Original Paper

Application and Reflection of Artificial Intelligence in Balanced Management of Universities - Taking Medical Students as an Example

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Abstract

With the rapid development of artificial intelligence, its technology has been widely applied in various fields and aspects. It is urgent to cultivate new medical talents who can adapt to the era of intelligent medicine. Balance is the core idea of traditional Chinese management philosophy, and school balance management is a concrete manifestation of the integration of "control" and "motivation". How to build a balanced management system with ecological, humanistic, and individual characteristics in the era of artificial intelligence, and empower the development of a harmonious campus management environment, can be proposed through four dimensions: "giving full play to the main channels of ideological and political theory courses", "attaching importance to the effective operation of intelligent balance management", "enriching the content of intelligent balance management", and "establishing a guarantee mechanism for intelligent balance management". Starting from specific problems, clarify the essence, improve the indicator system, optimize algorithm design, improve feedback mechanism, do a good job in analysis and guidance, and help improve the effectiveness of university management and education.

Keywords

Artificial intelligence, Balanced management, Medical students

CCS CONCEPTS: *Lambda calculus, Turing machines, Recursive functions*

1. Introduction

With the rapid development of artificial intelligence (AI), it has become an indispensable and important tool in all aspects of our life and learning. The development of AI has broken the limitations of traditional education and brought new opportunities, especially the new viewpoint of "the combination of artificial

intelligence and college education management", which has brought a new perspective and possibility for college education. Firstly, with the help of AI, universities can be more comprehensively understand learning progress and needs of students, and then help teachers develop a more scientific and reasonable educational planning. Then, AI could also provide teachers with precise teaching, which help them to deeply understand and comprehensively assess the student's learning status, and then timely adjust the teaching strategy to achieve the optimization of teaching effect. In addition, the application of AI technology is of great significance for promoting the sustainable development of higher education including green development and optimized management processes. Therefore, With the help of AI, the management of university on students is gradually developing towards intelligence, scientificity, standardization, and institutionalization.

Medical students are facing both an increasingly competitive medical environment and the academic pressure of clinical internships and postgraduate entrance exams. To turn danger into opportunity, it is necessary to introduce the concept of artificial intelligence and the idea of balanced management in the process of student management, improve the intelligent education management system, pay attention to the feedback mechanism and formative evaluation of clinical practice management for medical students, strive to meet the constantly developing and changing new needs of students, teachers, and clinical practice bases, and better promote the new model of intelligent balanced management for medical students.

2. The Application and Significance of Artificial Intelligence in Balanced Management of Universities

With the development of big data, Internet and information technology, artificial intelligence is widely used in smart medicine, smart education and other fields. With the development of big data, the Internet and information technology, artificial intelligence is widely used in intelligent medical treatment, intelligent education and other fields, especially in the balanced management of colleges and universities, showing great potential. Artificial intelligence can accurately evaluate clinical practice activities such as simulated surgeries and patient communication for medical students through technologies such as image recognition, speech recognition, and natural language processing. In terms of learning status management, personalized learning resource recommendations can be generated based on students' learning history, preferences, and performance data. In terms of internship arrangements, it is possible to comprehensively consider the professional direction, learning progress, interests and preferences of medical students, as well as the job requirements of hospitals or clinics, and intelligently match the optimal internship opportunities. Especially in terms of student management, by analyzing students' learning behavior data, such as online learning time, time management habits, social interaction, etc., it is possible to timely identify students' psychological behavior patterns, provide warnings for university student management and psychological counseling centers, ensure students' physical and mental health, and continuously promote the modernization and intelligence of university student management. A total of 883 research

