

Conceptual Paper

Digital Intelligence-Enabled Value-Infused Teaching in Public Finance: A Four-Dimensional Framework for Curriculum Ideological and Political Education

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Abstract

Digitalisation is opening up new avenues for connecting disciplinary learning with value education in higher education. Digital tools have not automatically resolved the division between fiscal knowledge and questions of public interest, social equity and government responsibility in public finance. Based on relevant literature and three years of teaching public finance to second-year undergraduates, this study has identified four practical problems: the lack of integration between fiscal knowledge and public values; insufficient opportunities for contextualised and active learning; a scarcity of teaching cases; and difficulties in evaluating value-oriented learning. Therefore, it has put forward a four-dimensional system of content integration, teaching implementation, resource support and evaluation and feedback. A resource-constrained ecological infrastructure investment scenario in a hypothetical area of the upper Yellow River Basin is used to illustrate the framework. The scenario provides public policy materials and simulates funding constraints, allowing students to prioritise projects, make financing decisions, consider provision arrangements, and evaluate the cost-effectiveness of expenditure. It has not been officially introduced at this time and therefore cannot be presented as a result of a controlled experiment. Although the digital platform can be employed to organise preparation, communication, resources and process documentation, teachers' professional judgement is still required for the interpretation of students' reasoning and values.

Keywords

Digital intelligence technologies, Public finance education, Curriculum ideological and political education, Value-infused teaching, Case-based learning

1. Introduction

Over the past three years of teaching public finance, digital tools have been used to distribute teaching materials and organise class preparation more conveniently. Based on the above analysis, one finds that the addition of a platform does not alter students' thoughts or ways of thinking independently. Research on digital transformation also considers technology to be part of a broader alteration in teaching design, institutional practice, and the capabilities of teachers and students (Bisri et al., 2023; Castro Benavides et al., 2020; Farias-Gaytan et al., 2023).

The two are not the same. Second-year economics students will study taxation, public expenditure and budget, transfers, public investment and fiscal policy. However, even if they learn a category or a calculation in class, they may not know who benefits from the fiscal decision, which groups bear the cost, or why the government should assume responsibility when market provision is lacking.

CIPE offers a foundation for raising these issues in disciplinary teaching rather than presenting them as separate moral lessons. Chinese scholars have proposed reform paths for public finance CIPEs and discussed teaching innovation in the digital economy (Chen et al., 2024; Ni, 2025; Song et al., 2023), and other studies have connected digital intelligence with value guidance and the modernisation of ideological and political education (Huang & Zhao, 2025; Yuan & Quan, 2026). Research abroad has studied digital transformation, literacy, skills and technology-assisted learning in higher education (Bisri et al., 2023; Castro Benavides et al., 2020; Farias-Gaytan et al., 2023; Rêgo et al., 2024). The problem in practice for the public finance classroom is how to integrate digital functions with fiscal reasoning for public welfare and not just use them as means to deliver content.

The inquiry developed from a sequence of teaching decisions. An earlier Three Gorges Project activity delivered through Rain Classroom showed that students had more to talk about when the government intervened and provided project funds for a specific case. A more localised, resource-constrained ecological infrastructure scenario was then built, and a chapter-based smart course was prepared on the Fanya platform for use in the following semester. Based on the above, this paper will examine the problems in teaching value-infused public finance and, based on them, present corresponding countermeasures. As the new scenario and smart course have not yet been used with students, they are presented as a practice-informed design to be tested rather than as evidence of measured learning effects.

2. Practical Challenges

The four problems listed below have been observed in recent classes of public finance for second-year economics students. They are taken from the lesson preparation, classroom discussion,

submitted homework and participation records in Rain Classroom. They are teaching observations and not the results of a survey or a controlled experiment.

2.1. Limited Connection Between Fiscal Knowledge and Public Values

A typical classroom phenomenon was that the first questions students asked concerned which parts of the course would affect their grades. Many could reproduce the definitions or divisions of public expenditure, but the government's responsibilities in terms of social benefits and regional differences were not clear. For example, the answer may correctly name an expenditure category but omit who would benefit, whether access was fair, and why public provision was necessary.

