

Exploring the Practice of AI-Enabled Integrated “Teaching-Learning-Assessment” Reform in Undergraduate Taxation and Finance Courses

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Abstract: In recent years, the rapid advancement of generative AI tools—such as DeepSeek, ChatGPT, and ChatPPT—has profoundly transformed university teaching models. Leveraging its powerful capabilities in deep learning and natural language processing, AI empowers classroom instruction across multiple dimensions—including content generation, personalized learning, intelligent tutoring, data analysis, and virtual teaching—providing new perspectives and practical pathways for teaching undergraduate finance and taxation courses. Taking the core finance and taxation course “Tax Law” as a case study, this paper proposes utilizing AI tools to implement pre-class diagnostic assessments of student learning status and resource updates; facilitate in-class scenario creation and intelligent interaction; and enable post-class dynamic evaluation and consolidation/extension of knowledge. This approach aims to shift teaching from being experience-driven to data-driven, and to transform teaching evaluation from focusing solely on final exam results to encompassing a diverse range of learning processes, thereby offering a practical pathway for addressing the fragmentation issue between “teaching, learning, and assessment” in finance and taxation courses.

Keywords: Artificial intelligence; Intelligent interaction; Diversified evaluation

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1. Introduction

Against the backdrop of rapid advancements in artificial intelligence, the *2024 Government Work Report* introduced the “AI+” initiative for the first time, emphasizing the need to deepen the innovative application of AI technologies across various fields ^[1]. In August 2025, the State Council issued the *Opinions on Further Implementing the “AI+” Initiative*, which explicitly proposes integrating artificial intelligence into all elements and entire processes of education and teaching, promoting the transformation of teaching models, advocating for personalized instruction leveraging AI, and enhancing students’ ability to apply their knowledge ^[2]. With the full implementation of Golden Tax Phase IV, the widespread adoption of intelligent financial and tax systems, and the proliferation of RPA systems, standardized and repetitive tasks in financial and tax work—such as bill recognition, basic accounting processing, and simplified tax filing—are gradually being taken over by intelligent systems; consequently, the market’s demand for financial and tax professionals

has shifted from seeking accountants to seeking versatile digital-intelligent financial and tax professionals who can proficiently apply financial and tax regulations to implement tax compliance plans, utilize human-machine collaborative thinking to conduct data analysis, and participate in strategic decision-making support. Given this context, the integrated “Teaching–Learning–Assessment” reform of undergraduate financial and tax courses has become particularly crucial—it is not only an inevitable requirement in response to national policy directives but also a vital practical step in aligning undergraduate financial and tax education with the trends of the digital-intelligent era.

2. Issues arising in the “Teaching–Learning–Assessment” framework of traditional undergraduate finance and taxation courses

2.1. The teaching content lags behind relatively, and its visual presentation is relatively simplistic

In undergraduate finance and taxation education, classroom instruction is predominantly teacher-led, with instructors primarily delivering lessons and designing curricula based on the content of existing textbooks^[3]. In other words, textbook content serves as the primary source of knowledge for these undergraduate courses. However, once a textbook is published, its financial and tax regulatory provisions as well as teaching cases remain static as of the publication date, whereas financial and tax policies are constantly evolving and being adjusted. This creates certain knowledge gaps that require instructors to consciously supplement their lesson preparation. On the other hand, most existing financial and tax theory textbooks on the market present their content in the form of textual statutes and regulations—combining extensive written text with various case studies and data—resulting in a presentation that is often overly simplistic and monotonous, highly theoretical in nature, and consequently makes it more difficult for students to comprehend and absorb the material.

