

Research on Constructing a Compatible Mechanism for Cultivating TCM Talents through the Integration of Traditional Apprenticeship and Academic Education

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Abstract: This study is based on the background of the new era of innovation and inheritance in traditional Chinese medicine (TCM), with the fundamental goal of promoting the high-quality development of TCM. Guided by a deep understanding of General Secretary Xi Jinping's important discussions on TCM work, the study systematically investigates and analyzes the complementary advantages and collaborative innovation potential of apprenticeship education and university education. It focuses on the core proposition of 'dual-track integration', systematically explaining the internal mechanisms and pathways for the compatible development of the two educational models at both theoretical and practical levels. The research aims to provide theoretical support and practical reference for constructing a new mechanism for TCM talent training that meets the needs of the times.

Keywords: TCM education; University education; Apprenticeship education; System reform; Inheritance and innovation; Compatibility and parallelism

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1. Introduction

Teacher education is an important form of inheritance and development of traditional Chinese medicine, and its core lies in realizing the intergenerational transmission of academic ideas and clinical experience of mentors through long-term follow-up and clinical evidence, which plays an irreplaceable role in cultivating high-level clinical talents in traditional Chinese medicine. As an important part of the modern higher education system, college education has become the main channel for the training of traditional Chinese medicine talents in our country, with significant advantages of systematisation, scale and standardisation. In the new era, the inheritance, innovation and development of traditional Chinese medicine urgently need to realize the organic integration of traditional teacher education and modern college education. This study takes this as the starting

point and comprehensively uses literature research, logical analysis and other methods to deeply analyze the advantages, limitations and interrelationships of the two education models, and conduct theoretical interpretation and practical exploration of the “dual-track integration” mechanism, to provide new ideas and new ways for the innovation of traditional Chinese medicine talent training model.

At present, TCM education is facing new challenges and requirements: the deepening of teaching objectives requires the innovation of teaching methods; the traditional education model urgently needs to be transformed and upgraded to meet the needs of the times; the change of talent evaluation standards calls for innovation in assessment methods ^[1,2]. Therefore, how to effectively inherit the essence of traditional Chinese medicine in the context of the new era and realize the innovation and transformation of talent training mode has become a key issue to be solved urgently. Teacher education has achieved remarkable results in historical practice, and college education is the cornerstone of modern medical education. Both have their characteristics and limitations, and how to achieve complementary advantages, synergies, and maximize the quality of talent training is the core concern of this study.

2. Analysis of the current situation and problems of clinical ability training under two education models

With the popularisation of higher education in traditional Chinese medicine, two main training paths have been formed: teacher inheritance and colleges. However, the existing model has shortcomings in training effect, mainly manifested in the following: some graduates have weak clinical practice ability and are difficult to meet the job needs; the cultivation of humanistic literacy and clinical thinking ability of traditional Chinese medicine needs to be strengthened; the disconnect between theory and practice still exists. The reason for this is that there are significant differences in teaching concepts, methods, content, and evaluation between the two education models. Therefore, the key to solving the above problems lies in promoting the deep integration of teacher education and college education, achieving complementary advantages, collaborative innovation, and compatible development, and jointly promoting the improvement of the quality of traditional Chinese medicine talent training.

2.1. The collaborative and innovative relationship between teacher education and higher education.

Teacher education carries the profound cultural genes of traditional Chinese medicine, and through the method of “teacher and apprentice”, academic experience, technical methods and even humanistic spirit are passed on to form a unique “teacher culture”. College education relies on a systematic curriculum system to efficiently impart professional knowledge and skills to form a standardized “theoretical knowledge system.” The two have different functions and an emphasis on talent training. The relationship between the two is not a simple substitution relationship, but a symbiotic relationship that is both competitive and coordinated. College education can learn from the personalized and practical essence of teacher education; Teacher education can also absorb the systematic and cutting-edge advantages of college education. Only by learning from each other, learning from each other’s strengths, and innovating collaboratively can we achieve the goal of cultivating the comprehensive ability of traditional Chinese medicine talents.

