# Research on the Training Mode of Information-based talents of TCM Driven by WCM

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**Abstract:** With the advent of WCM (Wisdom Chinese Medicine), the cultivation of informational talents of TCM (Chinese Traditional Medicine) cannot meet its needs. This study intends to explore the training mode of Information-based talents of TCM and improve the quality of talents training.

## 1. Introduction

The emergence of WCM is undoubtedly the perfect combination of TCM and the Internet. Social needs determine the knowledge, ability and quality requirements of talents and determine the talent training model. Therefore, colleges and universities need to make real-time adjustments and changes in the informational talents of TCM. Reset the training objectives, curriculum system, training practice and many other links to form a training model for Information-based talents of TCM that keeps pace with the times. The specific ideas are as follows:

- Reposition the training target;
- Innovate curriculum system;
- Optimize the students' practice methods;
- Adjust the evaluation system.

## 2. Research progress at home and abroad

To ensure the scientific and effective training mode of Information-based talents of TCM, it is necessary to have a deep understanding of the two aspects: (1) the need of WCM for Information-based talents of TCM; (2) the status quo of Information-based talents of TCM. Based on this, the research on the training of Information-based talents of TCM is more targeted and can guarantee the quality of teaching and teaching effects.

### 2.1 The demand analysis of WCM for information-based talents of TCM

WCM is a Chinese medicine service that has gradually grown up with the development of information technology and the deepening of service concepts. The "wisdom" of WCM is embodied in the "intelligence of Chinese medicine services." It is represented by cloud hospitals based on the Internet, big data, cloud payment, mobile medical, telemedicine, wearable medical monitoring, intelligent medical services, TCM remote consultation, two-way referral, appointment registration, remote training, etc.[1]. In recent years, information technology and TCM have been deeply integrated, and WCM, which is a new form of informationization of Chinese medicine, has received extensive attention.

In terms of policy support, China's TCM industry's "Eleventh Five-Year Plan" and "Twelfth Five-Year Plan" all regard the construction of Chinese medicine informationization as an important content.

In the "13th Five-Year Plan", the overall goal of informatization construction of Chinese medicine is determined as the establishment of a national TCM wisdom cloud service platform, achieving 20% of the provincial and municipal (prefecture) level Chinese medicine authorities and public TCM medical institutions. TCM hospitals, 30% of grassroots Chinese medicine medical institutions and

50% of Chinese medicine research institutions and Chinese medicine institutions access the cloud platform to realize important data sharing and interconnection of various types of Chinese medicine business. The strong support of the government is the guarantee for the sustainable development of informationization of Chinese medicine.

In terms of informatization construction results, 55% of Chinese medicine hospitals have established TCM electronic medical record systems, 64.40% of Chinese medicine hospitals have established door (emergency) doctor workstations, and 74 Chinese medicine hospitals across the country have established famous Chinese medicine experience inheritance information systems. 132 Chinese medicine hospitals have established a Chinese medicine auxiliary diagnosis and treatment system, and 136 Chinese medicine hospitals have established a traditional Chinese medicine treatment management system [2]. The health information cloud platform of the Chinese medicine clinic in China's primary medical institutions is also being deployed and commissioned under the organization of the State Administration of Traditional Chinese Medicine. The research and construction of provincial-level TCM information and data centers are also being carried out. .

WCM has placed an urgent need on Information-based talents of TCM. However, the survey shows that at present, there are 1.88 full-time information staff in Chinese medicine hospitals, 15% of hospitals have no full-time information personnel, 59% of hospitals have 1 or 2 people, and only 26% of hospitals have more than 3 people. The Chinese Medicine Administration's "Basic Norms for Information Technology Construction of Traditional Chinese Medicine Hospitals" (China Traditional Chinese Medicine News, 2014). According to this, there is a serious shortage of Information-based talents of TCM.

## 2.2 Status quo of training mode of  Information-based talents  of TCM

Chinese medicine informatics is gradually formed by the cross-development of TCM and information science. It is a discipline that uses the theoretical methods of information science to interpret and express TCM to promote the scientific development of Chinese medicine[3].Chinese medicine informatics combines medical, computer science, management and other disciplines, aiming at cultivating a combination of practical and high-level professionals engaged in information management, information services, information research and utilization, information technology and medical management, and medical service [4].By 2012, 50% of Chinese medicine universities in China have opened information management and information systems, and 41.67% have opened medical information engineering. By 2017, the number of establishments has increased by 29.17% and 25% respectively[5]. At present, most of the institutions of higher learning of Chinese medicine have opened the Chinese medicine informatics major or set up a professional direction.