2.2. The teaching model is overly rigid, lacking integration of practical scenarios and interaction

Most undergraduate courses in taxation and finance primarily rely on theoretical lectures supplemented by PPT presentations; their teaching models resemble those of general education or foundational courses. While students may find such teaching approaches familiar, they can also easily become fatigued by them. Although certain digital teaching tools—such as Yuchangtang and Xuetong—are now available to assist with instruction, disparities in teachers’ proficiency with these digital tools can lead to varying levels of classroom interaction frequency and effectiveness. On the other hand, real-world practical scenarios are seldom integrated into the teaching process for taxation and finance courses; for instance, in tax law courses, instruction typically focuses on introducing relevant tax system elements by breaking down taxes into individual categories. This approach makes it difficult to create realistic simulations of practical scenarios—such as addressing key and challenging tax issues for different types of enterprises or handling comprehensive tax filing procedures—in the classroom. As a result, students lack opportunities for independent exploration, data analysis, and interactive reasoning regarding complex tax matters, as well as the ability to independently solve real-world financial and tax problems.

2.3. Teaching evaluation has not yet established a comprehensive scientific assessment system

Currently, the final evaluation methods for finance and taxation courses predominantly focus on paper-based final examinations; the assessment of knowledge points primarily centers on basic conceptual distinctions and the rote memorization of tax and financial policies, making it difficult to comprehensively evaluate students' data sensitivity, professional judgment, and comprehensive problem-solving abilities within complex tax-related contexts. Furthermore, process-based assessments are often limited to attendance records, simple classroom assignments, or basic Q&A sessions; these evaluation methods lack multi-dimensional tracking of classroom interaction quality, teamwork performance, and practical application. As a result, they fail to accurately identify students' learning blind spots or cognitive barriers, and lack the capacity for personalized, precise instruction. Such evaluation approaches lead students to focus solely on passing the course examination without dedicating additional time to consolidating or expanding their existing knowledge. Moreover, the essence of finance and taxation courses extends beyond the classroom; the absence of a robust scientific evaluation system results in a severe fragmentation between “teaching,” “learning,” and “evaluation.” Consequently, evaluation outcomes struggle to provide feedback that guides instructional design or student self-directed learning, failing to establish a closed-loop mechanism and, by extension, unable to support the objective of cultivating talent in the field of digital and intelligent finance and taxation.

3. Practical paths for the integration of “teaching–learning–assessment” reform in undergraduate financial and taxation courses enhanced by AI

3.1. Ensuring the dynamic updating of teaching resources and presenting instructional content in an engaging manner

During the pre-class lesson preparation phase, teachers can utilize AI-powered tools—such as the “One-Click Question Generation” and “Intelligent Lesson Preparation” features within the AI teaching platform of Yuchan Classroom—to incorporate online teaching resources provided by the platform itself. These resources encompass materials from nearly 800 universities, including Tsinghua University, covering 92 majors across 13 undergraduate disciplines; specifically, teachers can select relevant resources from “National Exemplary Courses” and “Provincial First-Class Courses” to enrich their instructional content. Additionally, using access codes, teachers can leverage tools such as Doubao or DeepSeek to automatically filter relevant financial and tax documents along with their interpretations issued by the State Taxation Administration and the Ministry of Finance over the past year, thereby ensuring timely updates to resources beyond the standard textbook content. Furthermore, teachers can use tools like Doubao, Jiemeng, or other AI-assisted teaching platforms to create video- or audio-based supplementary reading materials, integrating these readings with practice exercises to generate pre-class learning materials directly for students. This approach enables students to enter the classroom with specific questions in mind and encourages them to engage in critical thinking starting from the actual problems they face.

