

Research on an AI-Empowered Teaching Model for Ideological and Political Education in Public Finance Courses

Haizhen Guo*, Xuejin Zhao

School of Economics, Guangdong University of Technology, Guangzhou 510520, Guangdong, China

*Corresponding author: Haizhen Guo, hzguo@gdut.edu.cn

Copyright: © 2025 Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), permitting distribution and reproduction in any medium, provided the original work is cited.

Abstract: Addressing practical challenges in traditional ideological and political education within Public Finance courses, such as forced integration, outdated case studies, and one-dimensional assessment, this paper innovatively constructs a three-dimensional integrated teaching model. The model aims to shape public values, leverages Artificial Intelligence (AI) technology as its core driver, and achieves closed-loop improvement through evidence-based teaching optimization. Taking the teaching module on “Tax Principles and Systems” as a case study, this study aims to provide a forward-looking, operational theoretical framework for ideological and political education reform in finance-related courses in the AI era.

Keywords: Public Finance; Ideological and political education in courses; AI; Public value; Teaching model

Online publication: December 31, 2025

1. Introduction

“Public finance is the foundation and vital pillar of national governance.” As a discipline studying the patterns of government revenue and expenditure activities as well as their economic impacts, public finance centers on “managing public finances and administering public affairs.” It serves not only as the foundational knowledge for economics majors, but also as a crucial arena for cultivating students’ public values, rule-of-law spirit, and patriotic sentiment. However, the integration of ideological and political education into public finance curricula faces three core challenges in practice: First, the disconnection between the “soul” and the “body”. Ideological and political elements and professional knowledge often exist as “two separate layers”, where value guidance fails to organically integrate into the fabric of knowledge transmission and ability cultivation, leading to rigid indoctrination or tokenism. Second, the disconnection between “past” and “present”. Teaching cases are updated slowly, failing to fully and promptly respond to the ever-evolving fiscal practices and social hotspots, making it difficult to spark deep resonance and critical thinking among students. Third, the divergence between

“knowledge” and “action”. Traditional evaluation methods predominantly focus on summative assessment of theoretical knowledge, lacking effective dynamic tracking and precise evaluation of the internalization process of students’ value cognition and genuine expression of their public sentiment ^[1].

From DeepSeek and Chat GPT to text-to-video Sora, artificial intelligence (AI) has entered the era of large language models. The wave of AI technology is reshaping the educational ecosystem. Its unique advantages in personalized learning path planning, intelligent correlation of massive resources, virtual-physical integration in teaching scenarios, and data-driven analysis of learning behaviors provide novel methodologies and toolkits for overcoming the aforementioned challenges. Existing research has explored macro-level pathways for AI-empowered ideological and political education in curriculum ^[2] or achieved promising outcomes in engineering courses ^[3]. However, a teaching model that combines theoretical depth with practical refinement remains elusive for deeply and systematically integrating AI with public finance—a discipline characterized by strong public attributes and value dimensions.

Therefore, grounded in the disciplinary essence of public finance and the fundamental task of fostering virtue through education, this paper fully absorbs existing research findings and combines years of teaching reflection to attempt constructing a public-value-oriented, AI-empowered, three-dimensional integrated teaching model for ideological and political education in public finance courses. This model strives to achieve the “trinity” of value objectives, technological means, and the teaching process. Taking the core module of public finance—tax principles and systems—as an example, it elaborates on its operational framework and practical pathways in detail, aiming to provide colleagues with a reform blueprint deeply rooted in the characteristics of public finance.

2. Theoretical foundation: the core of public values and the empowerment of AI

The essence of public finance is its public nature. The theoretical foundation of ideological and political education in public finance courses stems from the discipline’s inherent public attributes and its orientation toward national governance ^[4]. Therefore, the core of such education should focus on shaping public values. Fan (2020) systematically proposed that ideological and political education in public finance and related majors should prioritize four key aspects: patriotic education, rule-of-law awareness, public consciousness, and the concept of a “community with a shared future for mankind” ^[5]. This framework accurately captures the educational dimensions that public finance should carry, providing a crucial theoretical starting point for this study. However, in the age of artificial intelligence, both the internal and external environment of education has undergone profound changes. Students’ cognitive habits, ways of acquiring knowledge, and societal modes of discussing public issues have all significantly diverged from the past.

