Scientific Research Publishing

Advances in Applied Sociology, 2025, 15(2), 60-74
https://www.scirp.org/journal/aasoci
ISSN Online: 2165-4336
ISSN Print: 2165-4328

# Leveraging Artificial Intelligence in Outcome-Based Education: A Case Study of Undergraduate Auditing Curriculum

**Yuanyuan Cao[1,2], Yitao Liu[1,2*], Jinwen Lai[1]**

[1]School of Economics and Management, Beijing Institute of Petrochemical Technology, Beijing, China
[2]Development Research Centre of Beijing New Modern Industrial Area, Beijing, China
Email: *liuyitao@bipt.edu.cn

**How to cite this paper:** Cao, Y. Y., Liu, Y. T., & Lai, J. W. (2025). Leveraging Artificial Intelligence in Outcome-Based Education: A Case Study of Undergraduate Auditing Curriculum. *Advances in Applied Sociology, 15,* 60-74.
https://doi.org/10.4236/aasoci.2025.152004

**Received:** January 19, 2025
**Accepted:** February 21, 2025
**Published:** February 24, 2025



## Abstract

This study explores the integration of Artificial Intelligence (AI) within the Outcome-Based Education (OBE) framework in undergraduate auditing courses. AI plays a pivotal role in responding to the evolving needs of the auditing profession by processing data from various sources, including recruitment platforms and industry reports. This data-driven approach facilitates the development of precise, measurable learning outcomes and course objectives, aligned with core competencies in financial auditing, IT auditing, risk management, and global auditing standards. In the curriculum design process, AI contributes to creating a holistic educational framework that incorporates knowledge, skills, and values, ensuring students not only gain theoretical insights but also practical expertise and ethical awareness. AI enhances the teaching and learning experience by supporting personalized pre-class preparation, fostering active in-class participation, and enabling timely, constructive post-class feedback. Through dynamic case generation and individualized learning pathways, AI cultivates a student-centered learning environment. Additionally, AI plays a crucial role in assessing learning outcomes and optimizing feedback mechanisms. By automating exam question generation, grading, and offering personalized learning suggestions, AI empowers instructors to adjust their teaching strategies based on real-time data, fostering continuous improvement and student progress. The findings suggest that the AI-enhanced OBE model significantly outperforms traditional OBE approaches, particularly in improving student performance and increasing the proportion of high-achieving students. This highlights AI's potential to enhance both teaching quality and academic outcomes. The study advocates for the widespread adoption of AI technologies in higher education, particularly in specialized fields like auditing, to create intelligent, personalized learning environments that better meet market demands

and optimize educational outcomes.

## Keywords

Artificial Intelligence, OBE Concept, Undergraduate Auditing Curriculum

## 1. Introduction

The global education landscape is experiencing a significant transformation, particularly in higher education, where the student-centered paradigm of Outcome-Based Education (OBE) is becoming increasingly prevalent (Kaliannan & Chandran, 2012). The OBE framework emphasizes the achievement of defined learning outcomes, promoting student engagement, the development of practical skills, and the enhancement of critical thinking throughout the educational process (Ag Damit et al., 2021). This paradigm shift moves away from traditional "Teacher-centered" models, fostering a more dynamic, "student-centered" approach. However, in traditional OBE (Outcome-Based Education) for auditing education, there are three limitations that hinder its effectiveness.

1) Lack of Flexibility and Personalization

Traditional OBE systems typically follow a standardized curriculum with fixed learning goals, which often fail to account for individual students' diverse backgrounds, learning speeds, and interests. Auditing, being a complex and practice-intensive subject, requires personalized learning paths to accommodate different student needs. Traditional OBE lacks the flexibility to adjust to these individual differences, resulting in a one-size-fits-all approach that may not be effective for all students.

2) Limited Practical and Interactive Learning

OBE in auditing education often lacks practical and interactive learning opportunities. Auditing is a hands-on profession, requiring critical thinking, problem-solving, and real-world application of knowledge. Traditional OBE methods, however, may not provide enough opportunities for students to engage in simulations, case studies, or real-world tasks, leaving them unprepared for the practical challenges they will face in the workplace.

3) Slow Content Updates and Limited Cross-Disciplinary Integration

The auditing field is rapidly evolving, with new technologies (like AI, data analytics, and blockchain) and regulations emerging continuously. Traditional OBE curricula often struggle to keep pace with these changes, leading to outdated content that doesn't reflect the latest industry practices. Additionally, traditional OBE tends to focus heavily on core auditing and accounting skills, neglecting the integration of interdisciplinary knowledge such as information technology, law, and data science, which are increasingly essential in modern auditing practice.

