Exploration and Practice on Artificial Intelligence Information Technology Intergration into Practical Teaching of Acupuncture and Massage in the Background of New Medicine

Mingjun LIU, Xiaochao GANG*, Chongwen ZHONG, Changchun MA, Jianzhong CUI

Acupuncture and Massage College, Changchun University of Chinese Medicine, Changchun, Jilin 130117, China

Abstract [**Objectives**] In order to fully leverage the distinctive features of the top-tier national professional discipline of acupuncture and massage. [**Methods**] According to the characteristics of the scientific attributes of acupuncture and massage, combined with the top-tier national professional AI practical teaching platform and artificial intelligence-related information technology, together with the teaching team with rich teaching experience. [**Results**] Innovative reforms and practical explorations are being conducted to integrate AI information technology into acupuncture and massage practical teaching under the background of new medicine. [**Conclusions**] Through practical research, the quality of the practical teaching of students in acupuncture and massage major has been improved, playing a leading and exemplary role in related majors across the country.

Key words Artificial intelligence, Acupuncture and Massage, Practical teaching

1 Introduction

In August 2018, the Central Committee of the Communist Party of China and the State Council issued an important document on the reform and development of education in the new era and for the first time formally proposed the concept of "New Medicine", which is one of the "Four New" constructions put forward by the state to cope with the new scientific and technological revolution and industrial transformation[1]. With the wide application of big data, virtual simulation, and other information technologies led by artificial intelligence in the medical field, medical and health care services have been developed rapidly, besides, it has also promoted the reform of traditional medical education to the new medical education featuring cross-border and cross-fertilization. Artificial intelligence-enabled medical education and integration into the practical teaching of acupuncture and massage in the context of new medicine is an inevitable choice for the development of artificial intelligence in the medical field and a strong support for the innovative development of medical education.

2 Current research status related to the integration of artificial intelligence (AI) into teaching

AI is a cutting-edge science that involves theoretical methods, technologies, and application systems used to simulate, extend, and expand human intelligence. Many foreign scholars have extensively applied AI in the field of education. According to research by Elsevier, an increasing number of universities are actively using modern information technologies such as AI, virtual simulation, the internet, and big data in teaching. In April 2018, the General Office of the State Council of China issued *An Opinion on Promoting the Development of Internet-Plus Medical Health*, proposing the introduction of AI into traditional Chinese medicine. On July 8, 2017, the State Council issued *Development Plan for the New Generation of AI*, which emphasized the need to increase research and application efforts in AI filed, maximize the potential of AI, utilize intelligent technology to accelerate the reform of talent training models and teaching methods, create a new education system that includes intelligent learning and interactive learning, and promote the comprehensive application of AI in teaching, management, and resource building. Currently, domestic scholars are paying increasing attention to the application and research of AI in the field of traditional Chinese medicine education. In the era of AI, education management departments, research and training departments, and universities at all levels are actively carrying out exploration and practice related to AI teaching reform[4]. The *Doctor You* clinical physician training platform of *Alibaba Health* can automatically create virtual patients who follow treatment measures, provide corresponding changes in physical condition, result reports, and post-execution status. Trainees can complete training in a guided and targeted way within simulated scenarios. The evaluation system comprehensively assesses the completion of training medical records, the accuracy of basic skills, and the logicality of medical record diagnosis and treatment, providing accurate and instructive evaluation results to enhance trainees' clinical thinking abilities. The integration of AI information technology into medical teaching unfolds from multiple perspectives of vision, hearing and touch, realizing the change from purely indoctrination teaching to the heuristic teaching mode of cultivating comprehensive ability, strengthening practical teaching, and enhancing the cultivation of students' observation ability, hands-on ability, analytical ability, and problem-solving ability[5]. However, current

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research on the reform of integrating AI information technology into acupuncture and massage practical training is relatively limited, in order to further improve the quality of talent training in acupuncture and massage, it is urgent to carry out relevant research.