Therefore, building upon the aforementioned theoretical framework, this paper deepens and refocuses its analysis for the contemporary era. It further distills and integrates the four key areas into the public value core of political education in public finance courses, using this framework to examine the enabling potential of AI technology. First, patriotism and public ethics. Guide students to transcend individualism and the “economic man” hypothesis, deeply understand the ethical essence of public finance as “from the people, for the people”, and establish values that prioritize public interest. Second, legal literacy and awareness of rights and responsibilities. The rule-of-law in public finance is not about memorizing legal statutes; it is manifested in adhering to procedural justice and respecting the boundaries of power in every specific operation, such

as budget preparation and tax collection. Efforts should focus on cultivating students' awareness of tax law compliance etc., and establishing a sense of the equivalence of rights and responsibilities—exercising public authority according to the law. Third, public spirit and rational critical thinking. Guide students to analyze real-world fiscal issues (such as transfer payments) scientifically and rationally using fiscal theory tools grounded in China's national conditions. Develop their ability to analyze issues pragmatically and dialectically, fostering constructive public policy thinking. Fourth, integration of the concept of a “community with a shared future for mankind”. This paper treats this grand concept as the overarching vision for the aforementioned three core values. For instance, when explaining the spillover effects of fiscal policy in the context of globalization, students are guided to recognize the global impact of a nation's fiscal decisions.

Guided by this deepened core of public values, the role of AI technology transcends that of a mere auxiliary tool for presenting knowledge, moving towards restructuring the teaching ecosystem. Its empowering potential lies in its ability to transform the aforementioned abstract process of value shaping into operable, perceptible, and evaluable teaching practices. Firstly, traditional teaching often involves the teacher's one-way transmission of values. AI, through virtual scenarios, can create fields of value conflict, compelling students to mobilize knowledge, emotion, and reason to autonomously construct a stable cognitive system of public values while resolving dilemmas. Secondly, the ability for public decision-making in public finance is difficult to hone in traditional classrooms. AI-supported virtual simulation platforms offer students with opportunities for low-cost trial-and-error and high-frequency practice, allowing them to repeatedly refine their comprehensive abilities in analysis, decision-making, negotiation, and stress resilience in near-real fiscal management scenarios. Finally, leveraging learning analytics and natural language processing technologies, AI can conduct multimodal data collection and analysis of the value tendencies, thinking patterns, and emotional attitudes displayed by students in discussions, assignments, and simulated decision-making. This provides teachers with a dynamic, multidimensional digital profile of students' ideological and political literacy, making the effectiveness of value guidance observable and measurable, while offering precise guidance for instructional optimization.

In summary, building upon the theoretical framework of Fan(2020) and combining characteristics of the digital age, this study deepens it into a core of public values centered on “patriotic sentiment, legal literacy, and public spirit”, and systematically elaborates on the great potential of AI technology in reconstructing the teaching ecosystem and facilitating value internalization. This lays a robust theoretical foundation for subsequent instructional model development—one that respects academic tradition while embracing innovative advancement.

3. Construction of the “Three-Dimensional Integrated” teaching model

The core of this model lies in “Three-Dimensional Integration”, namely the target-dimension (public value shaping), the means-dimension (AI empowerment), and the process-dimension (evidence-based optimization). These three dimensions are not linearly progressive but constitute an interdependent, continuously cyclical teaching ecosystem. **Figure 1** shows its theoretical framework.

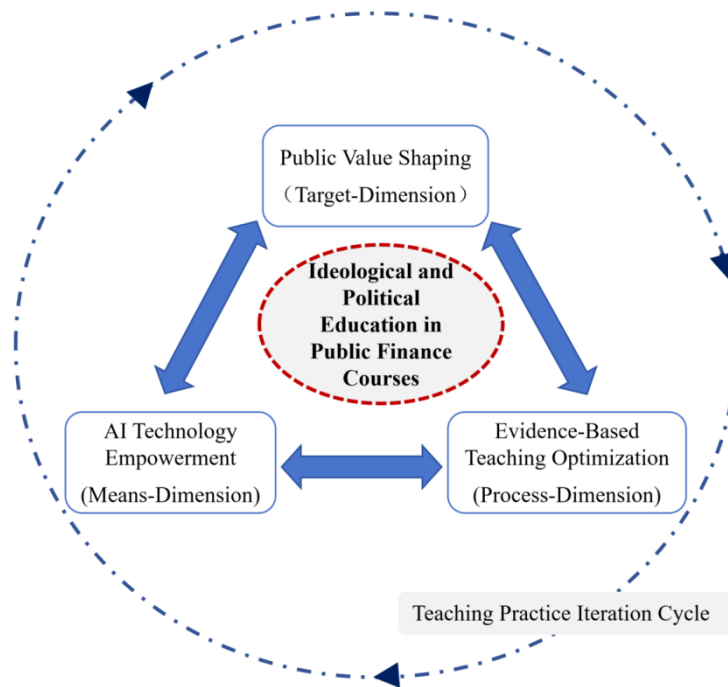


Figure 1. Theoretical framework of the “Three-Dimensional Integrated” teaching model

3.1. Target dimension: shaping public values—the “soul” of teaching

This dimension is the starting point and ultimate goal of the model, governing the entire teaching activity. It involves a “genetic” excavation of ideological and political elements from each chapter of Public Finance, uncovering the inherent value connotations from within the professional knowledge rather than imposing them externally. Taking the “Tax Principles and Systems” module as an example (as shown in **Table 1**).

