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From Knowledge Transmission to Collaborative Intelligence: Reconstructing Auditing Pedagogy from a Human-AI Collaboration Perspective

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Abstract

Auditing as a profession has changed considerably in recent years, yet the courses that train future auditors have not kept pace. This paper reports on a curriculum reform effort at a Chinese business school that tried to close that gap by building human-AI collaboration into the center of an undergraduate Auditing course, rather than treating it as a supplementary topic. The reform was motivated by three recurring problems we observed in our own students: an inability to connect isolated auditing concepts into coherent engagements, limited exposure to the digital tools now standard in practice, and almost no experience working within a structured audit team. To address these, the course was redesigned around three coordinated changes—reorganizing content into a progressive module sequence, embedding an AI pre-screening workflow into regular instruction, and replacing end-of-term examinations with a semester-long simulation project. The underlying logic throughout was to keep AI in the role of assistant, handling data extraction and initial screening, while students retained responsibility for interpretation and judgment. For accounting educators facing similar pressures, the approach may offer a workable model.

Keywords

Human-AI collaboration; auditing education; pedagogical reform; outcome-based education; digital competency.

1. Introduction

Walk into any Big Four audit team today and you will find tools doing work that, ten years ago, would have occupied a junior associate for days. Large language models flag document anomalies; data analytics platforms run population-level tests on entire transaction datasets rather than samples; automated systems generate preliminary risk summaries before a human reviewer has opened the file [1]. The profession has not been this structurally disrupted since the move from paper-based ledgers to enterprise software. Yet the courses preparing accounting graduates for this environment have largely carried on as before.

In most Chinese undergraduate programs, the dominant approach to auditing instruction still revolves around textbook standards, chapter-by-chapter coverage, and closed-book examinations. Students can recite the steps of a substantive testing procedure without having ever worked through one collaboratively, or used an analytics tool to examine real transaction data. More importantly, they graduate with essentially no practice in the judgment calls that define actual audit work: when to accept an AI-generated anomaly flag versus when to question it; how to handle a situation where the system's preliminary conclusion conflicts with your own professional read; when escalation is warranted and when it is not. This gap between what curricula teach and what employers actually need has been noted in the literature for years [2], though systematic attempts to close it remain rare.

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This paper describes a curriculum reform carried out over multiple teaching cycles at a Guangdong business school, with third-year accounting undergraduates as the primary participants. The reform drew on outcome-based education principles [3] and organized itself around a single central question: what would an auditing course look like if human-AI collaboration were treated as the normal mode of professional work rather than an add-on topic? Section 2 diagnoses the structural weaknesses in traditional auditing pedagogy that made the reform necessary. Section 3 explains the pedagogical logic behind positioning AI as an audit assistant rather than a decision-maker. Section 4 describes the three reform dimensions in concrete terms. Section 5 draws out implications for practice.

2. Three Core Pain Points of Traditional Auditing Pedagogy

It is worth being specific about what the existing curriculum actually fails to do, because the answer shapes what reform needs to address. Over several teaching cycles, and through feedback from graduates who had entered practice, we identified three problems that seemed to compound each other.

2.1. Fragmented Knowledge Structures

Most auditing textbooks are organized chapter by chapter: risk assessment here, internal controls there, substantive testing elsewhere, audit reporting at the end. Each chapter is internally coherent but the connections between them are rarely made explicit. A student can learn how to design a substantive test without ever understanding why the risk assessment they performed two chapters earlier should be determining their sample selection strategy—or how a surprising finding during testing ought to prompt them to revisit their earlier risk judgments. By the end of a conventionally taught course, students often hold a collection of disconnected procedures rather than a picture of how an actual audit engagement unfolds from start to finish [3].

2.2. Absence of AI and Digital Tool Integration

Despite the widespread adoption of data analytics and AI tools in professional audit practice, most auditing courses continue to rely on paper-based case studies and manual calculations. Students graduate without meaningful experience using the digital tools they will encounter on the job. As Kokina and Davenport [1] documented, the profession began changing fundamentally almost a decade ago; curricula have been slower to follow. Recent research reinforces the point: knowing that AI can do something does not prepare students to work alongside it in practice, particularly when that requires them to make judgment calls about the reliability of system outputs [4].

2.3. Insufficient Team-Based Project Experience

A third gap involves teamwork. Real audit engagements are coordinated across roles: the risk assessment specialist feeds findings to the internal controls team; working papers circulate for review; the reporting specialist needs inputs from multiple others before drafting can begin. None of this happens in a standard auditing course, where students complete their work individually and are assessed by a closed-book examination at the end. A student who has never had to coordinate working papers with a teammate, or defend a risk conclusion to a project manager under time pressure, is going to face a significant adjustment upon entering practice—regardless of their examination score.

