

A Study on Teaching Reform of the "Auditing" Course for Applied Undergraduate Accounting Programs Based on CDIO Principles

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Abstract

Auditing is a core course for applied undergraduate majors such as accounting and financial management, which combines theoretical abstraction with practical application. With the continuous promotion of digital and intelligent transformation in the industry, the teaching methods of traditional audit courses have exposed obvious shortcomings in the cultivation goals of applied talents, especially in terms of course content, teaching mode, practical training, and assessment mechanism, which urgently need to be improved. This article starts from the perspective of single course education reform, introduces the CDIO engineering education framework, and constructs a project driven audit simulation course. The four stages logic of "conception → design → implementation → operation" is integrated into the entire process of audit business, and specific reform paths are proposed, including restructuring the teaching system, innovating teaching models, strengthening practical training systems, and optimizing assessment mechanisms. The aim is to bridge the gap between theory and practice, effectively enhance students' professional judgment and business execution ability.

Keywords

Auditing; CDIO; Finance and accounting major; reform in education; practical personnel.

1. Introduction

The course of "Auditing" is a bridge course that connects financial accounting theory and auditing practice, and its teaching quality directly affects the cultivation of financial and accounting professionals. With the continuous advancement of digital technology, intelligent auditing and big data auditing are gradually becoming industry trends. The demand for accounting professionals in enterprises is also increasing, expanding from basic accounting skills to risk identification, data analysis, project implementation, and other aspects. However, some universities still use the traditional "lecture based plus post class exercises" model in audit classrooms, resulting in a disconnect between knowledge transmission and talent cultivation. In addition, although students have a theoretical understanding of audit standards, they often find it difficult to effectively apply them in practical projects and face many challenges.

CDIO is a competency based on education model widely adopted in international engineering education, which uses the entire curriculum system as a learning tool to enable students to actively acquire knowledge and develop comprehensive abilities through the practical process of "Conceptual Design Implement Operate". Audit itself has project attributes, closely aligned with the four stages of CDIO, from business acceptance, plan formulation, program execution to report issuance[1]. This article focuses on the teaching reform of audit courses in finance and accounting majors, analyzes the problems existing in current teaching practices, and proposes specific implementation plans based on the CDIO framework, in order to provide reference for improving the teaching quality of applied undergraduate finance and accounting courses.

2. Existing Teaching Pain Points in The Course of "Auditing" for Applied Undergraduate Finance and Accounting Majors

(1) The teaching content is not updated in a timely manner, and the quality of case teaching is not high

Audit textbooks usually go through a long revision cycle, making it difficult to keep up with the continuous evolution of tax laws, accounting standards, regulatory requirements, and audit methods, resulting in a significant lag between content and industry development trends. The overall quality of case teaching is also relatively low, with most existing cases being simplified textual descriptions that only provide final financial data and fraud conclusions, lacking authentic audit materials such as original documents, business processes, and working papers. The result is that students can only conduct analysis similar to "reading comprehension questions"[2]. In addition, these cases lack timeliness and overly rely on classic fraud cases from the past. The integration of new fraud methods and audit failure cases in the capital market in recent years is not sufficient, resulting in students having outdated knowledge when understanding current practical risk factors.

(2) Unidirectional solidification of teaching mode, lack of student-centered status

Audit standards are complex and conceptually abstract, with a high degree of procedural complexity. At present, teaching is still mainly one-way, with most of the class hours used to explain theoretical definitions, audit methods, and operational processes. Classroom interaction is mainly limited to simple Q&A of basic knowledge, lacking in-depth discussion and inquiry based on learning[3]. Students are in a passive state for a long time, generally believing that the curriculum is boring and difficult to understand, and knowledge is difficult to internalize. When faced with practical open-ended tasks, there is often a lack of analytical framework and judgment ability. Although some universities have attempted to introduce case-based teaching or flipped classrooms, these practices mostly remain superficial. The application of information technology is also relatively limited, and teaching platforms are mainly used for basic functions such as publishing course content and attendance. Audit simulation software is mostly a demonstration tool for pre-set workflows, which only allows students to mechanically complete operations according to steps without the need for active thinking or professional judgment, making it difficult to truly cultivate the logical thinking ability required for auditing.