Table 1. Ideological and political elements in the “Tax Principles and Systems” module

Teaching Content	Ideological and Political Elements
Nature and Functions of Tax	From the philosophical question of “on what grounds does the state levy taxes”, we derive the spirit of social contract, the theory of public goods, and the legitimacy of taxation, thereby establishing the foundational principle of equal rights and obligations in civic consciousness.
Principles of Taxation	Through the age-old debate of fairness vs. efficiency, guide students to contemplate how China’s current tax system embodies ability-to-pay principle (vertical equity) and universal taxation (horizontal equity), cultivating a socialist view of fairness and justice.
Tax Structure	Analyze China’s turnover-tax-dominated tax structure and its causes, combining reforms like “Replacing Business Tax with VAT” to understand its strategic intent in serving the transformation of economic development mode, fostering awareness of national conditions and dialectical thinking.
Tax Hot Topics	Focusing on socially prominent issues such as individual income tax settlement, VAT carryforward refunds, tax oversight of platform economies, and carbon taxes alongside green taxation systems as primary battlegrounds for value-based discourse, we guide students to hone their public rationality through engagement with real-world challenges.

3.2. Means dimension: AI empowerment—the “tool” of teaching

This dimension acts as the catalyst and multiplier for model implementation. It encompasses the following aspects: First, intelligent lesson preparation and resource generation (using large language models such as DeepSeek to build a fiscal policy and ideological education think tank and rapidly synthesizes information to produce structured teaching material). Second, virtual simulation and situational experience (organizing AI-assisted online debates on tax policies topics like “Should personal income tax exemption thresholds be further raised?”, and simulating diverse stakeholder perspectives). Third, data-driven and personalized guidance (providing targeted corrective content based on analysis of learning behavior data).

3.3. Process dimension: evidence-based optimization—the “pulse” of teaching

This dimension ensures the self-evolution capability of the model, forming a closed-loop of “design–implementation–assessment–improvement”. AI aids in building a multimodal comprehensive assessment system for ideological and political literacy, transcending the limitations of exam-based evaluation. AI helps analyzing the emotional tendencies and frequency of value-related keywords in student essays. Furthermore, an evidence-based teaching knowledge repository is constructed, where data mining reveals patterns between teaching strategies and educational outcomes, forming an evidence chain for continuous optimization.

4. Conclusion and Outlook

The public-value-oriented, AI-empowered, three-dimensional integrated teaching model proposed in this paper represents a systematic exploration of the Public Finance educational paradigm in the AI era. It strives to transform ideological education from an external addition to an internal generation, from teacher-centered monologue to human-machine collaboration and student-student interaction, and from experience-driven to data-driven. Demonstrated through the “Tax Principles and Systems” module, this model anchors the “soul” of moral education through shaping public values, forges the “tool” of teaching innovation through AI empowerment, and ultimately connects the “pulse” of continuous improvement through evidence-based teaching optimization. Together, these elements provide a dynamic and resilient framework for integrating ideological and political education into Public Finance courses.

In the future, we will continue to deepen this model: on one hand, exploring the deep application of big data and blockchain technologies in teaching scenarios; on the other hand, always maintaining prudence and reflection on technology application, ensuring the warmth and humanistic spirit of education.

Acknowledgments

We thank our colleagues for their insightful discussions and constructive feedback during the development of this teaching model.

Funding

Guangdong University of Technology Undergraduate Teaching Project “Model Classroom for Ideological and Political Education in Public Finance Courses” (Project number:2023273)

Disclosure statement

The authors declare no conflict of interest.

Author contributions

Haizhen Guo conceived the idea of the study and wrote the paper. Xuejin Zhao developed the case study.

References

- [1] Yang T, Zhao K L, 2021, Research on teaching reform of Public Finance courses based on the concept of curriculum ideology and politics. *Journal of Changchun University*, 31(02): 84-87+91.
- [2] Cui Z X, Ma W L, 2023, Research on Artificial Intelligence empowering ideological and political curriculum reform. *Theory and Practice of Education*, 43(12): 33-36.
- [3] He W, Qi Q, Wu, J H, et al., 2025, Exploration of a four-dimensional integrated teaching mode for ideological and political education in new engineering courses empowered by AI. *Journal of Hunan Institute of Science and Technology (Natural Sciences Edition)*, 38(03): 64-67.
- [4] An T F, 2016, On the disciplinary attribute and positioning of Public Finance. *Finance & Trade Economics*, (12): 17-27.
- [5] Fan L M, 2020, Four key issues in ideological and political construction for Public Finance major courses. *China Higher Education Research*, (09): 4-8.

Publisher's note

Bio-Byword Scientific Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.