



EXPLORATION OF AI TECHNOLOGY APPLICATION IN REHABILITATION PROFESSIONAL COURSE DESIGN BASED ON OBE

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ABSTRACT

Based on the concept of Outcome-Based Education (OBE), this study explores the application of AI technology in the instructional design and implementation of rehabilitation professional courses. The research adopts a combination of literature analysis, case studies, and teaching experiments. It designs an outcome-oriented teaching plan for rehabilitation courses that integrates AI technology and conducts a small-scale practice to verify the feasibility of the plan. The study finds that the OBE concept is highly compatible with AI technology. AI technology can effectively support precise curriculum system design based on outcome requirements, immersive digital teaching implementation, targeted evaluation and feedback, and comprehensively promote the achievement of learning outcomes. Therefore, AI technology should be widely applied in curriculum instructional design to better realize the OBE concept. The effective integration of the OBE concept and AI technology is an important direction for upgrading the teaching model, which is worth further exploration and practice. Subsequent research can continue to expand the application areas of this model, enrich specific implementation strategies, and conduct large-sample application effect verification to provide support for scale-up and promotion.

KEYWORD : AI technology Rehabilitation course OBE

A. INTRODUCTION

With the rapid development of technology, Artificial Intelligence (AI) has become an important force in transforming the field of education, especially in rehabilitation professional education. At the same time, Outcome-Based Education (OBE), as an innovative educational model, has received increasing attention in its application in rehabilitation professional teaching.

The core of OBE emphasizes a student learning outcome-centered educational model, focusing not only on the teaching process but also on the teaching results[1]. In rehabilitation professional education, this concept is particularly important because the learning outcomes in this field are directly related to future professional practice and the abilities of those being served. However, achieving high-quality teaching outcomes requires effective teaching methods and tools, which is where AI technology comes into play[2].

The combination of OBE and AI technology has brought new possibilities for the design of rehabilitation professional course teaching. This can not only improve teaching efficiency and quality but also help to cultivate more professional and adaptable rehabilitation professionals. This paper aims to explore the integration of OBE and AI technology in the design of rehabilitation professional course teaching and its potential value, exploring how to incorporate AI technology into the design of OBE-based rehabilitation professional teaching courses to improve teaching effectiveness and student ability development, with a view to providing new perspectives and practical strategies for educational reform in this field.

B. SPECIFIC APPLICATIONS OF OBE AND AI TECHNOLOGY

1. Application Characteristics of OBE (Outcome-Based Education) in Rehabilitation Professional Teaching Design

1) Strong Professionalism and Practicality: The rehabilitation profession requires students to master a series of professional knowledge and skills. The outcome orientation emphasized by OBE makes the educational content closely related to actual career needs[3]. Due to the practical nature of the rehabilitation profession, the application



of OBE in this field focuses more on cultivating practical operational abilities, such as patient assessment and treatment planning.

2) Personalized Learning Pathways: OBE allows for adjusting teaching content and methods according to each student's abilities and progress[3], which is especially important in rehabilitation professional education because students' backgrounds and learning needs may vary greatly.

3) Continuous Assessment and Feedback: Under the OBE model, teachers need to continuously assess students' learning progress and outcomes and provide timely feedback to ensure that every student achieves the course objectives.

C. BUILDING A REHABILITATION PROFESSIONAL COURSE TEACHING DESIGN MODEL INTEGRATING AI TECHNOLOGY BASED ON THE OBE CONCEPT.

Clarify Learning Outcomes and Goals: The first step of the model is to clearly define the specific learning outcomes of the rehabilitation professional courses based on the OBE concept. These outcomes should be specific, quantifiable, and directly related to the professional requirements of the rehabilitation field[3]. For example, set goals such as effectively executing specific rehabilitation therapy techniques, mastering the use of patient assessments and scales, communication skills, etc.

Integrate AI Technology: In the course design, integrate AI technology into the teaching process. For example, use generative AI-assisted virtual reality systems for actual operational training, employ AI for personalized learning path recommendations, and adopt NLP intelligent analysis tools to track students' learning progress and effectiveness[5].

Flexible Teaching Methods: Combine various teaching methods, including lectures, group discussions, practical operations, and case studies of specific sports injuries or post-stroke rehabilitation. AI technology assists in this process, such as guiding teachers to adjust teaching content through data analysis to ensure that teaching methods meet the requirements of learning outcomes[6].

3) Conduct assessments of attitudes and emotions to evaluate the cultivation of values and professional integrity. Set up clinical case analyses, open-ended questions, and other sections. Comprehensively evaluate the results from all sections to assess students' professional attitudes, value orientations, and moral qualities, and examine the internalization of professional spirit. Through multi-angle and comprehensive assessments, the real effectiveness of the course learning on cultivating students' professional abilities can be objectively evaluated, providing an optimization basis for subsequent teaching design.