(3) Weak practical teaching links and insufficient depth of practical experience

The practical teaching of audit courses generally presents fragmented and superficial characteristics. Classroom exercises mainly revolve around the knowledge points of each chapter, focusing on training a single knowledge point, which makes it difficult for students to systematically understand the entire audit process and grasp the logical connections between each stage. The training data used is often simplified, with lower business complexity and simpler risk scenario design. In addition, there is an excessive emphasis on the preparation of working papers in teaching, while the cultivation of abilities such as risk assessment and fraud identification is clearly insufficient, resulting in a significant disconnect from actual audit work. Meanwhile, due to limitations in class hours, insufficient space, and client confidentiality, the training environment is usually limited to on campus training rooms, making it difficult for students to access real audit work. Therefore, they lack experience with the pace of work, communication methods, and collaboration patterns in the actual workplace, and their level of professional competence penetration is weak[4]. At the same time, traditional teaching methods progress linearly according to chapters and fail to integrate interdisciplinary comprehensive projects, resulting in scattered knowledge acquisition for students. They are unable to integrate their knowledge of financial accounting, tax law, and other topics to solve complete audit problems, leading to the phenomenon of "forgetting after learning" and

"abandoning after taking exams". It is difficult to truly establish systematic audit thinking ability and complex problem-solving ability.

(4) The assessment and evaluation methods are single, and the ability orientation is not reflected sufficiently

The course evaluation still mainly adopts the traditional model of "regular homework plus final written test", and the final exam score usually accounts for more than 60% of the total evaluation. The exam questions mainly focus on memorization forms such as multiple-choice questions, true/false questions, and short answer questions. Even for case analysis questions, they are mostly standardized answers, with the focus on whether students can accurately remember audit standards and operating procedures, making it difficult to effectively evaluate high-level abilities such as professional judgment and risk analysis. The evaluation of grades is also relatively rough, and grades are often based on attendance and homework submission. Attendance rate cannot truly reflect students' level of learning engagement, and homework is prone to AI generation and plagiarism. In addition, classroom participation performance evaluation highly relies on teachers' subjective impressions and lacks quantitative basis, making it difficult to accurately diagnose students' learning problems or effectively guide the learning process. At the same time, the evaluation work is completed solely by teachers, and industry practitioners hardly participate in it, resulting in a disconnect between assessment and actual workplace needs[5].

3. The Core Connotation and Curriculum Adaptability of CDIO Teaching Mode

(1) The core connotation of CDIO teaching mode

The CDIO model regards engineering projects as the core carrier of teaching, allowing students to learn professional knowledge and comprehensive abilities in an active, practical, and organically connected way. This pattern consists of four coherent stages:

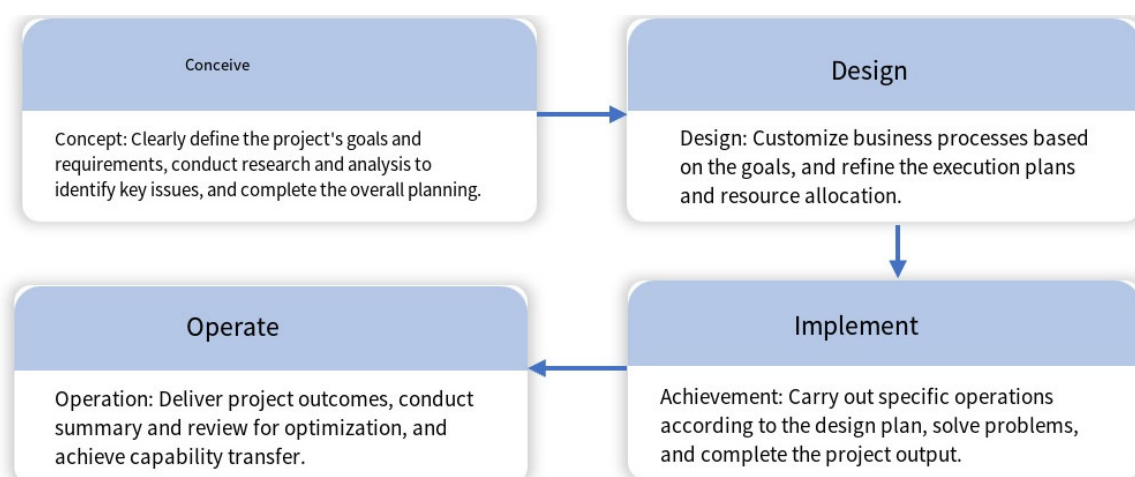


Figure 1. Four-Stage CDIO Model

The CDIO model breaks down the barrier between traditional theory and practice, allowing students to learn by doing, cultivating their professional application ability, problem-solving ability, teamwork ability, and systematic thinking ability, which is highly in line with the goal of cultivating applied talents.

