

Research on the Pedagogical Reform of Financial Technology Studies: An Exploration and Practice Based on Interdisciplinary Synergy and Industry–Academia Collaboration

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Abstract: The rapid evolution of financial technology (FinTech) has imposed unprecedented demands on the way higher education institutions cultivate FinTech professionals. Currently, FinTech pedagogy faces several salient challenges: insufficient cross-disciplinary integration within the curriculum, a disconnect between hands-on training and actual industry requirements, a predominantly mono-dimensional knowledge profile among faculty, and only superficial incorporation of value-oriented education. After systematically examining these issues, this paper advances a four-pillar reform framework—namely, “interdisciplinary synergy, industry–academia co-education, digital–intelligent technology enablement, and value-oriented curriculum leadership”—and elaborates concrete measures in terms of curriculum restructuring, practical platform development, faculty competence enhancement, and evaluation mechanism innovation. By drawing on reform case studies from multiple domestic universities, this study seeks to offer both theoretical insights and practical references for the ongoing transformation of FinTech education.

Keywords: Financial Technology Studies; Pedagogical reform; Interdisciplinary integration; Industry–education integration; Talent cultivation

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1. Introduction

The swift progress of next-generation information technologies—including artificial intelligence (AI), big data, blockchain, and cloud computing—has profoundly altered the operational logic and industrial landscape of the global financial sector. Financial technology (FinTech) has transitioned from a marginal innovation to a mainstream application domain, evolving into an emergent field with its own disciplinary identity. In this context, the market demand for FinTech professionals has surged dramatically^[1]. According to industry

estimates, the annual demand for FinTech talent is projected to reach roughly 200,000 over the next five years, with total demand exceeding one million. Notably, 66.4% of financial institutions urgently require AI specialists, while 66% are in pressing need of big data experts. At the same time, cross-disciplinary talent continues to suffer from a two-way structural gap—technology-oriented practitioners often possess limited financial knowledge, whereas finance-trained professionals frequently lack sufficient technical depth.

As a quintessential interdisciplinary field, Financial Technology Studies draws upon theories and methods from finance, statistics, computer science, mathematics, and other disciplines, exhibiting strong cross-cutting characteristics and a pronounced practice-oriented nature. Nevertheless, FinTech programs at many universities remain plagued by weak curriculum integration, inadequate alignment between practical teaching and real-world industry demands, and a faculty composition that is insufficiently diverse. Concurrently, the Ministry of Education and the National Financial Regulatory Administration have jointly launched an initiative to establish national centers of excellence for financial talent development, explicitly calling for the “integration of disciplinary elements with FinTech cross-fertilization as the key lever.” Thus, how to adapt to evolving industry trends, deepen the pedagogical reform of Financial Technology Studies, and produce high-quality, versatile FinTech professionals capable of meeting the needs of the digital economy has become an urgent challenge for the higher education community^[2].

Building on a review of the current status and existing problems of FinTech teaching, and drawing on reform experiences from both domestic and overseas institutions, this paper systematically articulates a four-pronged reform path: interdisciplinary synergy, industry–academia co-education, digital–intelligent empowerment, and value-oriented curriculum guidance. The aim is to provide a coherent theoretical framework and actionable implementation plan for the teaching reform of this discipline.

2. Current state and problems of FinTech pedagogy

2.1. Insufficient interdisciplinary integration and shallow disciplinary convergence

The FinTech major spans multiple fields including finance, computer science, statistics, and mathematics. However, many universities still arrange their curricula merely as a simple overlay of “finance courses plus technology courses,” without achieving genuine interdisciplinary integration. There is little organic connection between finance-oriented and technology-oriented modules, making it difficult for students to develop a systematic cross-disciplinary knowledge base and the comprehensive ability to address complex FinTech problems^[3]. A survey of thirty application-oriented undergraduate institutions revealed that although the core curricula for Internet Finance programs exhibit some multi-disciplinary and cross-disciplinary features, they are weak in adaptability and practicality—largely owing to the long-term nature of disciplinary integration and resource constraints. Moreover, some universities tend to overemphasize theoretical instruction at the expense of hands-on experience, and the pace of content renewal lags considerably behind the forefront of FinTech industry practice.

2.2. Disconnect between practical teaching and industry needs, and shallow industry–academia collaboration

The FinTech industry is characterized by rapid technological iteration and diverse application scenarios, imposing high standards on graduates’ practical skills and innovative thinking. Yet practical teaching in current FinTech programs faces several common deficiencies: first, the construction of experimental and

training facilities falls behind, leaving students without teaching environments that mirror authentic industrial settings; second, university–industry partnerships remain largely superficial, lacking deep-seated mechanisms for joint curriculum design, faculty sharing, and co-cultivation of talent; third, students have limited exposure to real-world practice, resulting in a protracted transition from theory to application^[4]. As some studies have pointed out, the practical teaching of FinTech encounters core obstacles including dynamically evolving industrial demands, lagging educational supply, and coordination barriers among industry, academia, research, and application. These practical difficulties create a discernible capability gap between the talents being trained and those demanded by the labor market.