Thus, the arrangement of values in the lesson has also been altered. Instead of concluding the lecture with a general comment on fairness or responsibility, the teacher should pose such questions while the students are learning about the fiscal functions and fund allocation of different policies (Chen et al., 2024; Ni, 2025).

2.2. Insufficient Opportunities for Active and Contextualized Learning

The problem was more pronounced in the unit on infrastructure investment. When the lesson remained at a theoretical level, few students were able to offer reasons for the necessity of government intervention voluntarily. They could not imagine that a large project would use multiple sources of funds instead of obtaining all the money from the government budget.

For example, the instructor used a case study from the Three Gorges Project in Rain Classroom. Background information was released before class, a video was shown in the lesson, and then groups were asked to identify possible funding sources. Their sources of funds included government fiscal funds, bank loans, local fundraising, capital-market financing, foreign investment and private capital. More students contributed ideas and asked questions about the financing choices after the previous theory-only discussion. Since no experiment was conducted, only the results of classroom observation are presented here. However, it still provided the teaching basis for the scenario in Section 3.

2.3. Limited and Outdated Teaching Cases

Case preparation created a new problem. Some of the materials available to the teacher for the projects were already familiar, but they no longer reflected the latest policy changes. Others reported on the policy or project but did not have students choose. Such materials could show a concept, but they did not easily support the discussion of competing demands, a limited budget, alternative financing arrangements or expenditure performance.

These deficiencies provided the demand for a replacement case: it needed to be set in the present day, familiar to the students, offer choices among options, and require them to justify the public-interest consequences of their choices. Research on the teaching of public finance has also

identified a demand for practical, shareable and frequently updated resources (Song et al., 2023; Wang et al., 2024).

2.4. Limits of Existing Assessment and Platform Data

The current course grades have already incorporated several types of work. The last test of each class will be weighted at 0.50. The other 0.50 is distributed at different rates across the goals for pre-class preparation, regular homework, extracurricular reading and extracurricular discussion. Together, these components offer evidence of knowledge, participation, analysis, application and expression.

What they do not provide is a direct index of value perception. Rain Classroom shows whether a student has opened a resource, completed a preparation task or submitted an assignment; it does not show why the student chose a policy option or whether the student considered public responsibility and social equity. Therefore, the teacher should read the reasons in the case answers, listen to the group's explanations, and compare written justifications rather than considering a completed record as proof of value formation.

3. Four-Dimensional Framework

The above framework directly follows from these classroom decisions. Fiscal concepts and public values determine what students need to think about; the case sequence determines what they do; digital resources support their preparation and work; and evaluation focuses on the explanations for their choices. The four attributes are based on a simplified ecological infrastructure investment scenario in a hypothetical upper Yellow River area.

3.1. Content Integration: Connecting Fiscal Concepts With Public Values

The first category of content is the decision-making process for public investment, not an independent list of values. Students need to explain why intervention is necessary, how to use limited funds, where to allocate the benefits, which financing source is suitable for the project's characteristics, and what responsibilities the government will bear. Public interest, regional equity, fiscal constraints and accountability are included in the fiscal problem in this reasoning. Table 1 shows the connections used in the scenario.

Table 1

Connections between Public Finance Content and Value Dimensions

Public Finance Content	Related Value Dimension
Public investment	Public interest and government responsibility

Infrastructure financing

Fiscal sustainability and responsible resource use

Project prioritization

Regional equity and ecological security

Expenditure-performance evaluation

Accountability and effective use of public funds

The three areas of need for the groups in the scenario are: ecological and water-source protection; flood-control and river-management facilities; and public water-supply and wastewater-treatment projects. The categories are not interchangeable. They have different benefits in different areas, various prospects for user-fee income, and some are still reliant on government support. Students cannot recommend funding for all three. They should state which needs are to be prioritized and defend this choice in terms of ecological security, public interest, regional equity, government responsibility and the use of public funds.

3.2. Teaching Implementation: A Resource-Constrained Ecological Infrastructure Scenario

The proposed scenario was based on the previous application of the Three Gorges infrastructure-investment activity. It still has the previous focus on government intervention and financing, but now adds an upper Yellow River policy context, an explicit fiscal constraint, project prioritisation, provision choices, and expenditure-performance evaluation.