(2) The Adaptability of CDIO Mode to the Course of Auditing

Audit work has a natural project-based nature, and the financial statement audit process corresponds precisely to the four stages of CDIO, as shown in Figure 2:

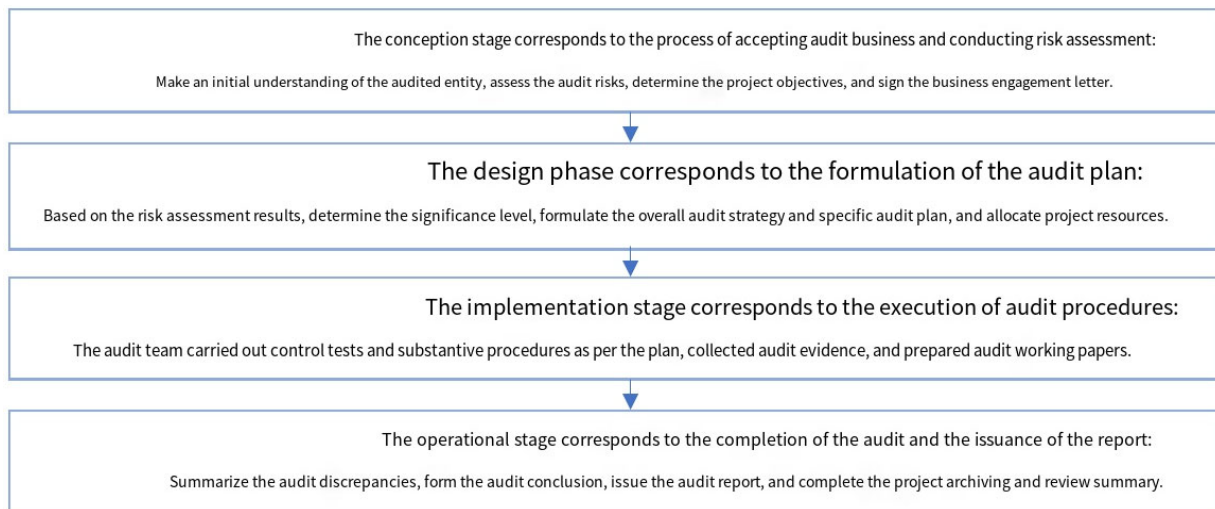


Figure 2. Relationship between the audit workflow and the CDIO model

The course of "Auditing" uses simulated audit projects as a carrier throughout the semester, reconstructs the course objectives and content, breaks down the original chapters and integrates them into the four stages of CIDO, allowing students to personally participate in the entire project process and achieve a deep integration of theory and practice.

4. Implementation Path of Teaching Reform in the Course of Audit Studies Based on CDIO Concept

1. Reshaping the CDIO oriented curriculum content system

Using the audit of "financial statements of medium-sized manufacturing enterprises" as a simulated audit project throughout the entire course, and combining with the CDIO four stages, reshaping the course content system and establishing a framework of "knowledge points & tasks".

(1) Match teaching content with project phase nodes

Taking the 48 hours course of "Auditing" as an example, the four stages of CDIO are matched with teaching content and project tasks one by one. The specific arrangement is shown in the following table:

Table 1. Four Stage Correspondence Table

Serial Number	Four stages	Teaching Content	Project Task
1	Conceptualization phase (8 class hours)	Introduction to Auditing, Standards and Professional Ethics, Preliminary Engagement Activities, Audit Objectives	Complete the task of the project "Business Takeover and Risk Assessment"
2	Design Phase (12 class hours)	Audit plan, materiality, audit approach, audit working papers, risk response	Complete the task for the project "Audit Planning and Procedure Design"
3	Implementation Phase (20 class hours)	Audit of Business Cycles	Complete the task "Execution of Audit Procedures" for the project
4	Operational Phase (8 class hours)	Complete the audit work and audit report	Complete the project task "Finalize Audit and Issue Report"

(2) Establish dynamic content updates

The course teaching team consists of two backbone teachers and two accounting firm mentors, responsible for course construction and teaching tasks, and establishing a "1+3" update mechanism[6]:

First, every academic year, the teaching content is updated according to the latest guidelines, regulations, and industry regulatory requirements, and new digital tools are added to simulate audit projects.

