

# Discussion on the Reform of OBE Talent Training Model in Universities with AI Assistance

Wei Zhang\*

*Xi'an Peihua University, Xi'an, Shaanxi, China*

*\* Corresponding Author.*

**Abstract:** Based on the concept of Outcome-Based Education (OBE) and in combination with Artificial Intelligence (AI) technology, this paper presents an innovative approach to reforming the OBE talent-training model in universities. It provides preliminary professional talent training plans and curriculum teaching outline design methods. This method uses AI technology to realize the core idea of OBE, which is to focus on teaching outcomes-students' knowledge, skills, and attitudes. It assists in analyzing and making decisions on several important aspects of talent training in universities, efficiently completing the establishment of core documents such as professional talent training plans, curriculum-teaching outlines, and course assessment plans. In addition, by utilizing AI and digital human technology for real-time interaction during the teaching process, and generating course evaluation and assessment scales based on course objectives after the course, it objectively and accurately measures students' achievement of learning goals.

**Keywords:** Artificial Intelligence; Outcome-Based Education (OBE); Talent Training Model; Curriculum Teaching Outline; Course Evaluation and Assessment

## 1. Introduction

The field of higher education has always been searching for better teaching strategies and more effective educational technologies in order to provide students with a higher quality education experience. In recent years, the concept of Outcome-Based Education (OBE) has been increasingly accepted and applied in education practices around the world [1]. Additionally, with the development of artificial intelligence (AI) technology, the role of AI in education has become more and more

important [2]. Prominent institutions like the Yark Design Institute [3] and Harvard University [4] have already started using AI in education. Although AI and OBE have been widely studied as separate components of educational reform, there is a lack of research on how AI can assist in implementing the OBE concept. The goal of this study is to delve into how AI technology can be used to implement the OBE concept and explore the potential impact of this integration in educational practice. We will focus on analyzing the applications of AI in developing teaching content, teaching methods, and assessment methods; examine the practical effects of digital human technology in the teaching process; and thoroughly investigate the practicality of using AI-generated course evaluation assessment scales. Through this approach, we hope to provide educators and policy makers with new perspectives and tools to make the implementation of OBE more scientific and effective on a global scale.

## 2. Integration of OBE Concept and Artificial Intelligence Leveraging

The assistance of Artificial Intelligence (AI) technology in implementing the concept of Outcome-Based Education (OBE) has profound significance. The following further elaborates on this integration from several aspects.

### 2.1 Connotation of OBE Concept

The OBE concept emphasizes that the goal of education is to cultivate students' practical mastery and application of knowledge, skills, and attitudes. This concept shifts our focus from the process of input to the outcomes, meaning that we are no longer only concerned with whether teachers have taught or students have learned [5], but more importantly, whether students can produce results after learning.

## 2.2 Contribution of AI Technology to OBE

The development of AI technology enables us to implement the OBE concept more effectively. Firstly, personalized design and teaching process [6]. AI technology can accurately understand each student's knowledge level, learning ability, and interests, and based on these factors, it provides customized teaching designs at both the individual and group levels to meet their specific needs. Secondly, in terms of course assessment, AI technology can provide objective, accurate, and real-time data feedback to help teachers adjust teaching strategies and better achieve preset teaching goals [7]. Finally, AI-generated teaching resources such as intelligent textbooks and virtual experiments greatly enrich teaching methods and improve teaching effectiveness [8].

## 2.3 Integration of OBE and AI

Overall, the integration of OBE and AI will bring innovation to education and teaching. In this process, we put more emphasis on students' actual abilities and use them as guiding principles for curriculum design and teaching methods. At the same time, we use the tools and resources provided by AI technology to assist us in achieving these goals. This not only makes the teaching process more aligned with students' needs but also enables better tracking and evaluation of their learning outcomes [9].

## 3. AI-Assisted Design of Curriculum System

In the process of formulating professional talent training plans, curriculum systems, and curriculum teaching outlines, we first need to clarify the goals of professional talent training. According to the OBE concept, we develop curriculum systems based on reverse design and implement them in a forward manner. We then determine curriculum teaching outlines and teaching content, analyze teaching methods, and finally establish corresponding assessment methods. The participation of AI will make this process more scientific and adaptable to the actual needs of students [10].

### 3.1 AI-Assisted Design of Talent Training Plans and Curriculum Systems

The professional talent training plan in

universities is the core document for talent training [11]. In the traditional revision process of professional training plans, professional leaders in universities usually attach more importance to the integrity of disciplinary knowledge structure and form their own plans by referring to a large number of training plans from various other universities. This curriculum development method has a serious problem of homogeneity, resulting in unclear positioning and objectives of talent training in universities. It is entirely possible to use AI technology to analyze the objectives of talent training in universities and design curriculum systems based on national quality standards. AI can quickly identify, analyze, and process large amounts of data, including student data, course data, teaching evaluation data, to provide in-depth analysis and optimization suggestions for teaching quality.

