Innovation and Practice of Training Mode for Professional Postgraduates of Acupuncture and Tuina Based on Artificial Intelligence

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Abstract   In view of the common problems of integrating artificial intelligence into the training of postgraduates in Acupuncture and Tuina major，this paper reviews the related research progress both at home and abroad. It puts forward the innovative reform paths for integrating artificial intelligence into postgraduate training mode of Acupuncture and Tuina major：construct the teaching staff of artificial intelligence graduate students；innovating artificial intelligence to promote the integration of classics and scientific research；constructing the ideological and political case base of artificial intelligence courses；implementing artificial intelligence platform blended teaching；building a domestic and foreign exchange platform for artificial intelligence. Through practical research in teaching，it has achieved good teaching results and played a good demonstration，leading and radiation role in similar majors in China.

Key words   Artificial intelligence（AI），Acupuncture and Tuina major，Professional postgraduates，Training mode

1   Introduction

Common problems in the integration of artificial intelligence（AI）into training of postgraduate students majoring in Acupuncture and Tuina include：Professional teachers and clinical teachers are not skilled in the use of artificial intelligence technology and platform；postgraduate training attaches much importance to the teaching of acupuncture and tuina，butneglects the classical teaching of traditional Chinese medicine；the development of ideological and political education is relatively weak；in the teaching process，the utilization rate of artificial intelligence resources is low；the ability of international communication in professional fields is insufficient，and the training effect of professional internationalized talents in Acupuncture and Tuina major is not good.

At present，the reform and innovation of integrating artificial intelligence into Acupuncture and Tuina major professional postgraduate training mode is still a "blue ocean". In order to further improve the quality of personnel training，it is urgent to carry out relevant research. Through integrating artificial intelligence into the whole process of training postgraduate students majoring in Acupuncture and Tuina，we take "building foundation，multi-clinical，strengthening scientific research，and emphasizing ideological and political thinking" as the core guiding ideology. We put forward five paths：including the artificial intelligence postgraduate teaching staff construction，artificial intelligence promoting the integration and innovation of classics and scientific research，artificial intelligence course ideological and political case base construction，artificial intelligence platform blended teaching，and construction of domestic and foreign artificial intelligence communication platform，and implementation of relevant teaching practice research[1]. It is expected to provide a model for the training of professional postgraduates in Acupuncture and Tuina major in universities throughout the country and improve the education and teaching quality of professional postgraduates.

2   Research progress of integrating artificial intelligence into teaching

2.1   Relevant research status in China   Artificial Intelligence（AI）is a frontier science of theory，method，technology and application system for simulating，extending and expanding human intelligence. In April 2018，the General Office of the State Council of China issued the *Opinions on Promoting the Development of "Internet ＋ Medical Health"*，proposing to introduce AI technology into the field of traditional Chinese medicine. On July 8，2017，the State Council issued the *New Generation Artificial Intelligence Development Plan*，which pointed out that "it is necessary to increase the research and development and application of artificial intelligence and maximize the potential of artificial intelligence，

use intelligent technology to accelerate the reform of talent training models and teaching methods, and build a new education system that includes intelligent learning and interactive learning, promote the application of artificial intelligence in the whole process of teaching, management, resource construction, *etc.*, and develop a three-dimensional comprehensive teaching field and an online learning and education platform based on big data intelligence." At present, Chinese scholars are paying more and more attention to the application and research of artificial intelligence in the field of traditional Chinese medicine education and teaching. In the context of the era of artificial intelligence, education management departments, research and training departments, and universities at all levels are actively carrying out the exploration and practice of artificial intelligence teaching reform[2].

2.2 Relevant research status in foreign countries Many foreign scholars have widely used AI in the field of education and teaching. Through research, Elsevier found that more and more colleges and universities actively apply modern information technologies such as artificial intelligence, virtual simulation, Internet and big data in education and teaching. The scholar Mostafavi B from North Carolina State University helped teachers to select artificial intelligence problems according to students' proficiency in knowledge, automatically generated prompts on demand, and he determined problem-solving strategies based on clustering of students. Scholars Rivers K *et al.* from Carnegie Mellon University used artificial intelligence teaching software to provide personalized tips for students who make mistakes in learning, practice and assessment according to state abstraction, path construction and state concretization.

However, at present, the reform and innovation of integrating artificial intelligence into Acupuncture and Tuina major professional postgraduate training mode is still a "blue ocean". In order to further improve the quality of personnel training, it is urgent to carry out relevant research.