Second, every three years, based on the latest cases of financial fraud and audit failures in the capital market, update the key risk points and major misstatement designs of simulated audit projects, and synchronously improve basic data and supporting materials.

(3) Building a three-level supporting case resource library

First, Micro case studies on knowledge points. Produce 3-5 minutes digital human videos or AI short dramas on core knowledge points for students to learn independently after class and master key audit procedures and methods[6].

Second, Five major cycle cases. Set up phased cases around the sales and receipt cycle, procurement and payment cycle, production and inventory cycle, human resources and payroll cycle, and financing and investment cycle. Students will master the execution of audit procedures and the preparation of working papers by completing control tests and substantive procedures for each cycle.

Third, Comprehensive cases from different industries. Based on the online platform, develop 2-3 comprehensive cases from different industries, covering all aspects of financial statement auditing. Students will complete the audit work of the case company in the form of a project team PK competition, mastering risk assessment, evidence collection, and determining audit opinion types.

2.Promote project driven interactive teaching mode

Breaking the traditional order of "theory first, practice later", adopting a closed-loop classroom process of "self-directed learning → task introduction → practical operation → core lectures → stage review", to achieve a student-centered classroom environment.

(1) Implementation process of teaching units

Taking each business cycle teaching (4 class hours) as an example, the specific implementation process is as follows:

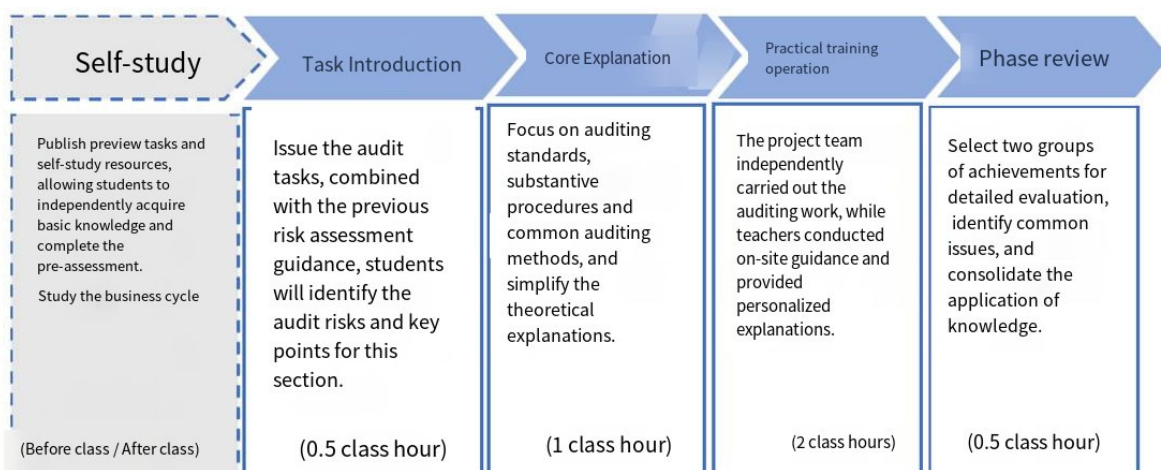


Figure 3. Implementation Process of the Business Cycle Teaching Unit

(2) Application of Generative AI

Clarify the application boundaries and operational norms of AI tools in each stage of CDIO[7], so that students can learn to use AI without relying on AI, and be able to judge false or even erroneous conclusions generated by AI[8].

Table 2. Four Stage AI Application Scenarios

Serial Number	Four stages	Teacher	Student
1	Conceptualization phase	AI generates diverse corporate background and risk materials, enriching training case studies	AI queries industry overviews and risks, independently completes the drafting of risk assessment conclusions
2	Design Phase	AI verifies audit procedures for compliance and enhances the efficiency of solution evaluation.	AI reviews auditing standards to build procedural frameworks, independently determines materiality, and customizes procedures.
3	Implementation Phase	AI-generated simulated business data to expand the volume and complexity of training datasets	AI completes data reconciliation, voucher sampling, anomaly detection, and independently judges evidence selection.
4	Operational Phase	AI aggregates common issues to accelerate course review and summary	AI reviews misstatements, adjusts journal entries, drafts initial report, and the audit opinion is collectively discussed and finalized.