2.3. Monolithic faculty knowledge structure and shortage of “dual-qualified” instructors

Financial Technology Studies imposes high demands on faculty members in terms of interdisciplinary knowledge and hands-on industry experience. However, within the existing faculty cohort, instructors with a traditional finance background often lack technical and practical skills, while those with a computer science background tend to have only a limited grasp of financial business logic. In addition, due to constraints imposed by the university appointment system, it is difficult for FinTech industry experts with substantial practical experience to engage deeply in teaching activities. The shortage of “dual-qualified” (i.e., both academically and professionally competent) teachers severely hampers the improvement of teaching quality. Although some universities have recognized this issue, they remain at an early stage in building a “dual-qualified and dual-capable” faculty team.

2.4. Insufficient incorporation of value-oriented education and weak value guidance

FinTech is not merely a technological toolkit; it also carries important value missions, such as serving the real economy, safeguarding financial security, and promoting social equity. Nevertheless, the current integration of value-oriented education into FinTech teaching is still shallow and monotonous. Some instructors perceive value-oriented education merely as “label-pasting,” failing to embed value elements organically into the entire process of knowledge transmission and competence development. How to achieve an organic unity of value shaping, knowledge impartation, and skill cultivation in FinTech professional education remains a challenging frontier that requires urgent attention^[5].

3. Pathways and strategies for FinTech teaching reform

To address the above issues, this paper proposes a four-dimensional reform path: interdisciplinary synergy, industry–academia co-education, digital–intelligent technology enablement, and value-oriented curriculum leadership.

3.1. Optimizing the Interdisciplinary Integrated Curriculum System

Restructure the curriculum into modular blocks. Breaking down traditional disciplinary silos, we reorganize the curriculum along three main threads: “theory–technology–application.” Specifically, five progressive modules can be established: a general education module (disciplinary awareness + technological literacy), a foundational professional module (financial theory + programming basics), a core professional module (principles of FinTech + data analytics + AI), a specialized expansion module (blockchain finance + quantitative investment + robo-advisory), and a comprehensive practice module (project training + corporate

internships)^[6]. Curriculum design should adhere to the principle of “finance as the foundation and technology as the enabler,” thereby fostering multi-disciplinary convergence. For example, the Yingyang FinTech Industry College at Zhejiang University of Finance and Economics focuses on “AI + Finance,” pooling cross-disciplinary high-caliber faculty from computer science and data science, and introducing mathematical tools, engineering thinking, and programming methodologies into the financial talent cultivation system.

Develop cross-cutting integrated courses. Targeting typical FinTech application scenarios, we design integrated courses such as “Financial Big Data Analytics,” “Machine Learning for Financial Forecasting,” “Blockchain Technology and Financial Applications,” and “Intelligent Risk Control.” Emphasis should be placed on frontier relevance and practical utility, ensuring that the latest industry technologies and trends are promptly reflected in the classroom. Concentrating on the core “AI + Finance” direction, we can build specialized course packages like “Intelligent Quantitative Investment” and “Intelligent Risk Management.” At the same time, practice-based courses grounded in real-world contexts should be developed to enhance students’ AI application capabilities^[7].

Promote project-based and case-based teaching. Using authentic FinTech projects as vehicles, students are guided to identify problems and apply multidisciplinary knowledge in an integrated manner for analysis and solution. A FinTech case database should be established, covering diverse areas such as payment technology, credit technology, insurance technology, and regulatory technology. Through a reform trajectory of “scenario-driven, data-connected, capability-progressive,” we can drive the intelligent restructuring of the entire curriculum system.

3.2. Deepening the industry–education integrated practical teaching system

Build high-level experimental and training platforms. Leveraging digital technologies such as virtual simulation and big data, we establish FinTech virtual simulation experiment centers, digital finance interdisciplinary experimental teaching centers, and similar platforms. By introducing de-identified real-industry data and cutting-edge training software, we create simulation environments such as “virtual banks,” “intelligent risk control systems,” and “quantitative trading desks,” enabling students to undergo end-to-end training from data analysis to decision-making. For instance, Sichuan Vocational College of Finance and Economics, in cooperation with a technology firm, carried out a “financial multi-industry virtual simulation experiment” teaching activity, relying on a jointly developed “service-loan-investment” business simulation platform to allow students to experience authentic business scenarios in a simulated setting.