The rapid evolution of Generative Artificial Intelligence (AI) is reshaping educational practices. By enabling the creation of personalized learning materials, AI

enhances classroom instruction, assessments, and feedback, offering a more tailored and flexible teaching approach based on data-driven insights (Liu & He, 2021). This integration not only improves instructional efficacy but also introduces novel pedagogical strategies, facilitating a reimagined educational paradigm (Zamir et al., 2022). For example, the "Shenyuan" large model represents a cutting-edge advancement in AI technology within auditing education. It has been developed by leveraging an extensive corpus of auditing knowledge graphs, in conjunction with specialized data processing and AI training methodologies, to generate highly accurate and domain-specific auditing insights. The model encompasses four primary application areas: intelligent question answering, code assistance, case recommendations, and report generation, thereby fostering a more efficient, accurate, and professional approach to auditing education and practice.

This study explores the integration of Generative AI into auditing course reforms to enhance student-centered learning and optimize learning outcomes within the OBE framework. It investigates how AI can transform traditional auditing education by fostering personalized learning, promoting interactive engagement, and establishing dynamic feedback mechanisms. By tailoring learning pathways to individual needs, AI not only supports personalized instruction but also empowers instructors to adjust course content in real-time, ensuring the attainment of predefined learning outcomes.

The study aims to identify effective strategies for improving teaching quality and student performance in auditing courses within the OBE context. It offers a theoretical foundation for reimagining auditing education and explores the broader application of Generative AI across academic disciplines. The findings contribute to the development of innovative pedagogical models and provide insights for advancing future educational reforms in auditing and beyond.

## 2. Literature Review

**1) Evolution and Reform of the Student-Centered Teaching Paradigm**

In 1991, American scholar William Spady introduced Outcome-Based Education (OBE), an educational philosophy that emphasizes the alignment of teaching practices with student learning outcomes. Central to this approach is the "student-centered" paradigm (Yasmin & Yasmeen, 2021), the "backward design" methodology (Liao, 2022), and a focus on "flexibility" (Xu et al., 2021). OBE has been widely recognized for its efficacy in shaping instructional methods, curriculum design, learning objectives, and professional development (Zhang, 2023). Particularly in disciplines like medicine (Huang et al., 2023; Feng et al., 2023) and English (Jin, 2021), its application has led to enhanced learning diversity (Wang, 2023). By integrating a range of teaching strategies and adapting materials to specific fields, OBE enriches the educational experience, aligning it with the varied needs of contemporary students.

From a curriculum design standpoint, OBE prioritizes problem-solving skills,

necessitating a curriculum structure with clear objectives, relevant content, appropriate pedagogical methods, and comprehensive assessments. This modular framework not only enhances both cognitive and non-cognitive skills but also improves students' employability within their professional domains (Lou & Ouyang, 2021). OBE ensures that learning objectives are precisely defined and aligned with market demands (Wang, 2023), guaranteeing that classroom instruction remains both practical and career-focused. Furthermore, OBE contributes to the professional development of educators (Zhang, 2023), strengthening their teaching efficacy and laying the groundwork for sustained improvement in educational quality.

**2) Reform and Innovation of Auditing Education in the Age of Artificial Intelligence**

The rise of Artificial Intelligence (AI) has spurred a rethinking of auditing education models. Dai and Nie (2023) introduced the "Micro Era" Jasper series teaching model, emphasizing that qualified auditors must possess not only robust professional knowledge but also the ability to leverage technologies such as mobile internet and cloud computing to add value to businesses. Building on this foundation, Wu and Xue (2022) implemented a blended learning model using the Cloud Classroom mobile app, combining "learning-centered" and "teaching-centered" approaches to foster greater student engagement and facilitate teacher-student interactions. This innovation offers valuable insights for the ongoing reform of auditing education.

Moreover, Mallikarjuna et al. (2021) proposed strategies to enhance the auditing education system, including the development of secondary learning environments, creation of specialized learning platforms, and the establishment of experimental settings and mechanisms for knowledge correction—all aimed at elevating teaching quality. Liu and He (2021) demonstrated that the use of online platforms, coupled with backup systems, effectively stimulated student interaction and participation.

In summary, the AI revolution is driving significant changes in auditing education. Through the continuous integration of technological innovations and the adaptation of pedagogical models, educators are better equipped to cultivate students' competencies and professional expertise. However, research on the fusion of AI technology and OBE in auditing education is still in its early stages, indicating a need for further exploration and practical application.