2.2. Comparison and complementary paths of advantages between teacher education and university education.

In terms of clinical ability training, the two models have their applicable objects and advantages. Teacher

education is more suitable for those with a certain cultural heritage and learning ability, and is good at the depth of classical study, clinical thinking cultivation, and meticulous crafting of practical skills. College education is more conducive to building a systematic theoretical framework for beginners, providing standardized knowledge input and large-scale training. Based on clarifying their respective characteristics, the two should jointly improve the comprehensive quality of traditional Chinese medicine talents through complementary advantages and collaborative innovation.

3. The realization path of the dual-track integration mechanism.

In the face of the requirements of the inheritance, innovation, and development of traditional Chinese medicine in the new era, “dual-track integration” has become an inevitable trend in the reform of traditional Chinese medicine education. This study proposes an implementation path guided by the concept of “five integrations,” “five unifications” as the normative guarantee, and “four combinations” as the core of operation.

3.1. With the concept of “five integrations,” we will lead the integration of training goals

“Dual-track integration” needs to uphold the following core concepts:

- (1) Integration of theory and practice: Strengthen the core position of clinical practice of Chinese medicine, and run through clinical thinking training in teaching, so that students can deeply understand and flexibly apply the theory and thinking mode of traditional Chinese medicine.
- (2) Integration of inheritance and innovation: Cherish the value of traditional Chinese medicine as a national treasure, while inheriting the essence, encourage breaking through traditional thinking and using modern technology and research methods to promote innovation and development.
- (3) Integration of tradition and modernity: It is necessary not only to take root in the classics and traditional culture of traditional Chinese medicine, but also to actively absorb the achievements of modern medicine and science, so as to realize the use of the past for the present and the foreign for the Chinese.
- (4) Integration of social needs and individual development: pay attention to the changes in social health needs, and pay attention to the individualized development of students and the shaping of correct values, outlook on life and world view.
- (5) Integration of classical study and scientific research: Colleges and universities should deepen the study of classical theories; Teacher education should strengthen the study of classics and the understanding of clinical experience; At the same time, we will jointly cultivate students’ scientific research literacy and ability. Through the “five integrations,” the talent training not only lays a solid foundation but also integrates ancient and modern wisdom, and has the potential for sustainable development.

3.2. Implement the “Five unifications” standard to promote system integration

In order to ensure the standardization and quality of integration, “dual-track integration” needs to follow the principle of “five unifications”:

- (1) Adhere to the unity of traditional Chinese medicine characteristics: The whole process of talent training must highlight the subjectivity of traditional Chinese medicine.
- (2) Unified training standards: Establish scientific talent training specifications and standards that integrate the advantages of both sides.
- (3) Unified graduation requirements: Set unified requirements for the knowledge, ability and quality that graduates should have.

- (4) Unification of core teaching content: Set a compulsory content framework around traditional Chinese medicine classics and core competencies.
- (5) Unification of key assessment methods: Establish an assessment and evaluation system that can effectively evaluate the effect of integrated training.

In view of the problems existing in the current college education, such as theory separated from practice, teaching methods separated from cognitive laws, evaluation separated from quality requirements, and training plans separated from social needs, the “five unifications” requirements are:

- (1) Teaching content: Based on traditional Chinese medicine classics, closely related to clinical practice.
- (2) Teaching methods: adhere to the problem orientation and stimulate learning motivation.
- (3) In terms of the curriculum system: strengthen the cultivation of students’ comprehensive quality.
- (4) In terms of the training plan: highlight the characteristics of traditional Chinese medicine and ensure the unity of standards.
- (4) Specific implementation measures include: listing traditional Chinese medicine classics as a compulsory core course; increase the proportion of clinical practice links in various courses; integrate humanistic quality and traditional Chinese medicine culture education into public and elective courses; promote the reform of teaching methods to conform to the laws of learning; Introducing mentorship education elements (e.g. famous doctors’ studios, mentorship systems) into professional and elective courses.