Taking the Tax Law course as an example, in theoretical and abstract chapters—such as Chapter 1: Introduction to Tax Law—one could create relatable short videos (e.g., “How much tax is owed when spending £100 at a supermarket in China?”) to introduce the topic. This approach is more engaging than using plain-text PPT presentations to explain the origins of China's tax system. Following these short videos,

instructors can administer a pre-assessment to gauge students' understanding of the types of taxes and basic requirements under China's current tax regime; based on the results of this pre-assessment, they can design subsequent instructional content accordingly, perhaps by adapting or omitting certain textbook material to enhance the sophistication and challenge level of the classroom content. After completing the explanation of each tax category in a chapter, instructors can utilize DeepSeek or XMind integration technologies to create mind maps for that particular tax category. Additionally, the latest national tax policies, monetary policies, and macroeconomic regulation measures can be presented through vivid images, audio, and video materials. These resources can be seamlessly integrated into the teaching content to deepen students' professional understanding. Artificial intelligence tools provide teachers with a rich repository of materials and efficient production capabilities, enabling dynamic updating and dynamic presentation of teaching resources. This makes the instructional content more comprehensive, multidimensional, and data-driven, helping to identify students' areas of interest and challenges in learning the course, and supporting the adaptation of subsequent teaching and learning methodologies.

3.2. Innovating learning models that create immersive, interactive intelligent experiences

During the teaching process, traditional instructional methods—such as conventional lecture-based approaches combined with demonstrations—should be abandoned. Instead, educators can first leverage pre-class learning diagnostic data to identify students' knowledge gaps or areas of interest. By selecting an appropriate AI-powered teaching platform, educators can collect data—including the total number of pages viewed, total viewing time, exercise scores, and completion rates based on students' preview materials or videos—to assess the current state and effectiveness of students' self-directed learning within the class. During classroom instruction, targeted tools—such as AI-powered intelligent learning companions—can be utilized to create virtual practice scenarios, personalized interactive Q&A sessions, and inquiry-based project-based learning activities. Through interactive data analysis, educators can tailor the instructional content to accommodate students with varying foundational levels, ensuring that classroom teaching content aligns with three distinct tiers—basic, advanced, and elevated—thereby achieving the goal of personalized education.

Regarding teaching content, the AI Workbench can organize key financial and tax-related points across four levels: Knowledge Base, Course Model, AI Application, and Decision Center. These levels are closely interconnected and collectively form an ecosystem that supports intelligent teaching. The Knowledge Base serves as the core component of the AI Workbench; it contains all essential information and concepts required for financial and tax courses, as well as the relationships between these elements. As the central pillar of the AI Workbench and the heart of the teaching content, the Knowledge Base, when integrated with RAG (Retrieval-Augmented Generation) technology, effectively mitigates the hallucination issues inherent in large language models, enabling them to provide more precise and effective responses to user queries. Additionally, content uploaded to the Knowledge Base can later be directly linked to knowledge nodes within the Knowledge Graph, serving as part of the teaching application. The Course Model is constructed based on the Knowledge Base; it provides a structured representation of the course content, helping the AI Application better understand the course material and its context, thereby delivering more accurate and relevant responses. The AI Application represents the practical implementation of the Knowledge Base and Course Model, leveraging this information to provide various teaching support functions. The Decision Center encompasses actual teaching activities—such as course implementation, student learning, and teacher

instruction—and utilizes data analysis and feedback to optimize teaching strategies.

Taking the tax law course as an example, one can select appropriate AI-based teaching platforms such as Yuketang class or Xuetong to innovate the course delivery method. During the preliminary lesson preparation phase, a substantial amount of teaching materials related to the course—such as those on taxation, public finance, tax law, and China’s tax system—can be incorporated, including but not limited to: textbooks, lecture notes, core academic papers, exam questions, and cutting-edge financial and tax case studies. These materials collectively form a knowledge base centered on the latest Chinese tax system. Subsequently, based on the main themes of taxpayer, taxable object, tax rate, tax calculation basis, tax payable amount, tax incentives, tax payment period, tax payment location, and declaration requirements, a comparative and interconnected model among different types of taxes can be constructed. With the completed knowledge base and course model, immersive and interactive practical scenarios can be created. For instance, the AI teaching tool can design a tax bureau filing scenario by simulating business activities of a manufacturing company, establishing a collaborative group setting for students. In this scenario, students assume roles such as cashier, tax accountant, and financial manager to develop a tax compliance plan for the company. Students can engage in intelligent interactive Q&A sessions with their AI learning companion both during and outside class, enabling precise and personalized interaction.