In the scenario, students are informed that the available public funds will cover only about two-thirds of the required investment. Before class, they will study the policy materials and learn about the three project types. Groups set investment priorities and explain the reasons in class. Then the three general financing channels are introduced: fiscal support, debt financing and the introduction of private funds. Students then determine whether each project category is more suitable for direct government investment or a cooperative provision model. After class, they will write a short reflection on the public-interest, regional-equity, government-responsibility, and fiscal-sustainability considerations of their choices. The scenario has not been formally applied, and it is presented as an instructional design rather than as evidence of teaching effectiveness.

3.3. Resource Support: A Chapter-Based Smart-Course Environment

A practical basis for the framework is a smart public finance course created during the summer break on the Chaoxing Fanya Online Teaching Platform (hereafter, the Fanya platform). The Course has been divided into several modules, and each module contains a task engine. The structure of the task includes extended views, core-content studies, AI-assisted immersive practices and consolidation exercises, with about six or seven tasks per chapter at present.

For example, the first chapter includes an AI-assisted question-and-answer activity in the form of an interview with a public finance scholar, an extracurricular video on the historical development of Chinese fiscal thought, and supplementary materials on the development of a Chinese public finance knowledge system. The ecological infrastructure scenario can be added as a chapter-level task sequence: background materials before class, project prioritisation and financing analysis during class, and reflection and performance-indicator design after class. A course knowledge graph can connect the scenario with public goods, externalities, government investment, infrastructure financing, provision arrangements and expenditure-performance evaluation.

The Fanya course has been built but has not been formally used with the students. Next semester, we will test the ease of use and teaching effect. At present, it offers an implementation environment for the framework rather than proof of effectiveness.

3.4. Evaluation and Feedback: Assessing Fiscal Reasoning

The four parts of the evaluation in the proposed scenario are: preparation and use of background materials, justification of project priorities, consistency between financing choices and project features, and quality of post-class reflection. This scenario-specific evaluation is not included in the existing general course-grade system.

The platform's record function will log a user's viewing and task completion history; however, it will not show why a student made a particular policy choice. The design of assessment does not consider platform participation as direct evidence of value creation. By comparison, explanation and written reflection, students learn about the public interest, regional equity, government responsibility and fiscal sustainability. As the case has not been applied in class yet, the evaluation norms will need to be adjusted.

4. Discussion

The framework shows how digital tools can help support value-oriented public finance teaching without making technology the goal of learning. Based on my prior experience teaching, concrete-material construction projects can inspire students' interest in learning more actively. The above method has been used to create an abstracted ecological infrastructure scenario with an upper Yellow River context and project demand competition, simulating a fiscal constraint, providing broad financing options and alternative provision arrangements.

A typical case is also presented to show disciplinary and value-oriented learning combined. Given the shortage of funds, students will need to apply public investment theory and consider ecological security, public interest, regional equity, government responsibility and fiscal sustainability.

Therefore, the value questions in fiscal reasoning are generated proactively rather than being added retrospectively.

From Rain Classroom to the chapter-based Fanya smart course, a more organised system for resources and learning tasks has been established. However, the application of digital technology in education is not without other deficiencies (Castro Benavides et al., 2020; Farias-Gaytan et al., 2023). Records of platforms cannot replace teachers' assessments of students' explanations and choices.

The following are some deficiencies. The problems in practice are based on reflections of teaching observations, not on organised surveys or experimental data. The proposed scenario and the Fanya smart course have not been formally rolled out. Feasibility, students' acceptance and learning effects are all unknown. In the future, we will collect evidence through students' work, classroom observations, questionnaires, interviews and test scores. We will compare fiscal reasoning, participation and sense of public value among different classes or at different times.

5. Conclusion

This paper identifies four practical problems in value-infused public finance teaching and puts forward a corresponding system of content integration, teaching implementation, resource support and evaluation and feedback. Based on three years of teaching experience, it develops an abstracted ecological infrastructure investment scenario in a hypothetical area of the upper Yellow River Basin.