## 3. The Practice of AI in Auditing Course under the Obe Method

Under the Outcome-Based Education (OBE) framework, the design of auditing courses is centered around six interrelated components (see **Figure 1**). The first component, Social Requirements of the Audit Profession (OBR), focuses on identifying and integrating the specific needs of the auditing industry into the course structure. The second component, Cultivation Objective Design (OBO), defines

the core competencies that auditing professionals must acquire in response to societal demands. This is followed by Course Objectives and Teaching Content Design (OBC), ensuring that the curriculum is aligned with the intended talent development goals. Teaching Method Design (OBLT) emphasizes the implementation of varied instructional strategies to optimize student learning outcomes. Teaching Effectiveness Assessment (OBA) evaluates whether students have achieved the desired competencies, while Feedback and Continuous Improvement (OBI) introduces a mechanism for ongoing refinement of course content and teaching methods. These six elements together constitute a robust, outcome-driven framework for auditing course design. The subsequent sections will explore how Artificial Intelligence (AI) can be applied within each of these areas to enhance the educational experience.

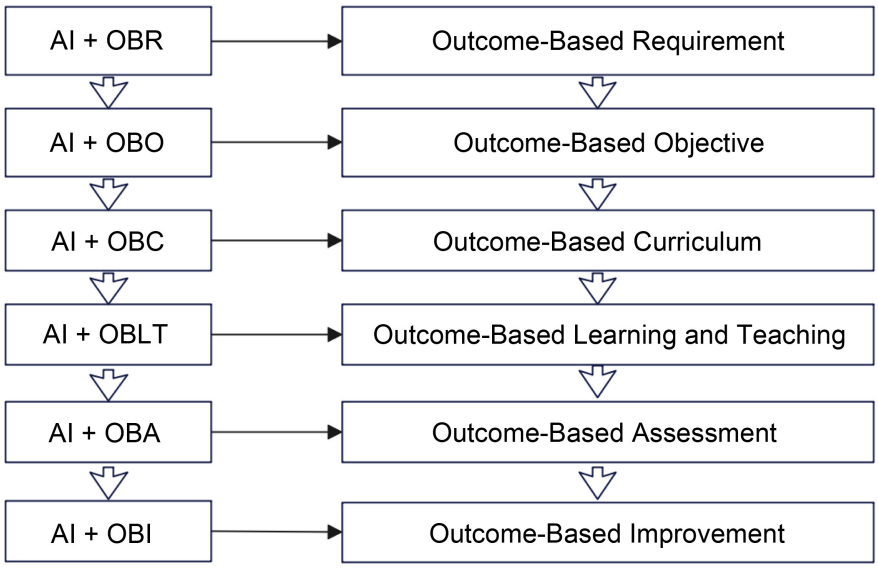


**Figure 1.** AI + OBE teaching model.

**1) The Application of AI in Analyzing Societal Demands for Auditing Professionals (OBR)**

Artificial Intelligence (AI) plays a pivotal role in analyzing societal demands for auditing professionals by processing large-scale data from diverse sources, such as job portals, industry reports, and policy documents. Leveraging Natural Language Processing (NLP) and advanced text analysis techniques, AI effectively extracts critical insights into the specific competencies, professional skills, and sectoral expertise required by employers. By identifying emerging trends and real-time shifts in industry standards and regulations, AI ensures that the analysis remains both relevant and forward-looking. This data-driven approach provides educational institutions with a solid, evidence-based foundation for aligning auditing curricula with evolving market needs. Through this alignment, the curriculum can be continuously refined to meet both current and anticipated industry demands, thereby enhancing the quality of audit education. Table 1 summarizes the

traditional and emerging talent requirements identified through AI[1], offering actionable guidance for curriculum development and shaping the future of auditing education in accordance with Outcome-Based Education (OBE) principles.

Table 1. Social requirements for auditing positions.

| Requirement Classification | Category | Source of Information |
|---|---|---|
| Traditional Requirement | External Auditors | Recruitment pages of the Big Four accounting firms; *Global Audit Services Market Trends* (2023 edition) |
| | Internal Auditors | Internal Audit Practices White Paper; Recruitment announcements from multinational companies (e.g., Huawei, Alibaba) |
| | Information Systems Auditors | 2023 Information Systems Audit Market Demand Analysis; Big Four Accounting firms' information systems audit job demand |
| | Risk Management and Compliance Auditors | *Risk and Compliance Audit Report for the Financial Industry*; Government regulatory policy documents, such as the China Banking and Insurance Regulatory Commission's Compliance Audit Guidelines |
| New Requirement | Globalization and Compliance Auditing Demands for Multinational Corporations | "Audit Demand and Global Compliance Requirements for Multinational Corporations" (OECD, 2023) |
| | Digital Transformation Driving Technology Audit Demand | "Global Digital Transformation Audit Demand Report" "2023 China Information Security Audit Report" |
| | Increasing Complexity of Policies and Regulations | Government policy documents, such as "Enterprise Accounting Standards," "Enterprise Internal Control Standards"; "Global Compliance Audit Demand Analysis Report" (2022 Edition) |
| | Artificial Intelligence and Audit Automation | "Application and Impact Analysis of AI in the Audit Industry" (2023) Research Report on Audit Automation by the Big Four Accounting Firms |
| | Environmental, Social, and Governance (ESG) Auditing | "ESG Audit and Future Demand Report" (2023) Corporate Sustainability Policies Issued by the United Nations Global Compact |