D. RESEARCH RESULTS AND SUGGESTIONS

1. Optimized Implementation Strategies for AI Technology in Rehabilitation Professional Education Based on OBE

1) Optimize course offerings and construct a systematic talent development program. Apply data mining, situational simulation, and other AI technologies to analyze trends and talent needs in the rehabilitation industry and professional development; scientifically and systematically determine the professional development positioning and talent training goals; and accordingly carry out curriculum system design oriented towards core professional competencies, forming a course content framework that supports outcome realization.

2) Improve teaching and learning methods, and create an immersive teaching environment. Utilize virtual simulations, digital case studies, and other AI applications to reconstruct the teaching process, creating a situational learning atmosphere similar to actual work, and strengthening the connection and transfer of knowledge and skills. Simultaneously, use intelligent discussion areas, personalized learning assistants, and other tools to promote active learning and stimulate students' intrinsic learning motivation.

3) Improve intelligent evaluation methods to achieve timely and effective evaluation feedback. Apply voice recognition, text analysis, and other technical means to automatically collect and identify classroom processes, supporting teachers in quickly understanding students' learning effectiveness; develop intelligent assessment systems oriented towards key competency points, allowing students to receive timely ability diagnoses and adjust subsequent learning accordingly.



4) Construct extensible learning support to promote continuous professional growth. Leverage AI carriers such as chatbots and online learning communities to provide timely learning suggestions, extending the classroom training learning experience, and embedding the cultivation of professional integrity and self-driven abilities; establish graduate contact mechanisms to obtain the latest industry updates, guiding continuous learning and growth.

Through the strategic integration of the OBE concept and AI technology, the curriculum design, teaching and learning, and evaluation systems of rehabilitation professional education are optimized and enhanced, ultimately helping students comprehensively and systematically acquire professional knowledge and core employability skills. This provides an effective approach to fundamentally promote the overall improvement of rehabilitation professional talent development quality.

2. AI technology plays a positive role in realizing the OBE concept and is worth promoting and applying in course teaching.

The OBE concept emphasizes being oriented towards cultivating students' professional skills and core competencies in curriculum design and teaching process management, differing from the traditional concept of knowledge inculcation. It places more emphasis on the output and realization of learning outcomes. AI technology provides strong support for realizing the OBE concept, making the formation and assessment of learning outcomes more precise and efficient.

1) AI technology can support precise curriculum system design oriented towards outcome requirements. By applying NLP, data analysis, and other technologies, teaching designers can scientifically judge industry development trends and predict position capability changes, thereby formulating curriculum design plans. Additionally, AI algorithms can analyze historical course data to identify students' main learning pain points, adjusting course content to make it more targeted. This provides content support for students to achieve expected learning outcomes.

2) AI-enabled immersive digital teaching enriches the teaching and learning methods within courses. Practice-based teaching based on virtual simulations can improve the transfer effect of knowledge and skills; relying on intelligent analysis for personalized learning path planning, students can obtain a learning experience better suited to their needs. These can enhance students' chances of achieving learning outcomes.

3) AI technology can achieve precise evaluation oriented towards key competency points and provide timely feedback on students' learning effectiveness. Technologies such as voice recognition enable asynchronous communication, allowing teachers to quickly gain insights into more students' real performance; while automated assessment systems developed using natural language processing and other means can enable regular monitoring of knowledge and skills, enabling students to identify problems early and adjust their learning methods.

It can be seen that AI technology provides comprehensive support for the effective implementation of the OBE concept, making the formation and evaluation of learning outcomes more efficient and precise, which is difficult to achieve with traditional teaching models. Therefore, in designing and developing outcome-oriented curriculum systems, the integration and application of AI technology should be increased to promote the implementation of the OBE concept in more educational fields.

3. Future Development Directions and Challenges for the Teaching Model with Deep Integration of the OBE Concept and AI Technology

In terms of development directions, the intelligence level of this teaching model can be continuously improved. With further advancements in AI technologies such as semantic understanding and emotion computation, teaching systems can achieve better semantic interaction and more accurate judgment of learning psychological states. At that time, AI technology can dominate almost all teaching aspects, with teachers transitioning to the role of learning process guides and supporters. This will significantly improve teaching efficiency and quality.

Meanwhile, efforts should be made to further expand the application scope of this teaching model. Currently, relevant practices may still be concentrated in fields such as information technology and business, but in the future, applications can be explored in more disciplines to create scaled demonstration and synergy effects. This requires close collaboration between subject experts and AI technology developers to research and develop intelligent teaching systems tailored to the needs of specific disciplines.



So far, this teaching model has mostly remained at the small-scale pilot stage. To achieve scaled application, capital investment and support from functional departments are essential driving forces for the future. Additionally, the adaptability and acceptance of new AI technologies and models by participants such as teachers and students is crucial for successful implementation and needs to be considered comprehensively.

E. CONCLUSION

AI can effectively support precise curriculum design based on intended learning outcomes, immersive digital teaching delivery, targeted assessment and feedback, and comprehensively facilitate outcome achievement. This integrated approach holds promise for upgrading traditional teaching models and enhancing educational quality and the learning experience. It represents an important direction for further in-depth research and large-scale implementation to realize the full potential of AI-enabled, outcome-oriented education.

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