Establish collaborative education mechanisms between universities and enterprises. Promote multi-stakeholder collaboration among universities, enterprises, government, and industry associations, and institute “dual-mentor” cooperation models and industry tutor systems^[8]. Work with enterprises to co-develop courses, co-compile textbooks, and share faculty resources. Refine the “order-based” talent cultivation model and the five-dimensional integration framework of “posts, courses, competitions, certificates, and innovation.” For example, the FinTech College at Shanghai Lixin University of Accounting and Finance adheres to a “student-centered, outcome-oriented, and continuous-improvement” educational philosophy, highlighting three major features: “integrity quality, digital-intelligent empowerment, and industry–education integration.” It has constructed a composite FinTech talent training structure that covers foundational literacy, professional competencies, AI skills, and career development pathways.

Expand the levels of practical teaching. Build a four-tier progressive practical teaching system

comprising “basic experiments—comprehensive training—innovative practice—corporate internships.” Encourage students to participate in FinTech competitions and innovation/entrepreneurship projects, thereby achieving “learning through competition and innovating through competition.” Shanghai University of Finance and Economics, drawing on its self-developed Kuangshi Finance Education Large Model and Fin-R1 Financial Large Model, combined with de-identified real business data and enterprise development platforms, has created a tri-dimensional innovative education model of “frontier theory + industrial training + practical competition.”

3.3. Building a “dual-qualified and dual-capable” faculty

Optimize faculty recruitment and development mechanisms. Recruit more faculty members with backgrounds in computer science, data science, and other relevant fields. Support existing faculty to undertake temporary assignments in FinTech enterprises so as to sharpen their industry practice skills. Establish a faculty development mechanism driven by both “external incentives and internal motivation.” Hebei University of Finance has formulated the “Measures for the Recognition and Administration of Dual-Qualified and Dual-Capable Teachers,” encouraging faculty to obtain professional certifications accredited by authoritative government bodies or industry associations. By June 2025, the proportion of dual-qualified and dual-capable teachers had reached 41.27% ^[9].

Build cross-disciplinary teaching teams. Form course teaching teams composed of faculty from finance, computer science, statistics, and other relevant disciplines, and conduct joint lesson preparation and cross-disciplinary teaching research activities. Invite technical experts, quantitative analysts, risk control model specialists, and other professionals from FinTech enterprises to serve as industry mentors, thereby strengthening practical guidance. For instance, the Financial Technology Studies teaching team at Shanxi University of Finance and Economics, with a student-centered approach and value-oriented education as a key lever, has been successfully selected as a co-construction member of the Ministry of Education’s Virtual Teaching and Research Center for FinTech.

Promote the digital transformation of faculty. Conduct smart teaching capability training to enhance instructors’ proficiency in using AI, big data, and other technologies for teaching. Guide faculty to shift from being “knowledge transmitters” to “learning facilitators,” and adopt a stepped cultivation model to help them stay abreast of frontier digital technologies, ultimately forging a composite faculty team.

3.4. Deepening the value guidance of value-oriented curriculum

Construct a system for integrating value-oriented education. Organically embed value elements—such as national FinTech strategy, financial security, technology ethics, and the principle of “finance for the people”—into professional teaching. Establish a “123N” value-oriented curriculum system to achieve the organic unity of value shaping, knowledge impartation, and skill development. For example, the Finance College at Sichuan Vocational College of Finance and Economics, centered on the FinTech professional cluster, has innovatively created a distinctive education model of “red finance + digital teaching.” Through a four-dimensional mapping system of “profession + knowledge + skills + values,” it weaves red financial culture throughout the entire curriculum delivery process.

Innovate teaching methods for value-oriented education. Through case teaching, flipped classrooms, scenario simulations, and other approaches, naturally integrate value education into the instructional process. Guide students to pay attention to the development of domestic technologies and to value technology ethics

and the spirit of scientific inquiry. The teaching team at Shanxi University of Finance and Economics, for example, has actively experimented with flipped classrooms, case-based teaching, and the integration of value elements into course delivery.

Improve the evaluation mechanism for value-oriented curriculum. Establish a “dynamic adjustment” mechanism to continuously refine the content and methods of value-oriented education based on student feedback and employment outcomes.

3.5. Innovating teaching evaluation and quality assurance mechanisms

Promote diversified assessment and evaluation. Move beyond the traditional single final-examination model and establish a diversified assessment system that combines formative and summative evaluation. Introduce assessment formats such as project defenses, case analysis reports, and practical achievement presentations ^[10].