**2) The Application of AI in Setting Development Objectives for Undergraduate Auditing Students (OBO)**

Building on the societal demand for auditing professionals as outlined in Table 1, this study leverages Artificial Intelligence (AI), particularly Natural Language Processing (NLP) and large-scale models, to integrate these societal needs into the development objectives for undergraduate auditing programs. As shown in Table 2, a comprehensive framework of eight development objectives is proposed, each aligned with specific societal requirements and detailing the corresponding

[1]In the process of auditing curriculum reform, Kimi is utilized as the AI tool.

competencies. This AI-driven approach ensures that the auditing curriculum is closely aligned with industry needs while providing students with a structured learning trajectory. By fostering the acquisition of critical skills, this methodology enhances the relevance and effectiveness of auditing education, equipping students with the competencies required for success in modern auditing practice.

Table 2. Auditing students' development objectives and relevant skills under AI integration.

| No. | Objective | Social Requirement | Relevant Skills |
|---|---|---|---|
| 1 | Solid Financial and Accounting Knowledge | External Auditors, Internal Auditors require proficient financial analysis and accounting skills | Financial statement analysis, International Financial Reporting Standards (IFRS), Chinese Accounting Standards (CAS) |
| 2 | Information Systems and Technology Audit Ability | Information Systems Auditors and technology audit demands driven by digital transformation | ERP system auditing, cybersecurity auditing, information systems control assessment, auditing software usage |
| 3 | Risk Management and Compliance Auditing Ability | Demand for Risk Management and Compliance Auditors, and the increasing complexity of policies and regulations | Risk assessment, internal control auditing, knowledge of compliance regulations |
| 4 | Artificial Intelligence and Audit Automation Ability | Demand for Artificial Intelligence and audit automation | AI in auditing, data analysis tools (e.g., Python, R), automated audit platforms |
| 5 | Global and Multinational Auditing Ability | Globalization and compliance auditing demands for multinational corporations | International Financial Reporting Standards (IFRS), multilingual skills, cross-border tax compliance auditing |
| 6 | Environmental, Social, and Governance (ESG) Auditing Ability | ESG auditing demand, especially with increasing focus on sustainability and corporate social responsibility | ESG assessment, environmental regulations and social responsibility auditing, corporate governance structure analysis |
| 7 | Integrated Critical Thinking and Communication Skills | All auditing positions, particularly in internal auditing and risk management, where communication and analysis are crucial | Critical thinking, problem-solving, written and oral communication skills |
| 8 | Critical thinking, problem-solving, written and oral communication skills | Demand driven by technological changes and increasing regulatory complexity in the audit industry | Ability to learn new technologies, adaptability to new policies and regulations |

**3) Practical Application of AI in Auditing Course Objectives and Content Design (OBC)**

This course adopts the Outcome-Based Education (OBE) framework, integrating Artificial Intelligence (AI) technology to design a comprehensive pedagogical model encompassing knowledge, skills, and values objectives. The design ensures students acquire a robust theoretical foundation, develop essential practical competencies, and uphold professional ethics within auditing.

The knowledge objectives emphasize a deep understanding of fundamental

auditing principles, methodologies, and standards, establishing a strong theoretical base. The skills objectives aim to cultivate students' problem-solving capabilities and technical proficiency in applying auditing techniques to real-world challenges. The values objectives focus on nurturing professional ethics, legal awareness, and social responsibility, fostering graduates who contribute to society with integrity and accountability. This integrated approach ensures the balanced development of theoretical knowledge, practical skills, and ethical values, preparing students for the evolving demands of the auditing profession (Table 3).