Although most of the higher education institutions in China have opened the Chinese medicine informatics major or set up a professional direction. However, most of the informational talents cultivated by Chinese medicine colleges and universities have become homogenized with the informational talents of other converging comprehensive engineering colleges, which makes the characteristics of TCM not fully utilized, and can not complete the cultivation of high-end information-based talents of TCM[5]. The reason is that in these colleges and universities, the construction of information technology faculty, curriculum content system, and training practice that meets the requirements for the development of Chinese medicine is far behind the needs of the situation. Teaching does not cultivate "Chinese medicine + information." The high-level class arrangement and elective majors of the "research talents" have led to the inability of informatics professionals to understand the embarrassing situation of Chinese medicine and Chinese medicine talents who do not understand information science [6]. There is a certain gap between the professional competence of graduates and the needs of the society. It still takes a long time after employment or can receive organizational training to adapt to the work of smart Chinese medicine practitioners.

In summary, social needs determine talent knowledge, ability and quality requirements, and determine talent training strategies. With the development of WCM, it is necessary to reset the training objectives, curriculum system, practical training and many other aspects, and gradually

improve the training mode of Chinese medicine information talents.

## 3. Research ideas

From the long-chain wisdom learning theory, knowledge acquisition and ability formation require a virtuous cycle. The training mode of information-based talents of TCM driven by WCM adheres to this concept, adheres to the combination of theoretical study and practical learning, and the formation system of "study-research-creation", which promotes learners to build meaning, and gradually optimizes students' knowledge structure and promotes the spirit of innovation and the formation of creative ability. The research design is as follows:
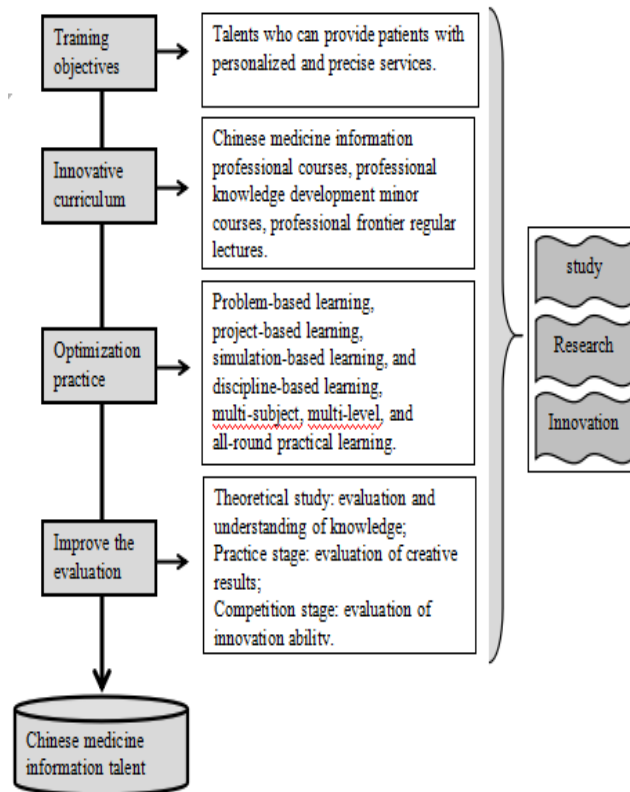


Fig.1 Flow chart of research ideas .

## 4. Design scheme

The design plan of the training mode of information-based talents of TCM .

The word "model", means "paradigm", which refers to the standard style of things. Professor He Kekang defines the model as a theoretical reappearance of the real world in Teaching System Design. It is generally believed that a model is a bridge between practice and theory and a medium or channel that spans from theory to reality. The Training Mode of Information-based talents of TCM Driven by WCM refers to the stable methods and processes for teachers and students to learn and teach under the technology of smart Chinese medicine. The design scheme is as follows:
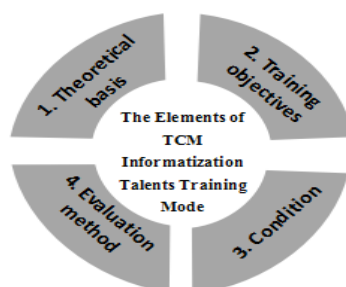


Fig.2 the structure diagram of design plan.

## 4.1 The theoretical basis

The theoretical basis of this research is the theory of demand analysis and the theory of long-chain learning.