(3) Three stage practical system

Taking CDIO as the core of the project, integrating in class and out of school resources, and building a layered and progressive practical system of "in class training and virtual simulation and out of school immersion", gradually improving students' practical abilities.

First, in class phased project training.

Table 3. In class Training Tasks

Serial number	Four stages	Simulation Tasks	Educational Objectives
1	Concept stage	Prepare preliminary business activity draft	Risk identification and analysis capability
2	design phase	Develop overall audit strategy and specific audit plan	Ability to design schemes and apply guidelines
3	Implementation Phase	Execute audit procedures for each business cycle and prepare audit workpapers	Practical operation and evidence judgment ability
4	Operation phase	Prepare adjustment tables, trial balance sheets, and audit reports	Comprehensive judgment and output capability

In class, students form a project team of five to complete the audit work of a simulated audit project. At the same time, the working papers are subject to a three-level review system (cross review by team members, review by project managers, and review by teachers) to cultivate students' standardized practice habits and quality control awareness.

Second, Campus virtual simulation scene filling.

Introduce audit training resources and complete audit procedures that are difficult to implement in simulated audit projects, such as issuing inquiry letters and inventory monitoring, through a virtual simulation training platform.

Third, Short term practice at off campus training bases.

Establish school enterprise cooperation with three to five reputable accounting firms in the local area and set up off campus practical activities:

I) Mid-term cognitive observation. After completing the learning tasks in the conceptualization and design phase, students are organized to visit an accounting firm for on-site learning, allowing them to experience firsthand the auditing environment and work practices, thereby laying a foundation for subsequent stages.

II) Final on-the-job internship. After the end of the semester, outstanding students will be selected to participate in 4-6 weeks of on-the-job internships at the accounting firm during the winter break, and to join the firm's project team for field audit work, in order to better understand the logic and thinking of risk oriented auditing.

(4) Establish a multi-dimensional assessment and evaluation mechanism throughout the entire process

Breaking the traditional model of setting scores based on test papers, constructing a full process, multi-dimensional evaluation system corresponding to the four stages of CDIO, highlighting ability orientation, and achieving the goal of cultivating applied undergraduate talents.

1.Refactoring the composition of course grades

The overall evaluation score consists of a process assessment (50%) and a final comprehensive assessment (50%). The process assessment strictly corresponds to the four stages of CDIO, with clear deliverables and scoring criteria set for each stage.

Table 4. CDIO Four Stage Process Assessment Details

Serial Number	Four stages	Proportion	Assessment Content
1	Conceptualization phase	10%	Review the risk assessment report and working papers to evaluate the completeness of risk identification and the logical soundness.
2	Design Phase	10%	Evaluate the audit plan and program design table, assessing the relevance of procedures, alignment with standards, and feasibility of the proposed approach.
3	Implementation Phase	25%	Evaluate the working papers and practical procedures to assess operational compliance, adequacy of audit evidence, and reasonableness of professional judgment.
4	Operational Phase	5%	Review audit reports, presentations, and post-project review materials to evaluate the reasonableness, logic, clarity of expression, and team collaboration level.

2. Develop standardized scoring scales

Develop detailed scoring criteria for each assessment node and clarify the evaluation criteria for different levels. Taking audit program design as an example:

Table 5. Evaluation Criteria for Audit Program Design

Serial Number	Level	Score	Evaluation Criteria
1	Excellent	Above 90 points	Comprehensive identification of significant misstatement risks, audit procedures are highly targeted, aligned with auditing standards, cost-effective, and well-organized in documentation format.
2	Good	75–89 points	Covers key risk areas, audit procedures are reasonable and compliant, and documentation format is relatively standardized.
3	Pass	60–74 points	Minor risk points were overlooked, but the program has no substantial errors and overall complies with the framework guidelines.
4	Unqualified	Below 60 points	Key risks missing, procedures violate auditing standards, overall logic disorganized

3. Introduce multiple evaluation subjects

Establish a diversified evaluation mechanism of "teacher evaluation and group peer evaluation and agency mentor evaluation", where teachers mainly evaluate students' mastery and application of theoretical knowledge in class, accounting for 60% of the total; Evaluate the completion status of tasks at each stage within the group and eliminate the phenomenon of "free riding" within the group, accounting for 10% of the total; The supervisor of the accounting firm evaluates the overall completion status of the simulated audit project and the organization and archiving of files, accounting for 30%. Multiple evaluation subjects can examine what students have learned from multiple perspectives.