Table 3. AI + OBE-Based auditing course content.

| Objective | Content |
|---|---|
| Knowledge Objectives | Basic Auditing Theoretical Knowledge<br>• Be able to correctly implement auditing procedures based on the business cycle process. Apply core auditing principles to analyze and interpret audit reports and financial statements.<br>• Accurately prepare working papers following established auditing standards.<br>• Implement auditing procedures to gather, organize, and evaluate audit evidence.<br>• Execute audit processes in alignment with business cycles and industry practices. |
| Skills Objectives | Practical Work Skills for Auditing Positions<br>• Mastering information technology auditing skills, assessing the security, integrity, and compliance of enterprise systems, and utilizing data analytics for large-scale audits.<br>• Effectively evaluating and managing business risks.<br>• Integrating AI and automation tools into modern auditing practices.<br>• Developing strong communication skills for effective engagement. |
| Values Objectives | Familiarity with Legal Standards and Professional Ethics, Legal Awareness, and Social Responsibility in Auditing<br>• Understand and apply legal standards in auditing practices while cultivating professional ethics, legal awareness, and a sense of social responsibility.<br>• Use critical thinking to analyze complex auditing scenarios, make informed decisions, and address challenges with sound judgment. |

In terms of knowledge acquisition, students could:

- Apply core auditing principles to analyze and interpret audit reports and financial statements.
- Accurately prepare working papers following established auditing standards.
- Implement auditing procedures to gather, organize, and evaluate audit evidence.
- Execute audit processes in alignment with business cycles and industry practices.

The skills objectives aim to strengthen students' practical and problem-solving abilities, including:

- Mastering information technology auditing skills, assessing the security, integrity, and compliance of enterprise systems, and utilizing data analytics for large-scale audits.

- Effectively evaluating and managing business risks.
- Integrating AI and automation tools into modern auditing practices.
- Developing strong communication skills for effective engagement.

At the values level, students could:

- Understand and apply legal standards in auditing practices while cultivating professional ethics, legal awareness, and a sense of social responsibility.
- Use critical thinking to analyze complex auditing scenarios, make informed decisions, and address challenges with sound judgment.

**4) Application of AI in the Design of Teaching and Learning Methods (OBLT)**

Outcome-Based Learning and Teaching (OBLT) emphasizes achieving specific student learning outcomes through the establishment of clear objectives, the design of targeted instructional activities, and the provision of ongoing feedback and assessments based on student performance. Within this framework, the integration of generative AI technology provides innovative support for the design of teaching methods, enhancing personalized learning experiences, enabling real-time feedback, and optimizing overall teaching effectiveness. The application of generative AI in teaching spans three key stages: pre-class preparation, in-class interaction, and post-class feedback, each contributing to the continuous refinement of instructional strategies and the achievement of learning outcomes.

## 3.1. Pre-Class Phase

Pre-Class Review and Interactive Testing. Artificial Intelligence (AI) can generate diverse question formats—such as multiple-choice, true/false, fill-in-the-blank, and open-ended questions—to facilitate pre-class review assessments. Following the assessments, AI provides timely, targeted feedback based on student responses, offering detailed explanations and personalized learning recommendations. For open-ended questions, generative AI also delivers tailored suggestions to help students refine their understanding of core concepts, fostering deeper engagement with the material.

Virtual Assistant for Q&A Support. During the review phase, students can interact with AI-driven virtual assistants to address questions. Through natural language processing (NLP), the AI comprehends inquiries and provides immediate, contextually relevant answers, while also suggesting supplementary learning resources. Moreover, the assistant adapts to individual student needs by generating personalized learning pathways and adjusting review content based on prior interactions, ensuring alignment with the desired learning outcomes.

AI Teacher Assistant for Course Preparation. Generative AI can serve as an effective teaching assistant, aiding instructors in preparing course materials such as lecture slides, syllabi, and case analyses. By leveraging AI, educators can efficiently create and modify teaching content, enhancing course flexibility and enriching the learning experience, thereby supporting the achievement of specific student outcomes in auditing education.

### 3.2. In-Class Phase

Dynamic Case and Scenario Generation. In auditing courses, Artificial Intelligence (AI) can generate complex financial audit cases that challenge students to critically analyze financial statements, identify discrepancies, and develop appropriate solutions. This dynamic approach aligns with Outcome-Based Education (OBE) by fostering critical thinking, problem-solving, and practical application, ensuring students meet specified learning outcomes. Through the use of AI-driven scenarios, the learning process becomes more interactive and personalized, enhancing the students' ability to tackle real-world auditing challenges effectively.

### 3.3. Post-Class Phase

Automated Assignment Grading and Feedback. Artificial Intelligence (AI) facilitates real-time grading of assignments and quizzes, delivering immediate scores and feedback. By offering targeted, constructive responses, AI helps students identify the root causes of their errors and provides personalized guidance, thereby enhancing their learning strategies in alignment with Outcome-Based Education (OBE) principles.

**5) Application of AI in Outcome-Based Assessment (OBA)**

Outcome-Based Assessment (OBA) centers on the evaluation of student learning outcomes through well-defined, measurable objectives, while providing constructive feedback to inform continuous pedagogical improvements. The integration of generative Artificial Intelligence (AI) into OBA enhances both the effectiveness and personalization of the assessment process, making it more efficient and data-driven.