articles related to the application of artificial intelligence in the medical field were counted and were listed in Table 1. Artificial intelligence has brought new driving forces to the innovative development of medical treatment and education, and has also spurred the transformation and upgrading of higher education management. Famous psychologist F. Heider proposed the "Balance Theory", also known as the "P-O-X Theory", which scientifically analyzes the relationship between the three parties involved in clinical practice management: schools, students, and clinical practice management. It emphasizes that a person's attitude towards a certain object of knowledge is often influenced by others' attitudes towards that object. In order to adjust the management strategy of school student clinical practice teaching in a timely manner and create a new dynamic balance of medical student management, this article focuses on the balance of students' physiology, psychology, and behavior from the perspective of artificial intelligence, while strengthening guidance on students' outlook on life, values, and worldview. It will fully utilize the main channel of ideological and political theory courses, attach importance to the intelligent and effective operation of balance management, enrich the intelligent content of balance management, and establish an intelligent guarantee mechanism for balance management to integrate into student management, strive to meet the new needs of students, teachers, and clinical practice teaching bases that are constantly developing and changing, promote the comprehensive transformation of educational evaluation, provide direction guidance for the innovative development of teaching management in the intelligent era, and better assist the growth and development of medical students.

Table 1. The Application of Artificial Intelligence in the Medical Field in China

Direction of application	Research quantum	Proportion
Intelligent diagnosis and treatment	362	41%
Intelligent drug research and development	159	18%
Health management	97	11%
Individual-based treatment	44	5%
Disease risk prediction	27	3%
Medical robot	27	3%
Cloud & Rehabilitation medical	18	2%
Other	149	17%

3. Active Exploration of Balanced Management for Medical Students

3.1 Utilize the Main Channel of Ideological and Political Theory Courses

One is to integrate teaching content. Adhere to the balanced concept of combining artificial intelligence with ideological and political education, and construct a diversified blended online teaching model that meets the needs of the times. For example, integrating the moral construction of "basic" courses into the personal and professional ethics of medical students, and integrating the realization of one's own life

value into the collective interests of the country; Incorporating the content of dialectics of nature into the "Principles" course; Integrating the history of modern Chinese medicine development and medical education into the "Outline" curriculum; Incorporate traditional Chinese medicine culture, harmonious doctor-patient relationships, and medical technology development into the "Introduction" course. Secondly, we need to strengthen vocational education. By fully utilizing the characteristics of hospital practical teaching and utilizing artificial intelligence and digital technology, we aim to cultivate and assess the clinical consultation abilities of medical students. For example, in the learning course of artificial neural networks, data collection such as scoring is carried out on specific items such as various stages, contents, and techniques of medical consultations. Then, through technologies such as big data mining and cloud computing, the shortcomings and deficiencies of students in the consultation process are discovered and analyzed, and accurate evaluations and guidance opinions are given, thus achieving precise guidance and training for medical students. The third is to focus on teaching reform. On the one hand, conduct specialized research around the hot issues that students are concerned about. Adhere to the organic combination of teaching focus, social hotspots, and student doubts, actively explore methods such as case-based teaching, interactive teaching, and debate based teaching, clarify and thoroughly explain the political confusion encountered by students in the process of learning and thinking, and achieve the goal of consolidating the foundation and cultivating the soul. On the other hand, strengthen international exchanges. Utilizing artificial intelligence to build a platform for sharing advanced educational resources both domestically and internationally, integrating large-scale databases and high-quality research results from around the world, and cultivating medical professionals who can adapt to the new diagnosis and treatment models of the big data era.

3.2 Emphasize the Intelligent and Effective Operation of Balanced Management

Balance management is a dynamic process, and only by standardizing intelligent and effective operation, and effectively implementing balance management dynamics, can management efficiency be improved. One is to clarify the content of educational work, put students at the center, and guide them to learn independently. For different teaching contents, different teaching methods such as case-based teaching, problem-based teaching, blended learning, and group discussions are adopted to guide students to actively participate and promote self-directed learning. For example, taking programming language design courses as an example, through teacher guided teaching, combined with group learning discussions, group presentations, etc., students' ability to learn independently is improved, learning interest is stimulated, and mental health education, medical humanities education, and doctor-patient relationship education are integrated into daily management to serve the cultivation of medical ethics and medical spirit among medical students. The second is to standardize institutional guarantees. Medical ideological and political education is a dynamic system engineering that involves multiple departments and personnel. To ensure the continuity and balance of management, all departments and relevant staff should maintain consistency in their thoughts and actions, formulate and implement student management evaluation standards, coordinate existing problems in work, and undertake relative division of labor in

159

educational content. The third is to strengthen the management and construction of student organizations. On the one hand, guide the formation of student clubs. Clarify the purpose of theoretical learning, strengthen club management and member recruitment, with the goal of cultivating students' theoretical backbone, in line with ideological and political education and national development situation, keeping up with the pace of the times and based on reality, forming a distinctive symbol of the times. On the other hand, guide student club activities. With the goal of scientific research innovation, guide students through multiple channels to combine medical applications for practical learning, and stimulate students' sense of participation. For example, through software design contests, "Internet plus", "Challenge Cup" and other innovation and entrepreneurship contests, student associations can be organized to participate in project research and development, promote medical and industrial integration, and effectively cultivate students' hands-on design ability and innovative thinking ability.