Finally, AI-assisted inquiry-based project-based learning can be utilized to introduce and discuss case studies focusing on various types of enterprises in areas such as tax filing, tax risk identification, and financial performance evaluation; furthermore, students are encouraged to employ artificial intelligence tools to organize tax-related data, compare preferential policies, and perform data-driven scenario simulations, thereby enabling them to handle daily tax-related matters more efficiently and enhancing their skills in fiscal and tax digitalization.

3.3. Establishing a scientific and diversified evaluation indicator system

Course grades should not rely solely on final examinations as the primary assessment method; instead, greater emphasis should be placed on evaluating the entire course learning process to establish a scientific, comprehensive, and diversified evaluation system. The evaluation indicators can integrate data collected automatically by an AI-based teaching platform across the entire learning journey—such as students’ pre-class preparation, scenario-based classroom interactions, project-based inquiry outcomes, and practical training operations—and combine these with input from instructors and intelligent monitoring devices to enable collaborative human-machine evaluation. This approach allows for the full recording of students’ learning status and their progress in skill development, thereby fundamentally transforming the one-sided “single-exam-determines-grade” evaluation model.

Taking the tax law course as an example, scores from traditional attendance systems can be converted into data reflecting students’ interactions with AI teaching assistants and their Q&A sessions during each class; this approach can also help mitigate the issue of “students being physically present but mentally absent” during lectures. Classroom assignments can then be transformed into evaluations based on inquiry-based project outcomes—such as completing tax returns under various scenarios, drafting tax compliance plans for different types of enterprises, or producing collaborative research reports on tax assessments. These assessments focus on evaluating students’ ability to reflect upon and apply tax law provisions and policies through practical activities, rather than merely testing their ability to memorize and select exam points.

Such practical assessment and scoring processes can be executed through human-machine collaboration and are highly transparent, allowing both teachers and students to simultaneously monitor changes in the data. Through diversified and data-driven evaluation methods, students can gain insight into their current level of mastery of the course content and identify their weak areas, thereby motivating them to consolidate their understanding of these gaps and expand their knowledge of more advanced topics, encouraging them to proactively address deficiencies and laying a solid foundation for final-term review as well as subsequent courses in tax planning and tax accounting. Behind this closed-loop evaluation reform lies the realization of deep integration among “teaching, learning, and assessment,” which drives the transformation and upgrading of teaching models and student learning approaches, effectively supporting the cultivation of interdisciplinary financial and tax professionals who possess both professional expertise in tax law and strong digital-intelligent practical skills.

4. Conclusion

The implementation of the “Teaching–Learning–Assessment” integrated reform for undergraduate finance and taxation courses does not merely require a plethora of AI tools with diverse functions; rather, it demands a sound ability to select and utilize AI tools effectively to enhance the quality of teaching content, innovate teaching methods, and establish a diversified evaluation system. This requires university faculty members to continuously strengthen their digital and intelligent skills and competencies through various means—such as technical training, academic lectures, peer exchange sessions, and teaching innovation competitions—to elevate teaching effectiveness using advanced tool technologies, while also emphasizing the role of AI-powered tools in guiding ideological and political education within these courses: helping students identify loopholes and risks in AI-generated financial and taxation content, preventing AI hallucinations, and cultivating students’ core competencies in independent thinking, professional critical reasoning, and human-machine collaboration. It is essential to correctly understand the essence of how artificial intelligence technology empowers teaching, comprehensively improve the quality of classroom instruction in finance and taxation courses, establish a continuous cyclical mechanism of “precise teaching–self-directed learning–comprehensive assessment–optimized teaching,” and ultimately build a new, student-centered smart teaching ecosystem.

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