Build a continuous improvement mechanism. Establish a closed-loop quality assurance system of “evaluation–feedback–improvement,” and conduct regular teaching assessments and curriculum revisions ^[11]. Utilize big data analytics to conduct precise diagnosis of the teaching process, enabling the design of personalized learning pathways.

4. Practical explorations and initial outcomes

In recent years, a number of domestic universities have actively explored reforms in FinTech pedagogy and have achieved notable results.

Shanghai University of Finance and Economics (SUFU) has adopted the core concept of “reshaping teaching and talent development processes through AI integration,” constructing “course professional models” and “competency maps,” compressing redundant class hours, and supplementing new courses such as big data finance, financial large models, and machine learning. SUFE has also established a FinTech Virtual Simulation Experiment Center and a Digital Finance Interdisciplinary Experimental Teaching Center, leveraging digital technologies to shorten the journey from theory to practice. In 2026, the “Finance-Artificial Intelligence” joint bachelor’s degree program co-applied by SUFE and Fudan University was officially approved, becoming the first cross-university joint bachelor’s program in Shanghai. Through mutual course recognition, joint teaching, joint practice, and joint graduation projects, the two universities are co-developing deeply integrated interdisciplinary modules around core areas such as AI frontiers, financial big data analytics, pattern recognition and machine learning, blockchain applications, robo-advisory, intelligent risk management, and regulatory technology.

Shanghai Lixin University of Accounting and Finance’s FinTech College, as noted earlier, persistently adheres to the “student-centered, outcome-oriented, continuous-improvement” philosophy, highlighting the three distinctive features of “integrity, digital-intelligent enablement, and industry–education integration,” and systematically refining its curricular modules and practical teaching system. The college has invited industry experts from Lujiazui International Trust, Hualqin Technology Group, Industrial and Commercial Bank of China, Alibaba, and other organizations to participate in the validation of talent cultivation plans. In 2026, the college further convened a seminar on the construction of the FinTech Industry Joint College, bringing together enterprise experts from Alibaba Cloud, HSBC Group, PwC, and others to discuss collaborative innovation pathways that integrate government, industry, academia, research, and application.

Shandong University of Finance and Economics has advanced the new finance education reform by distilling three main curriculum threads for its FinTech major—theory, technology, and business application—thereby promoting the cross-fertilization of AI and finance. Shandong Vocational College of Economics and Trade has innovatively implemented a “multi-party collaboration, four-dimensional integration, four-layer progression” digital–intelligent finance talent cultivation model, constructing a progressive curriculum system that covers general education, foundational professional education, integrated professional education, specialized professional education, and industry–education integrated innovative education.

Sichuan Vocational College of Finance and Economics’ Finance College, with the FinTech professional cluster at its core, has comprehensively deepened value-oriented curriculum development and created a distinctive “red finance + digital teaching” education model. The college has built a four-dimensional mapping system of “profession + knowledge + skills + values,” classifying its courses into three levels: “first-level foundational courses sharing a common base, second-level professional courses interconnected, and third-level directional courses for shared selection.” Data indicate that the digital tool application proficiency rate among students from secondary vocational backgrounds increased from 62% at enrolment to 94%, while the practical operation pass rate among students from general high school backgrounds rose from 58% to 91%.

In addition, South China University of Technology has constructed a three-in-one talent cultivation system combining “liberal arts–engineering integration, university–industry collaboration, and industry–education integration.” Capital University of Economics and Business has leveraged its existing faculty strengths in blockchain, financial machine learning, and AI applications, concentrating on AI financial programming and large-model applications to develop flagship products for its FinTech laboratory. Southwestern University of Finance and Economics and University of Electronic Science and Technology of China have jointly launched an innovative “dual-university co-education, bachelor-master-doctorate integrated” FinTech talent training model.

5. Conclusion

The rapid advancement of FinTech poses profound challenges to university-level talent cultivation, yet it also offers rare opportunities for pedagogical innovation. The reform of Financial Technology Studies is a systemic undertaking that demands coordinated efforts across multiple dimensions—curriculum system, practical teaching, faculty development, value-oriented education, and evaluation mechanisms. Universities should, based on their own institutional positioning, proactively align with industry development needs and persistently pursue the four-pronged path of “interdisciplinary synergy, industry–academia co-education, digital–intelligent technology empowerment, and value-oriented curriculum leadership.” In doing so, they can continuously deepen teaching reform, cultivate high-quality, versatile FinTech professionals who possess financial literacy, technical competence, and a strong sense of social responsibility, thereby providing robust talent support for the high-quality development of China’s FinTech industry and the broader endeavor of building a financial powerhouse.

Disclosure statement

The author declares no conflict of interest.

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