To ensure fairness in AI-driven assessments, three key measures must be prioritized. First, AI systems should be trained on diverse, representative datasets with transparent algorithms to minimize bias. Second, human oversight is crucial, with instructors regularly reviewing AI-generated assessments and an appeals process for students to challenge perceived unfair outcomes. Finally, continuous monitoring through audits, bias detection, and feedback loops helps maintain the system's fairness and alignment with educational objectives over time.

The auditing course adopts a comprehensive, multi-faceted assessment strategy with a clearly structured weight distribution (see **Table 4**). This includes:

- Class Performance (10%): Evaluates student engagement, collaboration, and participation during class discussions.
- Class Tests (10%): Assesses students' immediate grasp of course concepts and their retention of material.
- Homework (10%): Supports knowledge reinforcement and provides opportunities for iterative feedback.
- Course Reports (10%): Measures the integration of theoretical knowledge with practical auditing skills.
- Final Exam (60%): Serves as the principal assessment, evaluating the students' deep understanding of auditing theories, principles, and their practical

application in real-world scenarios.

Aligned with the course's overarching goals, the assessment structure dedicates 70% to knowledge, 20% to skills, and 10% to values. Within this framework, generative AI plays a key role in optimizing the accuracy and efficiency of assessments. It facilitates the automation of exam question generation, streamlines assignment grading, and provides real-time, targeted feedback.

Automated Exam and Test Question Generation. AI assists in generating diverse question types for various assessments, including assignments, homework, and final exams. Performance is automatically evaluated, with detailed explanations provided for incorrect responses.

Automated Assignment Grading and Feedback. Using generative AI, instructors can efficiently grade multiple question formats, including subjective responses, multiple-choice, and fill-in-the-blank questions. By leveraging Natural Language Processing (NLP), AI analyzes open-ended responses, offering semantic insights and in-depth feedback, ensuring a comprehensive understanding of student performance.

**Table 4.** AI-Enhanced Outcome-Based Education (OBE) assessment for auditing courses.

| No. | Course Objectives | Evaluation Criteria and Grade Distribution (%) | | | | | Grade Distribution (%) |
|---|---|---|---|---|---|---|---|
| | | Class Performance 10% | Test 10% | Homework 10% | Course Report 10% | Final Exam 60% | |
| 1 | Knowledge Objectives | 5% | 5% | 5% | 5% | 50% | 70% |
| 2 | Skills Objectives | | | 5% | 5% | 10% | 20% |
| 3 | Value Objectives | 5% | 5% | | | | 10% |
| | In total | 10% | 10% | 10% | 10% | 60% | **100%** |

This study examines the implementation of an AI-integrated Outcome-Based Education (AI + OBE) model in auditing courses and compares its impact on student performance with that of the traditional OBE model. A comparative analysis was conducted between the academic performance of undergraduate auditing students in the 2022 and 2023 academic years. In 2022, the traditional OBE model was applied, while the AI + OBE model was adopted in 2023. The 2022 cohort consisted of 52 students, while 65 students participated in the 2023 cohort. Under the AI + OBE model, the average score of the 65 students was 84.43, with 46.2% of students achieving scores exceeding 85. In contrast, the traditional OBE approach resulted in an average score of 72.14 for the 52 students, with only 3.8% exceeding the 85-point threshold. These results underscore the AI + OBE model's significant positive influence on student performance, particularly in increasing the proportion of high-achieving students. This finding highlights the efficacy of

the AI + OBE model in enhancing learning outcomes and promoting academic excellence (Table 5).

Table 5. Impact of the AI + OBE teaching model on student performance.

| Model | Number of Students | Average Score | Percentage of Students Scoring Above 85 |
|---|---|---|---|
| AI + OBE | 65 | 84.43 | 46.2% |
| Traditional OBE | 52 | 72.14 | 3.8% |

**6) The Role of AI in Feedback and Continuous Improvement Practices within Outcome-Based Instruction (OBI)**

Outcome-Based Instruction (OBI) is a central framework in instructional design, emphasizing the continuous integration of feedback throughout the learning cycle to enhance teaching methods, course content, and educational resources, ultimately improving student learning outcomes. In this context, Generative Artificial Intelligence (AI) serves a pivotal role. By providing real-time, personalized feedback, AI not only offers valuable insights for instructors to refine their teaching strategies but also customizes learning pathways for students, fostering mutual progress in both learning and teaching. This section delves into AI's application in feedback and continuous improvement practices.