3.3. With the “Four combinations” as the core, the integration of teaching is implemented

At the level of teaching implementation, the key is to achieve the “four combinations”:

- (1) Combination of training objectives: Organically unify the personalized and practical goals of teacher education with the systematic and theoretical goals of higher education.
- (2) Combination of teaching content: Integrate the study of classics and experience inheritance emphasized by teacher education with the theoretical knowledge impartation of the higher education system.
- (3) Combination of teaching methods: Combine classroom lectures and experimental training of higher education with teacher-in-law evidence, oral teaching.
- (4) Combination of assessment and evaluation: Combine the standardized examination of higher education with the process evaluation and practical ability assessment of teacher education.

The “apprenticeship” ceremony carries the cultural connotation of respecting teachers. In talent training, colleges and universities should not only attach importance to classical theoretical teaching, but also strengthen clinical practical ability training. Therefore, it is necessary to give full play to the unique role of teacher education in the higher education system, balance classical study and clinical practice in the teaching process, and strengthen the design and management of clinical practice links. Through the specific operation of the “four combinations,” it supports the realization of the concept of “five integrations” and provides an effective way for the implementation of the integration mechanism.

4. Practical cases and effectiveness tests

This study combines the “3 1” TCM master’s training model (three years of theoretical study in school and one year of intensive clinical follow-up practice) implemented by a university of traditional Chinese medicine in Jiangsu Province to conduct an empirical analysis ^[3]. This model aims to organically integrate institutional education and personalized training of teachers.

4.1. “3” year theoretical learning stage

This stage is a critical period for laying the foundation of the profession. With the classics of traditional Chinese medicine such as ‘The Yellow Emperor’s Neijing,’ ‘The Book of Difficulties,’ ‘Treatise on Typhoid Fever and Miscellaneous Diseases,’ and ‘The Essentials of Jinkui’ as the core teaching content, the basic theories of traditional Chinese medicine, traditional Chinese medicine, and prescription medicine are systematically imparted. At this stage, the systemic advantages of college education are emphasized, and the lectures and seminars are carried out through classroom lectures and seminars, but it is necessary to integrate the concept of teacher mentorship, such as inviting famous clinical teachers to give lectures and establishing early mentor contacts, to pave the way for subsequent clinical practice.

4.2. “1” year clinical practice stage

This stage is the core link in improving clinical capabilities, with a phased and progressive design:

- (1) Stage 1 (Theory Deepening and Skill Training): Under the guidance of the instructor, combined with clinical practice, deepen the understanding and application of core courses such as “Basic Theory of Traditional Chinese Medicine“, “Diagnosis of Traditional Chinese Medicine“, “Traditional Chinese Medicine“, and “Pharmacy“, and conduct basic skills training.
- (2) Stage 2 (clinical rotation and follow-up practice): Enter the clinical department rotation and participate in the actual diagnosis and treatment process under the guidance of the mentor (or teacher), focusing on cultivating the ability to differentiate and treat syndrome differentiation and solve clinical problems.
- (3) Stage 3 (Ability Synthesis and Introduction to Scientific Research): Under the guidance of the mentor, carry out relatively independent clinical practice, complete case summaries or small clinical studies, participate in the comprehensive graduation assessment, and improve clinical research capabilities.

4.3. Validity test

Initial assessments of the effectiveness of the model show that:

- (1) Improve students’ comprehensive quality: students can use two learning methods in a comprehensive manner. Theoretical learning in colleges and universities lays the foundation for the classics; teachers and instructors deepen theoretical understanding and master clinical skills. Students can plan their development direction according to their interests and organically integrate theoretical knowledge in practice.
- (2) Promote students’ innovation ability: In teacher-instructor practice, students can apply theory to real-world scenarios and explore personalized research directions under the inspiration of their mentors. The institutional platform provides a broader knowledge horizon and research method training to jointly stimulate innovative thinking.
- (3) Enhance clinical competence: The connection of models strengthens the combination of theory and practice. The mentorship session focuses on the clinical transformation and experience of classical theories; institution-led clinical internships provide standardized skills training and exposure to diverse cases, which complement each other and significantly improve students’ practical diagnosis and treatment capabilities.

