and enhance the ability to solve complex technical and skill problems.

5.4.2 Explore collaborative evaluation between schools and enterprises, and carry out multi-dimensional assessment of the quality of apprenticeship training

It has become a common consensus among all parties involved in modern apprenticeship systems to cultivate apprentices into high-quality technical and skilled talents. The evaluation of apprentices' learning and development should adopt an evaluation model that ADAPTS to and promotes the growth of technical and skilled talents. First, schools and enterprises should collaborate to formulate assessment and evaluation plans for apprenticeship training. They should strictly control the quality concept in accordance with the contents, standards and requirements stipulated in the talent cultivation plan to ensure that apprentices possess the basic professional ethics, knowledge and abilities of both graduates and employees. The evaluation system led by schools should be abandoned. It is becoming a common practice to increase the evaluation say of cooperative enterprises and implement joint evaluation by schools and enterprises. Second, schools and enterprises should jointly conduct assessment and evaluation of apprentices from the dimensions of their comprehensive vocational qualities, the technical and skill requirements of enterprises, and the academic achievements of schools, based on the technical and skill level standards for industrial workers. This will guide students to enhance their professional skills while

achieving all-round development, and the evaluation results will be used as a reference for determining the position, grade, and salary of newly hired employees. The evaluation based solely on theoretical learning outcomes should be abandoned, and the proportion of practical learning outcomes should be increased. Implementing an evaluation centered on comprehensive quality and technical skill levels is becoming the value pursuit of apprenticeship evaluation. Third, the evaluation methods should be diversified. Traditional evaluation methods such as evaluation scales, observation interviews, personal statements and discussions, as well as information-based evaluation methods like growth portfolios, learning contract evaluation, value-added evaluation and online mutual evaluation, should all be applied in the evaluation of apprenticeship training to enhance the authenticity of the evaluation process and the accuracy of the evaluation results.

5.5 Sign Apprenticeship Training Agreements and Strengthen the Governance of Modern Apprenticeship Systems

5.5.1 Sign an apprenticeship training agreement to clarify the responsibilities of all parties

Signing an apprenticeship training agreement not only protects the rights of all parties but also constrains their obligations. First, to ensure the effective implementation of modern apprenticeship, vocational colleges, cooperative enterprises and apprentices should voluntarily sign a tripartite agreement on modern apprenticeship. The cooperation content includes the joint training of apprentices by vocational colleges and cooperative enterprises through the modern apprenticeship training model, and the recognition of apprentices' dual identities as both educated and prospective employees. The tripartite agreement on modern apprenticeship should clearly stipulate the responsibilities, rights and obligations of vocational colleges, cooperative enterprises and apprentices. Vocational colleges should be responsible for establishing the management institutions of apprenticeship classes, allocating teaching staff and dedicated management personnel. Contact cooperative enterprises to jointly do a good job in the qualification review, assessment and selection, as well as recruitment of apprentices. Be responsible for the student status management of apprentices, the review of

their graduation qualifications, and the issuance of graduation certificates. Assign teachers and management personnel to the cooperative enterprises to participate in the educational and teaching management of apprentices. Provide the funds needed for the educational and teaching management of apprenticeship classes and the promotion of related projects. The cooperative enterprise should be responsible for the allocation of enterprise mentors and specialized management personnel. Assist institutions in jointly formulating talent cultivation plans, jointly developing courses and teaching materials, and jointly organizing assessment and evaluation. Be responsible for the daily management of apprentices' on-the-job work (study). Pay apprentices reasonable remuneration for their labor in accordance with enterprise standards. Apprentices should, in accordance with the talent cultivation plan, study earnestly and master the prescribed theories and technical skills. Keep in touch with your supervisor and complete the required learning tasks. Comply with all management regulations; Receive educational teaching and graduation assessment. Second, the tripartite agreement on modern apprenticeship should be based on the model text of the apprenticeship talent cultivation agreement issued by the government department. Under the premise of compliance with government laws and regulations, unit rules and regulations, etc., specific agreements should be concluded. The three parties may draft supplementary agreements according to the actual situation, or they may separately draft supplementary agreements as attachments [8].

5.5.2 Strengthen the governance of modern apprenticeship systems and safeguard the rights and interests of apprentices

The protection of apprentices' rights and interests is related to the smooth implementation of modern apprenticeship systems. Vocational education should strengthen governance and effectively safeguard the learning and working rights and interests of apprentices. First, the primary identity of an apprentice is that of a student, who is currently receiving academic vocational education. Vocational colleges should enhance the education of apprentices in professional ethics, scientific culture and professional knowledge, as well as ideological and political education, classroom teaching and experimental and practical training teaching, to

safeguard the learning rights and interests of apprentices. Vocational colleges must avoid "substituting work for study" and giving up their educational and teaching rights. Second, apprentices are also prospective employees. They not only have the right to demand practical opportunities from the enterprise but also the right to demand labor remuneration from the enterprise. The enterprise should not only strengthen the training of apprentices in job operation skills for "learning and developing abilities", but also provide corresponding wages and benefits to safeguard the work rights and interests of apprentices. Cooperative enterprises must not regard apprentices as cheap labor, merely using them without providing education. They should ensure reasonable remuneration in accordance with relevant national regulations, implement liability insurance and work-related injury insurance for apprentices, and guarantee the personal and labor safety of students. Third, implement a dynamic and merit-based recruitment system for apprentices. During the training process, students with low professional identity and poor performance are diverted to non-apprenticeship education types. Students who participate voluntarily and have development potential can be allowed to transfer through application and assessment procedures, ensuring the right of apprentices to "come and go freely".

6. Conclusion

Modern apprenticeship is a key focus of current vocational education reform and innovation. It has profound practical implications in cultivating high-quality technical and skilled talents, inheriting corporate culture and technology, promoting the transformation of vocational colleges, and deepening school-enterprise cooperation. The modern apprenticeship system with Chinese characteristics "is both a vocational education system and a labor system" [9] The basic requirements of the modern apprenticeship system are enrollment as recruitment, entry into the factory upon enrollment, employment upon graduation, joint training by schools and enterprises, and dual mentors, which are also the key measures to ensure the development of apprentices. Studying the learning conditions of apprentices, exploring the operation mechanism of modern apprenticeship with Chinese characteristics that adapts to and promotes the

high-quality development of apprentices, expanding the coverage of apprenticeship training, improving the standards of modern apprenticeship, strengthening the selection and assessment of dual mentors, improving collaborative teaching and evaluation, and reinforcing the governance of modern apprenticeship can help highlight the characteristics of vocational education types. It is conducive to the growth of high-quality technical and skilled talents.

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