3 Innovative reform paths for integrating artificial intelligence into postgraduate training mode of Acupuncture and Tuina major

3.1 Constructing the teaching staff of artificial intelligence graduate students In the teaching of postgraduate students in Acupuncture and Tuina major, it is recommended to refine countermeasures and measures to solve the problem of artificial intelligence boosting postgraduate teaching teachers, and determine the responsibilities of the teaching staff of artificial intelligence graduate students, to form Acupuncture and Tuina major basic plans for the construction of artificial intelligence teaching staff for professional postgraduate students and teachers. It is recommended to establish a teacher assessment system, through the establishment of research, communication, collective lesson preparation, training and other systems, to comprehensively digitalize the construction of teachers, consolidate the foundation of education, and develop the construction of digital education and digital excellent teachers in the context of the era of intelligence.

3.2 Innovating artificial intelligence to promote the integration of classics and scientific research In the teaching of graduate students majoring in Acupuncture and Tuina major, artificial intelligence system can be used to fully combine the classics of Acupuncture and Tuina with the frontier of scientific research, and "mutual viewing between ancient and modern" can be used to promote the objective, standardized and accurate education of the traditional Chinese medicine[3-4]. In teaching, artificial intelligence natural language processing technology can be used to explore classical professional theories and medical case analysis, artificial intelligence small sample machine learning technology can be used to assist classical theories and ancient clinical cases, and unsupervised clustering algorithm can be used in the field of mining classical prescriptions of ancient physicians. In addition, it is suggested to increase the teaching of ancient medical classics and the appreciation and interpretation of famous medical records in theoretical courses, so as to inherit the classics and consolidate students' basic professional skills.

3.3 Constructing the ideological and political case base of artificial intelligence courses In the era of big data, through the platform of artificial intelligence, we can excavate, sort out and match the contents of the professional postgraduate courses of Acupuncture and Tuina major, combine ideological and political humanities with academics, build the case base of ideological and political courses of artificial intelligence, take "cultivating people by virtue" as the central link, run ideological and political work through the whole process of education and teaching, and improve the ideological and political work, to educate people in the whole process and in an all-round way.

3.4 Implementing artificial intelligence platform blended teaching It is recommended to integrate Acupuncture and Tuina's professional artificial intelligence-related teaching resources, such as the "Acupuncture and Tuina Virtual Simulation Experiment Teaching Project" independently developed by Changchun Normal University based on Unity3D technology, "National First-class Professional Artificial Intelligence Training and Teaching Platform", "Tuina Careful Use of Techniques Virtual Simulation Safety Training Platform", "Traditional Chinese Medicine Meridian and Acupoint Anatomy Teaching Platform" and "Changbai Mountain Tongjing Tiaozang Technique School" Artificial Intelligence Inheritance Studio, *etc.*, to establish a professional graduate artificial intelligence teaching platform for Acupuncture and Tuina major. Then, it is possible to apply online and offline "mixed" teaching mode to carry out teaching and assessment, which is widely applicable to the whole stage of postgraduate training on campus and in clinical practice.

3.5 Building a domestic and foreign exchange platform for artificial intelligence It is recommended to build an artificial intelligence exchange platform at home and abroad, such as the "Virtual Teaching and Research Room of Meta-Universe Sharing for Acupuncture and Tuina major", and regularly carry out aca-

demic exchanges for postgraduates online and offline through the artificial intelligence platform, so as to encourage students and teachers to conduct academic exchanges and discussions with relevant disciplines abroad[5]. In addition, we recommend selecting some appropriate professional courses, using English teaching, construction of professional English literature reading and analysis courses, effectively improve the international communication ability of Acupuncture and Tuina professional postgraduates, to a certain extent, improve the quality of internationalized personnel training.

4 Innovative implementation plan of integrating artificial intelligence into the professional postgraduate training mode of Acupuncture and Tuina major

In the early stage of the implementation of the reform, literature needs to be collected, questionnaires should be conducted, and based on the results of the survey, an innovative reform and implementation plan needs to be formulated for the integration of artificial intelligence into the training mode of postgraduates majoring in Acupuncture and Tuina. Besides, it is necessary to carry out relevant training, teaching observation and discussion for teachers, and prepare the materials needed for teaching practice. In the middle practice stage, it is necessary to dynamically track and investigate the effect of teacher team construction by means of phased teaching assessment, interviews and questionnaires, promptly adjust and optimize the innovative reform and practical implementation of AI into Acupuncture and Tuina professional postgraduate training mode, and collect and collate various data. In the later stage, it is necessary to collate and compare the research data, and adjust and optimize the training mode according to the research data.

5 Effect of artificial intelligence integrated into the innovative reform of professional postgraduate training mode of Acupuncture and Tuina major

In summary, the integration of artificial intelligence into the innovative reform practice of Acupuncture and Tuina major professional postgraduate training mode helps to improve the quality of student training, better build the teaching team of artificial intelligence postgraduate, and provide a strong support way for the improvement of students' clinical practice ability. Also, it encourages teachers and students to carry out exchanges at home and abroad, plays a good demonstration, leading and radiation-driven role in similar specialties in China, and provides new ideas and insights for improving the teaching quality of postgraduate education in Acupuncture and Tuina major.

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