3 Implementation paths of AI integration into acupuncture and massage practical teaching

In order to fully leverage the distinctive features of the top-tier national professional discipline of acupuncture and massage, according to the characteristics of the scientific attributes of acupuncture and massage, combined with the top-tier national professional AI practical teaching platform and related AI equipment and software such as the Acupuncture 3D Smart Bronze figure, innovative reforms and practical explorations are being conducted to integrate AI information technology into acupuncture and massage practical teaching under the background of new medicine. The integration path is briefly described as follows:

3.1 Applying AI practical teaching equipment and software in acupuncture and massage Integration of teaching equipment and resources related to AI training for acupuncture and massage, including the national first-class professional AI practical teaching platforms, special equipment for acupuncture 3D intelligent bronze figure, massage technique virtual simulation and safety training platform, Chinese medicine meridian and acupoint dissection teaching platform, Unity3D-based acupuncture virtual simulation experimental teaching project, *etc.*, to establish an AI practical teaching platform for acupuncture and massage. Conducting student analysis and collecting information on the integration of AI information technology into acupuncture and massage practical teaching in the context of new medicine through literature research, multiple discussions with student representatives, and survey questionnaires to analyze student characteristics and set teaching goals and strategies tailored to students' learning characteristics. To stimulate students' intrinsic motivation for learning as the primary goal, based on the requirements of the teaching goals and the characteristics of the courses, focusing on the development of teaching strategies from active learning to independent learning and then intelligent and innovative learning. In the practical process, student-centered approaches are employed to inspire students' intelligent thinking and creativity, guiding them to discover problems, explore knowledge, and construct knowledge frameworks during the learning process of integrating AI information technology into Acupuncture and Massage practical training. A blended teaching model combining online and offline methods is applied for teaching practices and assessments, widely applicable to students in the Acupuncture and Massage major at all stages. A preliminary framework for the integration of AI information technology into acupuncture and massage practical teaching in the context of new medicine is established, with relevant teaching data collected and organized. Analysis, reflection, and optimization of practical teaching details are conducted based on feedback data.

3.2 Cultivating practical teaching staffs of AI in acupuncture and massage "AI + Medicine," as one of the cultivation directions of multidisciplinary cross-fertilization in the new medical field, is essential for adapting to changes in future medical diagnostic models. Future medical education will bring great challenges for teachers. They serve as organizers, guides, and facilitators of learning in the educational process. They not only need to proficiently utilize new intelligent teaching tools and related equipment in practical teaching but also need to reorganize teaching content, create necessary learning contexts, design teaching cases, and cultivate students' ability to acquire knowledge. Teachers utilize AI teaching evaluation systems to adjust practical teaching strategies, transform traditional practical teaching modes, improve practical teaching methods, and establish a student-centered medical practical education ecosystem. By developing immersive AI practical training courses and clinical practice teaching cases, students are guided to complete the training of practical skills, actual clinical work ability, and the cultivation of clinical thinking.

3.3 Developing an AI practical test bank for acupuncture and massage Teachers use AI technology to build a practical training test bank based on the syllabus, knowledge points of acupuncture and massage, and the attributes of the examination for licensed physicians. When the test bank is built, it can match test questions by lexical structure, intelligently generate difficulty coefficients, intelligently correct errors during examination, and push the related knowledge points. It systematically and intelligently summarizes the students' easy-to-mistake knowledge points in terms of anatomical levels, needle insertion methods, acupoint selection, massage techniques, *etc.*, and provides intelligent suggestions for teachers to clarify the focus of teaching. The test bank solves the problem of subjectivity encountered in the practical training examination and avoids the arbitrariness and inaccuracy caused by the subjective judgment of the difficulty of the questions by the question maker.

3.4 Establishing the AI course ideological and political case library for acupuncture and massage Through the AI platform, design relevant content that combines ideological and political education with practical training for students in acupuncture and massage, build an ideological and political module for AI practical training courses, take "cultivating morality and nurturing talents" as the central link, and integrate ideological and political education into the practical training of acupuncture and massage silently.

4 Discussion

Through the practical teaching of integrating AI into acupuncture and massage training, the quality of student cultivation has been improved, and skilled talents in acupuncture and massage have been effectively cultivated, which has promoted students' employability and thus improved the satisfaction of employers and students' parents with student cultivation. In addition, through the teaching

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practice, a high-level AI acupuncture and massage practical teaching team combining old, middle-aged, and young people is initially established. In the subsequent teaching work summary, it will be further optimized and adjusted to improve its overall level of AI practical teaching. Through the exploration and practice of teaching reform, the integration of AI into the practical teaching reform of acupuncture and massage has played a good role in demonstrating, leading, and radiating in colleges and universities in the same industry.

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