5. Conclusions

Traditional Chinese medicine is a great invention in the Chinese nation. In order to implement General Secretary

Xi Jinping's important instructions on Traditional Chinese Medicine and the requirements of the National Administration of Traditional Chinese Medicine regarding the "accelerated establishment of an integrated talent training system for education, research, and clinical practice in Traditional Chinese Medicine," based on this study's theoretical and practical exploration of the "dual-track integration" mechanism, the following recommendations are made:

5.1. Strengthen top-level design and improve the management system of traditional Chinese medicine education

- (1) Strengthen departmental coordination: The education department and the relevant department of traditional Chinese medicine need to enhance communication and cooperation, and jointly formulate integration policies and standards. The relevant authorities of traditional Chinese medicine should strengthen the macro coordination and guidance of colleges and universities and teacher education.
- (2) Implement the main responsibility: Colleges and universities need to bear the main responsibility for the implementation of integration, and ensure effective top-level design of the discipline system, teaching staff, curriculum, and other aspects. Mentors need to clarify their responsibilities in integrated education.
- (3) Improve quality control: The national and local TCM management departments need to strengthen the quality supervision of the integrated training process, especially in clinical practice and graduation links, and improve the policies, standards, evaluation, and feedback mechanisms.

5.2. Deepen the coordination of medical education and build an integrated talent training mechanism

- (1) Optimize the curriculum system: Reconstruct the curriculum system based on student development and the characteristics of the institution. Elements of mentorship (such as intensive reading of classics, case studies, and early mentoring experience) should be systematically embedded in the curriculum of colleges and universities, and necessary modern medical and scientific research methods should be integrated into the mentoring process to establish a complementary mechanism.
- (2) Strengthen the combination of scientific research and practice: encourage and support students to participate in scientific research projects and clinical research under the guidance of supervisors, and promote the application and transformation of theoretical knowledge in solving practical problems.
- (3) Reform the evaluation of clinical practice: establish a comprehensive evaluation system that integrates the assessment of college education theory, the process evaluation of teacher education, and the evaluation of clinical ability, to truly reflect the comprehensive quality and competency of students.

5.3. Optimize the discipline structure and improve the quality of education and teaching

- (1) Balancing ancient and modern knowledge: College courses need to deepen classical teaching, increase the proportion and depth of classic courses in traditional Chinese medicine, and reasonably integrate necessary modern medical knowledge to guide students to integrate. Teacher education needs to strengthen the systematic combination and modern expression of classical theories while inheriting experience.
- (2) Highlight traditional Chinese medicine thinking: All teaching links should run through the cultivation of traditional Chinese medicine thinking (such as holistic view, syndrome differentiation and treatment) to strengthen clinical thinking training.

- (3) Strengthen humanistic literacy: In public courses, elective courses and professional education, add traditional Chinese culture, medical ethics, traditional Chinese medicine culture, health care and other content to improve students' humanistic care and professionalism.
- (4) Pay attention to scientific research ability: integrate scientific research methodology into the teaching content to strengthen students' learning and practice of basic research and clinical research methods of traditional Chinese medicine. Encourage students to participate in scientific research activities, and reflect the weight of scientific research ability in the evaluation system.

5.4. Improve the policy system and ensure the operation of the integration mechanism

- (1) Improve laws and regulations: Accelerate the revision or formulation of relevant laws and policies, and clarify the legal status and normative requirements of teacher education in the current higher education system and the training of traditional Chinese medicine talents.
- (2) Increase financial investment: Set up special funds to support the development of integrated training projects between teacher education and colleges, and provide appropriate subsidies to universities, medical institutions, and tutors participating in integrated training.
- (3) Broaden investment channels: Explore diversified investment mechanisms and encourage social forces to support the development of teacher education.
- (4) Improve the guarantee mechanism: ensure that students who receive integrated training enjoy the same treatment as ordinary college graduates in terms of student status management, degree awarding, professional qualification examination, professional title promotion, employment, etc. Improve supporting policies such as continuing education, standardized training, and social security (such as medical insurance) for teachers and trainees (especially non-academic educators).
- (5) Strengthen the construction of teachers and build a high-level teaching team: Improve the clinical and classical skills of college teachers: Strengthen the classic training and clinical practice training of college teachers, especially young teachers, to improve the thinking and clinical teaching ability of traditional Chinese medicine. Strengthen the construction of the team of teachers and mentors: Establish and improve the selection, training, assessment and incentive mechanisms of teachers and mentors. Give full play to the core role of famous and old Chinese medicine in inheritance, do a good job of "passing on and helping," and promote the growth of young backbone teachers.
- (6) Improve incentive policies: At the national and college levels, introduce preferential policies for teachers (including college teachers and mentors) who participate in integrated education in terms of professional title evaluation, job appointment, and performance distribution.
- (7) Cultivate characteristic teams: Support colleges and universities to build high-level, full-time and part-time integrated teaching teams relying on platforms such as famous and old traditional Chinese medicine studios and school inheritance bases.