Demand analysis theory refers to the techniques and methods for researching requirements through introspection, interviews, observations and questionnaires. It has been widely used in education, economy, trade, manufacturing and services. In education, it mainly includes analysis of target scenario needs and analysis of learner needs. The target scenario analysis is mainly to analyze the society's demand for talents, that is, to analyze the goals or states that learners should achieve after finishing their studies. The learner needs analysis is mainly about the learners' current situation and its possible and achievable goals. Analyze, that is, analyze the learner's current situation and the conditions that should be met to achieve the goal. The training model of Chinese medicine talents must be based on the needs analysis and the starting point. Through continuous improvement of the content of the course teaching, we will cultivate the informational talents of Chinese medicine that keep pace with the times.

The theory of long-chain learning believes that in the process of learning, only through a series of interlocking learning, coordination, research, and practical activities can we effectively cultivate advanced thinking ability and innovative creative ability. Otherwise, it is easy to make learning stay in a half-know and taste. On the shallow level. The training target of the training model of Chinese medicine talents develops from the primary cognitive level to the advanced cognitive level, and finally points to the creative level. It can not only realize the basic knowledge and skills, ensure the completion of the students' cognitive ability goals, but also realize the completion of the high-level cognitive goal "creativity".

## 4.2 Training objectives

Focus on "Wisdom" drive and reposition talent training goals. WCM focuses on the word "wisdom". With the development and maturity of technologies such as Internet of Things, cloud computing, communication networks, information processing and intelligent data mining, Chinese medicine practitioners are experiencing the offline market to the online market. The process of transforming patient-oriented standardized services into personalized services. One of the core connotations of WCM is Wisdom service, which is to provide accurate information assistance in the decision-making process of patients through the scientific organization of various Chinese medicine information around the needs of patients. This requires TCM practitioners to be familiar with the basic knowledge and skills related to the wisdom of Chinese medicine in this department, as well as knowledge and ability to collect and process information, statistical analysis and decision-making, and then screen the individualized needs of patients, analysis, use existing strengths and resources to innovate product services, and ultimately provide intelligent and personalized services to meet the needs of patients. Based on this, we must carry out a new target orientation based on the original talent training: a combination of innovative talents who understand both Chinese medicine and informatics.

## 4.3 Condition

The training of TCM informational talents is the result of the two-way integration of theoretical learning and practical learning. Therefore, the main realization conditions include innovative curriculum system and optimization of students' practice methods.

The market's need for talent is the basic criterion for the establishment of talent training. Driven by TCM, the setting of the TCM informatization course should include the following three aspects:

The professional knowledge of TCM informatization: standing at the height of cultivating the "Traditional Chinese Medicine + Informatics" compound talents, coordinating the proportion of TCM knowledge and informatics knowledge in the curriculum setting, and cultivating both TCM and informatics Talents.

Expanding knowledge of TCM informatization: In the course setting, the TCM informatization course, which is partially elective and minor, is included to supplement, strengthen and consolidate

the professional knowledge.

Frontier knowledge of TCM informatization: Informatics is a fast-changing profession that requires students to keep up with the times. Therefore, in the course setting, experts are arranged in the form of regular lectures to introduce cutting-edge knowledge to help students understand the development trend and direction of the profession in a timely manner.

Make students have a fuller understanding of the new format of Chinese medicine and informationization of Chinese medicine.

In the undergraduate training stage of TCM informational talents, due to the strong interdisciplinary nature and huge amount of knowledge, only the theory and practice can improve the students' digestion and understanding of classroom knowledge more effectively. Driven by smart Chinese medicine, this study has developed multi-subject, multi-level, all-round practical learning activities: problem-based learning; project-based learning; simulation-based learning; and subject-based competition.

## 4.4 Evaluation method

The research provides multiple evaluations, evaluating knowledge understanding and mastery in the theoretical learning phase as a process incentive; in the practical phase, evaluating relevant performance and creative results in the problem solving process constitutes the core part of the course performance; Conduct an open evaluation, not counting the grades of the course, with the ability to improve and the ranking of the competition as a driving force for in-depth exploration. In this way, the two subjective abilities of cultivating students' learning ability and innovative ability are transformed into an executable and quantifiable evaluation method.

## 5. Conclusion

This study firstly combs the research progress at home and abroad. On this basis, it puts forward the macroscopic ideas and specific research programs for the training of Chinese medicine talents driven by WCM. We hope to promote the development of information technology of Chinese medicine.

## Acknowledgment

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