#### 3.1.1 Data collection

Collect various types of data, such as students' admission scores, academic performance, course feedback, employment situation, etc.

#### 3.1.2 Data analysis

Use AI technology (such as machine learning algorithms) to conduct in-depth analysis of the data to understand students' learning situations, learning outcomes, and course quality.

#### 3.1.3 Model establishment

Based on the analysis results, establish predictive models to predict students' academic performance, completion rates, and satisfaction with the course.

#### 3.1.4 Curriculum system design

Based on the predictive results of the above model and in combination with national quality standards, design a curriculum system that better suits students' needs and regulatory requirements.

However, we need to note that even though AI can greatly improve analysis efficiency and automate the processing of large amounts of complex data, educational experts and practitioners still need to be involved in core decision-making processes such as curriculum design and credit allocation [12]. Their professional knowledge and understanding of students' needs cannot be replaced by AI. Therefore, using AI technology for educational analysis and optimization design is a collaborative process involving multiple parties.

### 3.2 Determination of Teaching Content

AI can use its powerful data processing and intelligent analysis capabilities to deeply analyze a large amount of educational data when determining teaching content. This data may include information about students' basic knowledge levels, interests, learning styles, etc. After understanding and digesting this information, AI will set and adjust teaching content according to the OBE concept and the common and personalized needs of student groups. This process reflects the targeting nature of education while ensuring widespread applicability.

#### 3.2.1 Setting of Teaching Methods

The setting of teaching methods is also a complex and important aspect. Traditional teaching methods often fail to meet the learning needs of all students, so we need to find new methods. This is where the advantages of AI come into play. AI can customize the most suitable teaching methods based on students' learning styles and preferences, as well as the latest educational concepts and technologies. This process may include presentation methods, sequence determination, time allocation, etc. Combining AI with traditional teaching methods can meet students' various learning needs and improve learning outcomes.

#### 3.2.2 Selection of Assessment Methods

The selection of assessment methods is the final test for teaching outcomes. Traditional assessment methods often focus too much on students' weaknesses. However, with the power of AI, we can discover students' strengths and help them improve their weaknesses. AI can set challenging and practical assessment methods based on students' learning situations. This not only objectively and comprehensively evaluates students' learning outcomes but also stimulates their greater learning potential.

In conclusion, AI can play a unique role in every aspect of curriculum design, making the entire process more scientific and targeted. This helps to achieve the concept of OBE and improve the quality of education.

### 4. Application of Digital Human Technology in the Teaching Process

Digital humans, also known as virtual figures or virtual assistants, have shown their potential in the field of education. They can simulate

real teachers to conduct classroom teaching, ask questions, provide personalized teaching based on student feedback, and are comparable to human teachers in every aspect.

#### 4.1 Simulation of Teachers for Teaching

Digital humans, created using AI technology, can simulate the behavior of real teachers and conduct classroom lectures. They can teach according to the set curriculum, making classroom progress and content more aligned with teaching requirements. They can also receive real-time feedback from students during the teaching process and make adjustments based on the feedback. This makes teaching content and methods more tailored to students' actual needs and improves teaching quality.

#### 4.2 Questioning and Discussion

In addition to teaching, digital humans can ask students questions and organize discussions in the classroom. This helps teachers understand students' understanding of course content and encourages students to think more deeply about course content, stimulating their interest in learning.

#### 4.3 Personalized Teaching

Using AI technology, digital humans can provide personalized teaching based on each student's learning situation and feedback. For example, for students with fast learning progress, digital humans can provide more in-depth and complex content, while for students with slower progress, they can provide more exercises and explanations. In this way, each student can receive teaching support that suits them best, ensuring that all students can achieve predetermined learning goals. Overall, the introduction of digital human technology can significantly improve teaching efficiency and quality, especially when integrated with AI to better meet students' learning needs. This is also a means to achieve outstanding results in implementing the concept of OBE.

### 5. Course Evaluation and Assessment Scale Generated by AI

Traditional course evaluation and assessment methods may have subjectivity and lack comprehensiveness. However, when we introduce AI-based evaluation and assessment

tools, we can greatly improve the efficiency and accuracy of assessment.

### **5.1 Comprehensive Tracking of Learning Progress**

AI-generated course evaluation and assessment scales can create detailed progress reports based on each student's learning progress. These reports not only include students' mastery of course content but also their understanding of various knowledge points. Therefore, teachers can not only have a clear understanding of students' learning situations but also adjust teaching strategies and judge the achievement of course objectives based on the reports.

### **5.2 Objective Evaluation of Learning Outcomes**

AI can analyze students' online learning data, such as answer accuracy, answer speed, distribution of online learning time, etc., to further understand students' learning status and performance. Based on this data, AI can generate comprehensive and objective evaluations of learning outcomes, providing teachers with real-time and accurate tools to assess students' learning process and outcomes.

### **5.3 Obtaining Feedback Information**

AI-generated course evaluation and assessment scales can also include feedback from students, such as difficulties encountered during the learning process and suggestions for course content. This process helps teachers understand students' voices, provide substantial evidence for understanding their learning needs, adjusting teaching methods, and optimizing course settings.