6. Discussion

In the field of traditional Chinese medicine (TCM) education, academic education and apprenticeship education, as two important training models, each has distinct characteristics and significant advantages, while also having certain limitations. Academic education, relying on a systematic curriculum system, strong faculty, and advanced teaching facilities, builds a comprehensive and solid framework of TCM theoretical knowledge for

students, cultivates their scientific research thinking and innovative abilities, enabling them to grasp the TCM theoretical system from a macro perspective and conduct research using modern scientific methods. However, academic education is prone to the disconnection between theory and practice, and students have relatively insufficient clinical practice opportunities, resulting in some students having rich theoretical knowledge but weak clinical diagnosis and treatment capabilities.

The integration and innovation of the two, at the theoretical level, enrich the TCM education theoretical system, provide new directions and perspectives for TCM education research, and help to further explore the inherent laws and essential characteristics of TCM education. At the practical level, it can cultivate compound TCM talents who have both solid theoretical foundations and rich clinical experience and practical abilities, meet the urgent social demand for high-quality TCM talents, and promote the vigorous development of the TCM cause. From the perspective of industry development, this integration and innovation breaks the limitations of traditional educational models, promotes the optimal allocation of TCM educational resources, improves the overall quality and efficiency of TCM education, and injects new vitality and momentum into the TCM industry.

This paper innovatively and in-depth analyzes the complementary mechanism of advantages between academic education and apprenticeship education, explores the specific paths and practical models of their integration from multiple dimensions, and demonstrates them through a large number of detailed cases, providing operable ideas and methods for TCM education reform. In practical significance, it provides a useful reference for TCM colleges and educational institutions to formulate education and teaching reform plans, and has important practical guiding significance for solving the current predicament of TCM talent training and improving the quality of TCM talent training.

However, there are still some deficiencies in this research. In terms of research scope, although a wide range of integration practice cases from some domestic colleges and institutions have been collected, there is little research on similar models in international TCM education, failing to analyze the feasibility and uniqueness of the integration of academic education and apprenticeship education from a broader global perspective. In terms of research depth, although issues such as the reform of educational evaluation systems and the construction of teaching staff involved in the integration process are mentioned, they have not been comprehensively and in-depth discussed. Future research can further expand the research scope, strengthen the comparative analysis of international TCM education models, and deepen the research depth, conduct special research on key issues in the integration process, put forward more targeted and effective improvement strategies, and provide more solid theoretical support and practical guidance for the sustainable development of TCM education.

7. Innovations and characteristics of research

This study closely adheres to the core proposition of ‘dual-track integration,’ focusing on the goal of promoting high-quality development in traditional Chinese medicine (TCM) against the backdrop of innovation and development of TCM inheritance in the new era. It systematically expounds the theoretical mechanisms of the compatible development of traditional apprenticeship education and modern university education. The theoretical innovation lies in the comprehensive application of literature research and case analysis, exploring in depth the theoretical connotation, real demand, and internal logic of the complementary advantages, collaborative innovation, and compatible development of the apprenticeship system and the university system

in TCM talent cultivation. The practical exploration features systematic design and practical verification of the ‘apprenticeship + university’ integration mechanism based on actual projects from local universities (such as Gansu University of Chinese Medicine and Jiangsu case universities), providing a reference framework for the ‘dual-track integration’ model (the ‘Five Integrations’ concept, the ‘Five Unifications’ standards, and the ‘Four Combinations’ pathways) and specific case references. This research offers a preliminary theoretical construction and practical exploration of the conceptual system and construction model of ‘dual-track integration.’

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