5. Guarantee Measures for Reform

(1) Establish a multi-level curriculum construction team

Establish a teaching reform team for the course of "Auditing", with the participation of the vice dean of teaching, department head, and members of the teaching team. From the reconstruction of the curriculum system, the construction of teaching resources, the establishment and implementation of assessment standards to the appointment of dedicated personnel, a special teaching and research activity will be held every two weeks to report progress, provide feedback on issues, and promptly resolve them.

(2) Implement support for curriculum resource construction

The secondary college sets up corresponding funds for courses, which are used for the production of short videos on knowledge points, the development of digital human clients, and the construction of online platforms[9]. At the same time, the computer department of the engineering college leverages the strength of teachers to solve technical problems in the development process[10].

(3) Establish a quality closed-loop feedback mechanism

During the mid-term of the course, organize the class committee to collect students' difficulties in learning and suggestions for course implementation. For common problems, adjust and solve them in a timely manner in the later stages of the course; For personality issues, use after-school time to overcome them one-on-one. After the course is over, distribute student survey questionnaires, organize discussions among students in different score ranges, and collect feedback from students on teaching reform. Regularly visit accounting firms and industry associations every year to listen to feedback from the firms on interns and evaluations from industry experts on teaching content and student abilities, form a teaching quality report, and adjust the teaching content and implementation plan for the new semester based on the feedback collected, forming a closed-loop mechanism of "implementation → feedback → optimization".

6. Comparison of Preliminary Results of Reform Implementation

To verify the practical application effect of CDIO teaching mode, this study takes the accounting major of the college as a sample, selects 129 students from the 2022 class who have not implemented the reform and use traditional lecture teaching method, and compares them with the first batch of 2023 students who have implemented CDIO mode reform (150 people). The quality of student sources, pre course foundation, total class hours, textbook versions, and final assessment difficulty of the two grades are basically the same, with strong comparability. The comparison of core scores and ability indicators between the two classes is shown in the following table:

Table 6. Comparison of Student Grades and Ability Indicators before and after the Reform of the Auditing Course

Evaluation Dimensions	Specific indicators	Before the reform	After the reform	Improvement level
Academic Performance Dimension	Final exam average score	65.3	72.8	7.5 points
	Average score of process-based assessment	83.1	91.5	8.4 points
	Average course grade	74	81.5	7.5 points
	Course pass rate	83%	94%	11%
	Course excellence rate (≥ 85 points)	11%	18%	9%
Dimension of Competency Achievement	Risk identification and assessment capability score	58.7	74.2	15.5 points
	Audit Procedure Design Capability Score	64.3	78.9	14.6 points
	Practical operation and professional judgment ability score	63	80.3	17.3 points

From the comparison results, it can be seen that after the implementation of CDIO reform, students' overall course grades and abilities have greatly improved, with outstanding abilities in process assessment, practical operation, and professional ability judgment. This confirms that project-based teaching can effectively solve the problem of theoretical and practical detachment. CDIO teaching reform can better achieve the goal of "learning for practical use",

solve the embarrassing situation of "dry theory and difficult to apply guidelines", effectively make up for the shortcomings of traditional teaching, improve the overall teaching quality of the course, and comprehensively cultivate students' problem-solving ability and teamwork ability.

7. Conclusion

The CDIO teaching model provides a clear and feasible implementation framework for the reform of the auditing course in the finance and accounting major. By implementing a simulated audit project throughout the entire semester and restructuring the teaching content system, we can effectively address the pain points of the disconnect between theory and practice, and the mismatch between knowledge and ability in traditional teaching. We can return to classroom student leadership, allowing students to actively learn knowledge and train their abilities through project experience. In the context of the digitalization industry, the rational use of AI and other technological tools can further enrich teaching scenarios and improve teaching efficiency, but it is necessary to adhere to judgment, make decisions independently, and avoid blindly relying on tools. The core courses of other majors in finance and accounting can also draw on the CDIO teaching reform ideas and establish a project-based teaching content system to improve the overall course quality of the major.

Author Introduction

Ren Hongmei, a certified public accountant in China, specializes in auditing by certified public accountants. She has received over ten awards as an outstanding instructor in provincial-level and higher academic competitions, and has co-authored two textbooks.

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