3. Core Logic of a Human-AI Collaboration Framework

Each of these three problems points toward the same underlying issue: the course has been designed around what auditors need to know rather than around what they need to be able to

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do alongside increasingly capable AI systems. Fixing it required more than adding a software demonstration or appending a group project at the end of term.

3.1. AI as Audit Assistant, Not Replacement

The approach taken here assigns AI a specific, bounded role: it generates preliminary outputs. Data extractions, anomaly flags, initial risk summaries—these are tasks the system handles. What students do is review, challenge, and take ownership of those outputs. The distinction matters pedagogically. If students simply use AI to produce finished answers that they copy onto working papers, nothing educational has happened; in fact, a habit of uncritical reliance has been formed. But if the AI's preliminary output is consistently treated as a starting point requiring human evaluation—something to be verified, questioned, and possibly overridden—then every interaction with the system becomes practice in the kind of professional skepticism that auditing standards require. The course is designed so that students regularly encounter situations where the AI's flag is technically correct but professionally incomplete, or where the system has missed context that changes the interpretation entirely.

This maps onto what the human-AI collaboration literature describes as an effective division of cognitive labor: AI manages the routine and data-intensive work while humans focus on evaluation, judgment, and professional accountability [5]. In auditing terms, the system answers "what does the data show?" and the student answers "what does this mean, and what should we do about it?" The second question is where auditing expertise actually lives. It requires contextual knowledge, awareness of fraud risk patterns, sensitivity to client-specific circumstances, and the professional confidence to reach conclusions that may not be welcome. No AI system currently handles this well, and it is exactly what employers expect auditors to do from day one.

3.2. Human-AI Division of Labor

In practice, the division works as follows. AI tools handle data retrieval and organization, identify numerical anomalies and pattern deviations, generate preliminary risk flags, and produce draft working paper templates. Students verify the accuracy and completeness of these outputs, apply professional standards to interpret what the findings mean, exercise skepticism toward AI conclusions that seem incomplete or contextually off, and make the final professional call. The allocation is deliberate: it concentrates the learning where it actually happens, in the human act of making sense of data and taking responsibility for a conclusion.

Over a semester, repeated cycles of reviewing, questioning, and occasionally overriding AI-generated outputs build something that is difficult to develop through traditional case study instruction: a habitual disposition toward professional skepticism. Students gradually internalize the question "is this output complete and professionally framed, or does it only look right?" By the end of term, that instinct operates almost automatically—which is exactly what it needs to do in professional practice.

3.3. A Three-Dimensional Reform Framework

The three reform dimensions were designed to work together rather than independently, because isolated interventions tend to produce isolated results. Reorganizing content without changing how it is assessed leaves students still incentivized to memorize rather than apply. Adding AI tools without restructuring the task sequence means students encounter the tools without the conceptual scaffolding to evaluate their outputs meaningfully. Introducing group projects at the end of term, after everything else has been taught individually, does not give students enough time to develop genuine collaborative competency. The three dimensions described below—content restructuring, instructional method innovation, and learning context redesign—were therefore implemented as a coordinated system, each reinforcing the others.

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4. Three Reform Pathways and Recommendations

4.1. Content Restructuring: Three-Module, Five-Dimensional Integration

Rather than following the textbook chapter sequence, the course was reorganized into three modules with a clear developmental arc. The first module addresses professional identity and foundational standards—not as abstract content but as an answer to the question "what are auditors actually responsible for, and why does it matter?" Students who understand the purpose of an audit before learning its procedures tend to retain the procedures better and apply them more appropriately. The second module covers technical skill development across the complete audit process, but organized around a running case that connects each procedural step to the ones before and after it. The third module moves into integrated professional application, where students work through simulated engagements that require drawing on everything from the earlier modules simultaneously.

Within this structure, course materials are organized around five types of content that appear throughout all three modules rather than being siloed into separate weeks: professional ethics cases that build value orientation; current audit standards and regulatory frameworks that ground technical knowledge in real requirements; digital tools that are introduced progressively rather than demonstrated once; industry scenarios drawn from actual corporate audit contexts; and simulation tasks that increase in complexity as the semester progresses. The intention is that by the time students reach the third module, they experience these five elements as naturally interconnected rather than as separate topics that happen to share a course.

This organization reflects the core principle of outcome-based education: design backward from what graduates need to be able to do, not forward from what the textbook happens to cover [3,6]. When students can see the competency they are building toward at the start of each module, the individual topics within it acquire a purpose that makes retention and transfer more likely.

4.2. Instructional Method Innovation: AI Pre-Screening, Three-Stage Skill Development

The AI pre-screening workflow is the heart of the instructional method innovation. Rather than introducing AI tools through demonstration, the workflow builds them into the standard task structure of every teaching unit: students receive simulated audit datasets, use AI tools to generate initial findings, and then critically review and revise what the system produced before arriving at their own professional conclusions.