3.3 Enrich the Intelligent Content of Balanced Management

Adhere to the balanced concept of combining humanities and medical education with artificial intelligence, and establish a joint training model among schools, hospitals, and enterprises. One is to actively promote the integration of industry and education. For example, the Intelligent Medical Engineering program jointly offered by Tianjin University and Tianjin Medical University adopts a training strategy of parallel medical and engineering education. Through the joint training mode, students can understand clinical cases and practical experience in hospital institutions, understand clinical needs and frontiers, learn to identify and solve problems, and promote the translation of research results into medical practice. The second is to strengthen the intelligent construction of campus culture. On the one hand, relying on the new media, WeChat, and Weibo platforms of universities, a series of online tweets will be launched to fully utilize the educational function of campus culture. On the other hand, enriching students' extracurricular life. Through the implementation of "one level, one table", "one class, one case", and "one subject, one question", themed subject teaching and research salons, literary works creation, audio and video creation, etc. will be carried out, and the promotion of intelligent management in universities will be further strengthened to optimize the balance management between schools and families. With respect for students as the premise, we will play the role of waiters and coaches, and create a three-dimensional new normal for home school education. The third is to promote curriculum reform. Guided by the reform of ideological and political education in the curriculum, we should incorporate big data based teaching methods such as MOOCs, flipped classrooms, and micro classrooms, sort out the management content that integrates artificial intelligence, integrate patriotism education, ideal and belief education, life and health education, environmental education, gratitude education, responsibility education, and career planning education into the new curriculum system, and establish a shared medical education cloud platform.

3.4 Establish a Balanced Management Intelligent Guarantee Mechanism

The construction and smooth implementation of balanced management in universities require internal organizational leadership, indicator systems, and external multi-party cooperation to ensure. One is to

clarify the core value of intelligent management evaluation. To balance the relationship between "human evaluation" and "machine evaluation", it is necessary to clarify that intelligent management evaluation aims to help teachers, students, and managers complete tedious and repetitive data collection and analysis work, and provide reference for evaluation subjects to evaluate the current situation of education and optimize educational decisions. Secondly, we need to establish an indicator system to standardize the practical direction of balanced management evaluation in universities. To improve the practical logic of balanced management evaluation in universities, focus on the field specificity of intelligent management evaluation, construct a clear and structurally reasonable intelligent education evaluation index system, and provide standard references for the collection of educational data, generation of evaluation results, exploration of potential problems, and design of improvement plans. The third is to optimize algorithm design and promote the scientific development of intelligent management evaluation. On the one hand, it is necessary to enrich data sources and improve data quality. Strengthen the care for students from different regions, genders, and backgrounds, collect data from multiple perspectives, and avoid relying on a single source or type of data. On the other hand, optimizing algorithm design, improving analysis efficiency, and ensuring algorithm neutrality in the decision-making process. In addition, opinions from students, parents, teachers, and administrators should be widely solicited to understand the needs of different parties, adjust algorithm parameters and decision-making logic in a timely manner, and ensure the scientific and accurate evaluation results. The fourth is to improve the feedback mechanism and enhance the practical effectiveness of balanced management evaluation. We should not only focus on the evaluation content itself, but also explore the core elements that can have an impact on the evaluation object, in order to deeply explore the key issues of the evaluation object, and construct a closed-loop model of "evaluation design evaluation implementation evaluation feedback", providing guidance for intelligent management evaluation.