Personalized Learning Feedback Mechanisms. AI significantly improves student learning outcomes through personalized feedback systems. Immediate feedback mechanisms enable the rapid generation of tailored responses based on students' assignments, quizzes, or in-class performance. This personalized feedback guides students in error correction and enhances learning efficiency. Additionally, AI creates individualized improvement plans by analyzing students' error types, learning progression, and knowledge comprehension. It provides relevant practice problems, supplementary resources, and video tutorials to help students deepen their understanding and master content comprehensively. This continuous development approach supports students in accumulating knowledge throughout their learning journey.

Timely Feedback on Knowledge Gaps. AI further aids instructors by identifying knowledge gaps and refining teaching strategies. By analyzing student performance on assignments, quizzes, and exams, AI generates detailed reports on instructional effectiveness, enabling educators to target areas for improvement. For example, when AI identifies that a majority of students are struggling with a particular concept, it may suggest revisiting the topic or offering additional resources. Additionally, AI's real-time analysis of student learning data provides immediate instructional suggestions, such as adjusting teaching strategies or incorporating interactive activities to address low engagement or understanding. This data-driven feedback mechanism ensures that instruction aligns with student needs, thus enhancing the overall quality of education.

## 4. Conclusion and Recommendations

This study examines the integration of Artificial Intelligence (AI) within the framework of Outcome-Based Education (OBE) in auditing education. It focuses on the role of generative AI across key stages, including social demand analysis, development objective design, curriculum and content development, teaching and learning methodology, learning outcome assessment, and continuous feedback for improvement. The findings are summarized as follows:

AI-Driven Social Demand Analysis for Auditing Students. AI enhances the precision and efficiency of capturing the demand for auditing talent through natural language processing (NLP) and data analytics. By extracting key industry-relevant skills, knowledge, and competencies, AI provides universities with data-driven insights to design curricula that align with market needs. AI's ability to track real-time shifts in societal demands allows institutions to dynamically adjust course content, thereby improving the employability of auditing graduates.

AI-Assisted Formulation of Curriculum Objectives. Drawing on AI's analysis of social demands, the development goals for auditing students must encompass a wide range of competencies, including foundational financial and accounting knowledge, information technology, risk management, compliance auditing, global auditing, and ESG auditing. AI enables educators to translate these demands into clear, actionable training goals, facilitating the design of targeted course content and skill-building activities that ensure students develop both practical expertise and critical thinking capabilities.

AI-Enhanced Teaching and Learning Effectiveness. Within the OBE framework, AI optimizes auditing course design across knowledge, skills, and values. It assists instructors in developing tailored course materials and dynamically adapting content to meet individual learning needs. AI's integration has notably improved both theoretical instruction and practical skill development, particularly in complex areas such as information systems auditing, risk management, automated auditing, and cross-border auditing. By generating virtual cases and simulations, AI fosters the development of students' operational skills and real-world experience.

AI-Improved Assessment Efficiency and Accuracy. AI streamlines assessment processes by automating exam question generation, real-time grading, and offering multi-dimensional evaluations of learning outcomes. This technology provides educators and students with detailed data analysis and actionable feedback, supporting continuous improvement. Furthermore, AI assesses classroom participation, homework performance, and exam results, offering personalized recommendations for improvement and reinforcing a culture of ongoing feedback and adaptation.

AI-Driven Feedback and Continuous Improvement in Auditing Education. AI tracks students' learning progress, generates personalized feedback, and supports instructors in adjusting teaching strategies based on these insights. In real time, AI analyzes student data during class, offering immediate recommendations to

optimize instructional content and teaching methods, thus ensuring alignment with students' learning goals.

To further enhance auditing education, higher education institutions should expand the application of AI, ensuring that course content is continuously aligned with societal needs. The development of personalized learning pathways should be accelerated, with AI tracking students' progress and offering individualized suggestions to facilitate adaptive learning. Additionally, educators must receive training in AI technologies to improve their ability to integrate these tools effectively. Establishing a robust AI-driven assessment mechanism will enable multi-faceted feedback, helping both students and instructors to refine their learning and teaching processes. The widespread adoption of the AI + OBE model is essential for improving both academic performance and practical skills, thereby preparing students for the evolving demands of the auditing profession.

The AI + OBE model holds significant scalability potential across diverse educational contexts, especially in data-driven fields such as STEM, business, and healthcare, where clear learning outcomes are defined. AI's ability to personalize learning, offer real-time feedback, and track student progress aligns seamlessly with the principles of Outcome-Based Education.

However, it is important to recognize that the use of AI in the teaching process also raises areas that require careful attention. AI can be misleading and prone to errors. This underscores the need, on one hand, to enhance the training of AI, and on the other, to avoid full reliance on AI, instead placing greater emphasis on verifying the authenticity of the information it provides.