The workflow unfolds across three stages that correspond to the three content modules. In the first stage, tasks are relatively constrained: students use AI for data extraction and rule-based verification, focusing primarily on understanding how outputs are generated and where they tend to fall short. Encountering an AI error on a relatively simple task early in the course turns out to be pedagogically useful—it establishes from the outset that these systems require active oversight rather than passive acceptance. In the second stage, tasks shift to risk identification, where students compare AI-generated risk flags against their own professional assessments and document the reasoning behind any discrepancies. In the third stage, students produce comprehensive audit conclusions that synthesize AI analysis with independent professional judgment, producing working papers that meet professional standards.

The requirement to document reasoning—whether the student agrees with the AI output or not—is built into every task. This is not incidental; it is the primary mechanism through which critical engagement is enforced rather than merely encouraged. Research on human-AI collaboration suggests that the analytical benefits of working alongside AI systems only

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materialize when learners are actively evaluating rather than passively using them [7]. The documentation requirement ensures that evaluation happens visibly and systematically.

Classroom delivery is organized around a before-during-after sequence. Before each class, students receive simulated audit datasets and complete AI pre-screening independently, arriving with outputs already in hand. During class, teams compare their results, surface discrepancies, and work through the professional reasoning needed to resolve them—with the instructor facilitating rather than lecturing. After class, individual reflective assessments ask students to articulate what they found, what they questioned, and what they concluded. After a few iterations, this sequence becomes routine, which is precisely the point: human-AI collaboration should feel like normal professional practice, not an occasional special activity.

4.3. Learning Context Redesign: Role-Rotation Projects and Portfolio Assessment

The learning context redesign centers on a simulation project that runs the full length of the semester. The fictional audit client is a manufacturing company with financial data covering procurement, production, sales, and investment cycles—chosen to be comprehensive enough that different student roles encounter genuinely different types of tasks and data. The project is not a capstone activity at the end of term but an ongoing environment within which weekly instructional content acquires immediate application.

Teams of six are organized with defined roles corresponding to positions found in actual audit engagements: project manager, risk assessment specialist, internal controls specialist, two financial statement auditors covering different balance sheet areas, and a reporting specialist. Roles rotate at module boundaries, so each student occupies at least two positions over the course of the semester. The rotation serves a specific purpose: it prevents students from developing expertise in one function while remaining ignorant of how their work connects to others, which is a common problem when teams maintain fixed roles throughout.

Assessment is organized as a portfolio rather than a single end-of-term examination. Components include pre-class preparation records, AI screening outputs with critical review annotations, working papers produced at each stage of the simulation, peer evaluation records from role-rotation transitions, and a final audit report. The portfolio format makes competency development visible in a way that a closed-book exam cannot: a student's AI review notes from week four and week twelve tell a story about how their analytical judgment has grown, which is ultimately what the course is trying to produce. Formative assessment research consistently shows that portfolio approaches are better at capturing applied competency and sustaining engagement over a full semester [7].

AI also has a role in the assessment environment itself. Submitted working papers are automatically checked against audit standards and completeness criteria before instructor review, giving students immediate feedback on technical compliance. Students quickly learn to anticipate what the automated review will flag, which is itself a useful professional habit: auditors in practice increasingly need to understand how internal quality-control systems evaluate their work before it reaches a senior reviewer.

5. Conclusion

The three problems described in Section 2—fragmented knowledge, absence of digital tool experience, and no team-based practice—turn out to be symptoms of a single underlying misalignment rather than independent issues. Each reflects a curriculum that was designed for a profession that no longer quite exists. The reforms described in this paper tried to address that misalignment directly, by reorganizing content around professional competency milestones, embedding AI tools as routine working instruments rather than demonstrations,

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and giving students a realistic collaborative context in which to apply what they were learning. The results, across multiple teaching cycles, suggest that the combination works better than any of the three elements would in isolation. Students who experienced the full framework arrived at the end of term with more coherent professional knowledge, more confident and critical engagement with AI outputs, and a clearer sense of how audit team dynamics actually operate.

For faculty considering similar reforms, the most important lesson may be that AI integration is fundamentally a pedagogical design problem rather than a technology selection problem. The question is not which tools to adopt but how to structure interactions with those tools so that students develop professional capabilities rather than outsource them. That requires deliberate choices about what AI is asked to do, where human judgment is required to engage, and how assessment rewards the quality of reasoning rather than the acceptability of outputs. These are decisions that experienced educators are well placed to make—they do not require technical expertise so much as clarity about what professional competency actually looks like and a willingness to redesign tasks around it. Future research should examine how the framework performs across different institutional contexts, particularly where digital infrastructure or faculty familiarity with AI tools varies. Longitudinal follow-up with graduates entering practice would be especially valuable: the real test of whether a curriculum reform has worked is not end-of-term assessment scores but whether the habits of mind it cultivated hold up under the pressures of professional work.

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