Students select investment objects under a virtual fiscal constraint in the proposed scenario, compare various general financing channels, consider other provision plans, and deal with expenditure-performance assessment. Therefore, the theory of public investment can be related to ecological security, public interest, regional equity, government responsibility and efficient use of fiscal resources.

The chapter-based smart course on the Fanya platform offers an organised implementation environment, but neither the course nor the scenario has been tested with students yet. Therefore, the framework can be seen as a practice-informed instructional proposal. It will provide an open and specific design that is feasible to implement, assessed and modified in future teaching.

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Author contributions

The sole author was responsible for all aspects of the work. The author has read and agreed to the published version of the manuscript.

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References

- [1] Bisri, A., Putri, A., & Rosmansyah, Y. (2023). A systematic literature review on digital transformation in higher education: Revealing key success factors. *International Journal of Emerging Technologies in Learning*, 18(14), 164-187. <https://doi.org/10.3991/ijet.v18i14.40201>
- [2] Castro Benavides, L. M., Tamayo Arias, J. A., Arango Serna, M. D., Branch Bedoya, J. W., & Burgos, D. (2020). Digital transformation in higher education institutions: A systematic literature review. *Sensors*, 20(11), Article 3291. <https://doi.org/10.3390/s20113291>
- [3] Chen, J., Zhang, S., & Liu, J. (2024). Xin shidai ‘caizhengxue’ kecheng sizheng yaodian ji shixian lujing [Key points and implementation pathways of curriculum ideological and political education in public finance in the new era]. *Industrial & Science Tribune*, 23(14), 116-118.
- [4] Farias-Gaytan, S., Aguaded, I., & Ramirez-Montoya, M.-S. (2023). Digital transformation and digital literacy in the context of complexity within higher education institutions: A systematic literature review. *Humanities and Social Sciences Communications*, 10, Article 386. <https://doi.org/10.1057/s41599-023-01875-9>
- [5] Huang, Y., & Zhao, W. (2025). Shuzhi jishu funeng sixiang zhengzhi jiaoyu zhili xiandaihua de dongyin, jili yu shijian lujing [Motivations, mechanisms, and practical pathways of digital intelligence technology empowering the modernization of ideological and political education governance]. *Journal of Yibin University*, 25(4), 83-90. <https://doi.org/10.19504/j.cnki.issn1671-5365.2025.04.10>
- [6] Ni, Y. (2025). Gaoxiao caizhengxue kecheng sizheng xianshi kunjing ji gaijin lujing [Practical difficulties and improvement paths of curriculum ideological and political education in public finance at universities]. *Modern Business Trade Industry*, (5), 185-187.
- [7] Rêgo, B. S., Lourenço, D., Moreira, F., & Pereira, C. S. (2024). Digital transformation, skills and education: A systematic literature review. *Industry and Higher Education*, 38(4), 336-349. <https://doi.org/10.1177/09504222231208969>
- [8] Song, L., Yan, Z., & Feng, C. (2023). Shuzi jingji beijing xia ‘caizhengxue’ kecheng sizheng de jiaoxue tansuo: Jiyou, tiaozhan yu chuangxin [Teaching exploration of curriculum ideological and

political education in public finance in the context of the digital economy: Opportunities, challenges, and innovation]. *Higher Education Review*, 11(2), 51-60.

- [9] Wang, Y., Yu, X., & Han, J. (2024). Shuzihua funeng difang gaoxiao caizhengxue kecheng jianshe: Luoji, tiaozhan ji lujing celue [Digital empowerment of public finance curriculum development in local universities: Logic, challenges, and pathway strategies]. *Research on Financial and Economic Higher Education*, 12(2), 99-110.
- [10] Yuan, M., & Quan, L. (2026). Cong jiazhi yinling dao jishu funeng: Shuzhi shidai gaoxiao sixiang zhengzhi jiaoyu huayu chuangxin tanxi [From value guidance to technological empowerment: Discourse innovation in ideological and political education at universities in the digital intelligence era]. *Journal of Xi'an University (Social Sciences Edition)*, 29(2), 29-35.