## Supporting Projects

Key Projects of Educational Teaching Reform and Research of Beijing Institute of Petrochemical Technology: Research on the reform of "General Accounting" Course under the New Engineering Education Background Based on OBE Concept (ZDFSGG202104003).

Key Project of Education Reform of Beijing Institute of Petrochemical Technology: Student-centered curriculum development for the "Financial Consumer Education Program" (ZDFSGG202104001).

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

## References

Ag Damit, M. A., Omar, M. K., & Mohd Puad, M. H. (2021). Issues and Challenges of Outcome-Based Education (OBE) Implementation among Malaysian Vocational College Teachers. *International Journal of Academic Research in Business and Social Sciences, 11,* 197-211. https://doi.org/10.6007/ijarbss/v11-i3/8624

Dai, C., & Nie, X. (2023). Research on Teaching Reform of Audit Practice and Cases Based on OBE Concept under the Background of "Internet Plus". *International Journal of Social Sciences and Public Administration, 1,* 16-22. https://doi.org/10.62051/ijsspa.v1n1.03

Feng, L., Liang, R., Xu, Y., & Deng, J. (2023). Reform and Innovation of Teaching Mode of Prosthodontics Guided by OBE Concept. *International Journal of Education and Humanities, 6,* 1-4. https://doi.org/10.54097/ijeh.v6i1.2937

Huang, Y., Guo, H., & Li, Y. (2023). Study on the Construction and Practice of Blended Teaching Mode of Emergency First Aid Specialty Based on OBE Concept. *Medicine, 102,* e34252. https://doi.org/10.1097/md.0000000000034252

Jin, F. (2021). Exploring the Blended Teaching Mode under the Guidance of OBE Theory—Taking the Course of English Newspaper Reading I in Zhejiang Yuexiu University as an Example. *Open Journal of Modern Linguistics, 11,* 511-519. https://doi.org/10.4236/ojml.2021.114038

Kaliannan, M., & Chandran, S. D. (2012). Empowering Students through Outcome-Based Education (OBE). *Research in Education, 87,* 50-63. https://doi.org/10.7227/rie.87.1.4

Liao, H. (2022). Research on Teaching Reform of Business Majors in Chinese Higher Vocational Colleges—Based on the Concept of OBE. *Journal of Advanced Research in Education, 1,* 22-30. https://doi.org/10.56397/jare.2022.12.02

Liu, S., & He, X. (2021). Research on Talent Training Mode of "Big Data+Intelligent Accounting" Based on OBE. *Curriculum and Teaching, 4,* 70-77.

Lou, J. B., & Ouyang, Q. (2021). Exploration of Extracurricular Practice Teaching Mode of Mechanical Innovative Design Based on OBE Concept. *Advances in Educational Technology and Psychology, 5,* 106-114.

Mallikarjuna, B., Sabharwal, M., Kumar, P., & M, N. (2021). OBE: Perception of Computer Science Learners and Teachers in Online Learning during Covid-19. *EAI Endorsed Transactions on Creative Technologies, 8,* Article 172105. https://doi.org/10.4108/eai.12-11-2021.172105

Wang, Q. (2023). Discussion on Mixed Teaching Mode of Foundation of Mechanical Control Engineering under OBE Concept. *Advances in Education, Humanities and Social Science Research, 8,* 17-20. https://doi.org/10.56028/aehssr.8.1.17.2023

Wu, Y., & Xue, Y. (2022). A Study on the Construction of Open Curriculum for International Students Based on OBE Concept. *Open Access Library, 9,* 1-11. https://doi.org/10.4236/oalib.1108853

Xu, G., Shi, L., Xiao, P., & Zhang, Z. (2021). Exploration of E-Commerce Talents Training Mode Based on CDIO-OBE Concept. *European Journal of Education and Pedagogy, 2,* 20-24. https://doi.org/10.24018/ejedu.2021.2.4.156

Yasmin, M., & Yasmeen, A. (2021). Viability of Outcome-Based Education in Teaching English as Second Language to Chemical Engineering Learners. *Education for Chemical Engineers, 36,* 100-106. https://doi.org/10.1016/j.ece.2021.04.005

Zamir, M. Z., Abid, M. I., Fazal, M. R., Qazi, M. A. A. R., & Kamran, M. (2022). Switching to Outcome-Based Education (OBE) System, a Paradigm Shift in Engineering Education. *IEEE Transactions on Education, 65,* 695-702. https://doi.org/10.1109/te.2022.3169184

Zhang, H. (2023). Construction of Application-Oriented Practical Teaching System in Private Undergraduate Colleges Based on OBE Concept. *International Journal of Education and Humanities, 8,* 213-219. https://doi.org/10.54097/ijeh.v8i3.8729