Through the course evaluation and assessment scale generated by AI, we can better understand students' learning situations and accurately evaluate and optimize teaching design and effectiveness. This process will strongly promote the practice and promotion of the OBE concept in higher education.

## **6. Conclusion**

This article mainly discusses how the combination of Outcome-Based Education (OBE) philosophy and Artificial Intelligence (AI) technology can promote the reform and development of higher education. We

thoroughly discuss the various possibilities of AI in supporting OBE practices, including personalized design and instruction, data-driven assessment and feedback, and precise curriculum development to find the most suitable teaching methods for students. We also touch upon the crucial role of digital human technology and AI-generated course evaluation and assessment scales in this process.

### **6.1 Personalized Design and Teaching**

By combining AI and the OBE concept, we can effectively focus on each student's specific situation, personalized design, and implement teaching programs. AI's data processing and analysis capabilities help us understand each student in-depth, enabling fine-tuned design of teaching content and the proposal of the most suitable teaching methods for students.

### **6.2 Evaluation and Feedback**

AI with powerful data processing capabilities can generate detailed course evaluation and assessment scales, providing comprehensive feedback on students' learning situations. This enables us to gain a deeper understanding of students, evaluate more accurately, and helps us better implement the OBE concept.

### **6.3 Innovation in Teaching Methods**

The introduction of digital human technology opens up new possibilities in higher education. They can provide personalized online teaching for students, making the teaching process more dynamic and interesting, effectively enhancing students' interest and motivation to learn.

Through these analyses and discussions, we can see that the integration of AI and OBE concepts has brought innovation to teaching methods, making the teaching process more refined and targeted, thereby improving teaching quality more effectively. This provides us with new perspectives and tools, enabling educators and policymakers to better promote the practice and dissemination of OBE concepts on a global scale.

With the promotion of new technologies, the OBE concept can be further developed, bringing more possibilities to the field of higher education. We believe that the combination of AI technology and the OBE concept will undoubtedly bring higher-quality teaching, help more students access better

educational resources, and achieve their career goals and personal development.

### Acknowledgment

This work was supported by the Project of The research topic for vocational education in 2023, Shaanxi Vocational Education Society. "Based on AI, research on the full life cycle system of future vocational education and teaching." (Project No.: ZJS202314).

### References

- [1] Harden, R. M. (2002). "Learning outcomes and instructional objectives: is there a difference?". *Medical teacher*, 24(2), 151-155.
- [2] Luckin, R. (2018). *Machine learning and human intelligence: the future of education for the 21st century*. UCL IOE Press.
- [3] Kyungsik Han, Patrick C. Shih, & John M. Carroll. (2014). "Local News Chatter: Augmenting Community News by Aggregating Tweets". In *Proceedings of AAAI ICWSM'14*.
- [4] Lasernal, Charlie, Michael N. Bastedo & Nicholas A. Bowman. (2019). "The Role of Information in College Admissions Decisions", *American Journal of Education*, 125 (4).
- [5] Xu J. (2023). *Research on the Ability Framework of Undergraduate Talents in the Field of Artificial Intelligence from the Perspective of Knowledge System*. Zhejiang University, 2023(05), 85-88.
- [6] Xu Biao, Du Peng, Li Sanfu. (2023). *Exploration on the Quality Evaluation and Diagnosis Model of Talent Training Programs in Higher Vocational Colleges based on Multilevel Fuzzy Evaluation Method*. *Contemporary Education Theory and Practice*, 14(05), 98-103.
- [7] Yang Qing & Song Wei.(2022).*Exploration of Optimization Plan for School-Enterprise Cooperation and Computer Talent Training in the Era of Artificial Intelligence(J)*. *China Educational Informationization*, 28(07), 93-98.
- [8] Yu L. (2022).*Building a "Artificial Intelligence +" Vocational Education Ecological Model: Exploring a New Path for Professional Group Construction*. *China Training*, 2022(04), 99-101.
- [9] Wang D. (2021a).*Research on the Reform Ideas of Electrical Automation Technology Specialty under the Background of Artificial Intelligence*. *China Informatization*, 2021(08), 113-114.
- [10] Wang Z. (2021b).*Exploration and Thinking on Artificial Intelligence Talent Training: Analysis based on the Training Programs of Seven Domestic Universities*. *China Higher Education Science and Technology*, 2021(04), 67-71.
- [11] Fang Y. (2021).*Research on Talent Training and Curriculum Reform of Applied Undergraduate College Accounting Major under the Background of Artificial Intelligence*. *Journal of Hebei Energy Vocational and Technical College*, 21(01), 85-87+94.
- [12] Xie Y. (2020).*Exploration and Construction of Talent Training Programs for Artificial Intelligence Majors in Higher Vocational Colleges*. *Invention and Innovation (Vocational Education)*, 2020(01), 145-146.