4. Thoughts on Balanced Management of Medical Students

This article preliminarily constructs an application system of artificial intelligence in balanced management of universities from four dimensions. The concept and idea of balanced management is to use philosophical thinking to think about and solve the problems of ideological and political education and management for medical students in the era of artificial intelligence, laying a theoretical foundation for further research on the management system of higher education from the perspective of ecological management. Adhering to the student-centered approach, continuously strengthening the management of a harmonious and stable humanistic ecology, actively expanding the deep application of artificial intelligence in higher education management, forming a comprehensive and all-round education pattern for all staff, the whole process, and the whole way, constructing a harmonious management environment and university campus environment, providing theoretical basis for realizing the free and comprehensive development of college students, and having certain social application value.

5. Conclusion

To strengthen the application of artificial intelligence in university management and build a safe, hygienic, healthy, green, and civilized campus, it is necessary to establish corresponding incentive and guarantee mechanisms, clarify the essence, improve the indicator system, optimize algorithm design, and improve feedback mechanisms to enhance the systematic, scientific, and objective evaluation, and provide effective support for educational innovation and development. We need to further respect students' privacy, ensure data security, strengthen responsibility attribution, establish a grid based management system that focuses on prevention and emergency response, innovate educational management methods, and build a three-dimensional balanced management system for ideological and political courses. In particular, we need to leverage the role of home school and inter school linkage information technology and intelligence to achieve "borderless" supervision and ensure that university management is regulated and orderly. Due to time constraints in research, the widespread promotion of the application of artificial intelligence in balanced management in universities has not yet been validated. The next step will continue to study artificial intelligence and balanced management systems, and from a qualitative perspective, introduce management satisfaction and expert evaluation indicators to verify the relationship between artificial intelligence and balanced management systems; From a quantitative perspective, construct a balanced management index system for universities, and then form a complete management system. From both qualitative and quantitative perspectives, conduct extensive research and introduce analysis results from other medical majors and medical schools for verification, continuously adjusting, enriching, and improving the balanced management system of universities.
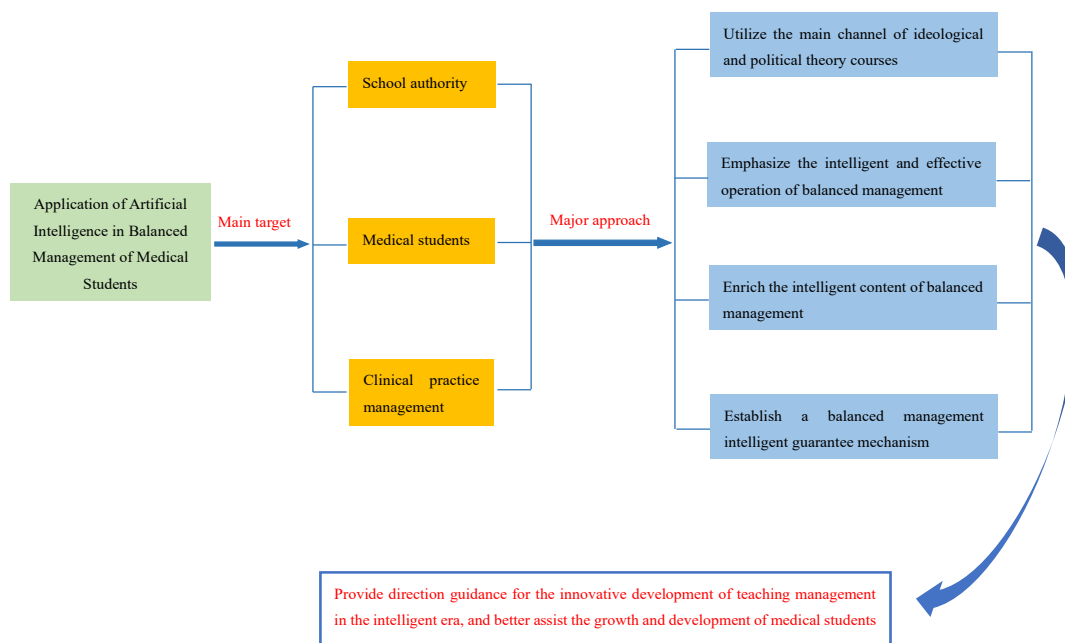

Figure 1. The Main Target and Major Approach of Artificial Intelligence in Balanced Management of Medical Students

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163

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