

# Study on the Teaching Path of Integrating Integrity Education Elements into the Course “Foundations of Financial Big Data”

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## Abstract

**With the widespread adoption of financial big data technologies, ethical issues such as data distortion and falsification in financial work have become increasingly prominent. Integrating integrity education into the course “Foundations of Financial Big Data” is therefore of significant practical importance. Guided by the principles of curriculum ideology and politics, and addressing the current lack of systematic integrity education in this course, this paper proposes a teaching pathway characterized by “aligned objectives, embedded content, integrated methods, and closed-loop evaluation.” The pathway is implemented across four dimensions: curriculum content restructuring, classroom teaching delivery, practical education expansion, and assessment and evaluation. By achieving an organic integration of technical instruction and integrity education, the study aims to cultivate a new generation of financial professionals who possess both strong financial big data skills and a firm commitment to professional integrity. This research provides a replicable practical model for integrating integrity education into technology-oriented courses, contributing positively to the construction of a “Clean China” and the high-quality development of the financial industry.**

## Keywords

**Foundations of Financial Big Data; Integrity Education; Curriculum Ideology and Politics.**

## 1. Introduction

With the deepening application of technologies such as big data and artificial intelligence in the financial domain, the working model of finance is undergoing a transformation from traditional accounting practices toward data-driven operations, intelligent analytics, and risk early warning. Financial data, as the core asset of enterprises, directly impacts business security, market order stability, and the construction of the social credit system through its authenticity, completeness, and security. In recent years, problems such as financial data falsification, earnings manipulation, information leakage, and irregular operations have emerged frequently, exposing prominent issues including the lack of professional ethics among some practitioners, weak compliance awareness, and blurred ethical boundaries, while also presenting new challenges to the cultivation of financial talent in higher education institutions.

The Chinese government places great emphasis on the development of an integrity culture in the new era, explicitly requiring the integration of integrity education into textbooks and classrooms, and incorporating integrity literacy into the entire process of talent cultivation. Curriculum ideology and politics, as a key pathway to fulfilling the fundamental task of fostering virtue through education, emphasizes the deep exploration of ideological and political resources in various professional courses to achieve the organic integration of knowledge transmission, skill development, and value guidance. The course “Foundations of Financial Big Data” covers content such as SQL data processing, financial data visualization, and data

governance, and inherently encompasses integrity education elements including data honesty, compliant operations, privacy protection, and anti-fraud measures, offering inherent conditions for deep integration with integrity education.

However, current teaching practices for this course remain primarily centered on technical tools. Integrity education is mostly addressed through simple case discussions, lacking systematic design, modular implementation, and closed-loop evaluation, making it difficult to achieve genuine internalization among students. Against this backdrop, this paper takes the course “Foundations of Financial Big Data” as the research subject to investigate teaching paths for the systematic integration of integrity education elements, constructing an integrity-oriented talent cultivation model suitable for technology-oriented courses. The research aims not only to enrich the theory and practice of curriculum ideology and politics but also to provide support for cultivating integrity-conscious financial talent capable of meeting the demands of the digital era.

## 2. Research Objectives

To cultivate financial data talent with both moral integrity and professional competence. Through curricular integration, the study seeks to help students establish integrity-centered professional values and clarify ethical boundaries in financial data processing, such as data authenticity, privacy protection, and anti-fraud awareness. The integration of integrity education elements into the course is intended to foster a sense of responsibility among students, strengthen their awareness of the sensitivity of financial data, and enable them to understand the legal and social consequences of data tampering and false reporting. At the same time, it aims to enhance students’ compliance capabilities by embedding data governance norms into SQL instruction, equipping them with compliant data operation procedures to better respond to industry demands and risk challenges. Through the cross-disciplinary integration of technical education and integrity education, the goal is to cultivate a new type of talent that not only excels in financial big data analysis skills but also maintains a firm commitment to integrity, thereby promoting transparency, standardization, and sustainable development in the financial sector in the digital era.

## 3. Research Significance

Integrating integrity education into the course “Foundations of Financial Big Data” holds significant theoretical and practical value. From an educational perspective, it innovates the implementation pathway of “curriculum ideology and politics,” effectively addressing the problem of separating professional education from moral education through the organic integration of technical practice and integrity culture, and providing a new paradigm for cultivating compound talent with both skills and virtues. From the perspective of industry development, the research directly confronts real-world risks such as financial data falsification and improper transfer of benefits. By embedding data ethics and compliance awareness into SQL instruction, it can enhance the professional ethics and risk prevention capabilities of future financial professionals, thereby contributing to the optimization of corporate internal controls. In terms of social benefits, the research responds to the national strategy of building a “Clean China,” establishing an anti-corruption line of defense from the educational source, while also aligning with the requirements of regulations such as the Data Security Law to promote standardized development in the financial big data domain. Furthermore, the systematic framework developed through this research offers replicable practical experience for the integration of ideological and political education into other technology-oriented courses, providing broad demonstration and dissemination value.

#### 4. Current Status of Domestic Research

Research on integrating integrity education into university courses in China has developed into multi-layered practical explorations. In higher education, efforts have increasingly emphasized specialized integration. For example, Shanghai University of Finance and Economics has offered courses such as “Clean Finance,” using industry cases (e.g., financial fraud, data tampering) for integrity education, and has explored the integration of technology courses (e.g., SQL data analysis) with integrity education to cultivate students’ compliance awareness. However, several problems persist in the integration of integrity culture into university curricula. Wang Cong (2021) identified that the primary reasons include insufficient emphasis on the construction of spiritual culture in higher education institutions, an inadequate corresponding institutional system, and a lack of sufficient efforts in establishing integrity behavioral norms.[1] From multiple perspectives, scholars have proposed pathways for integrating integrity culture into university curricula. Jiang Cheng (2021) advocates for the implementation of collaborative mechanisms, the improvement of integrity education frameworks for university students, the reform and innovation of ideological and political education to cultivate students’ integrity consciousness, the exploration of China’s excellent integrity cultural heritage, the vigorous implementation of cultural integrity cultivation, the expansion of integrity education channels through online platforms, and the creation of favorable learning environments.[2] He Yue and Zhang Qing (2017) propose strengthening students’ theoretical education on integrity through the development of practical education bases to facilitate self-purification and self-education.[3] Yang Yurong (2023) investigates integrity cultural integration from five dimensions: enhancing students’ integrity cognition and integrating the educational subjects’ ideological engagement; strengthening teacher development and integrating the professional engagement of teaching subjects; improving integrity education methods; refining integrity education mechanisms; and optimizing the integrity education environment to ensure the penetration and integration of educational content.[4] Wang Cong (2021) examines strategies for integrating integrity culture into ideological and political education for university students in the new era, focusing on enhancing the construction of integrity spiritual culture, improving integrity institutional culture, and strengthening integrity behavioral culture.[1]

#### 5. Construction of the Teaching Path for Integrating Integrity Education into the Course “Foundations of Financial Big Data”

The deep integration of integrity education into the course “Foundations of Financial Big Data” is not a simple addition or sloganeering, but rather the development of a systematic teaching pathway guided by curriculum ideology and politics, with the financial big data technical process as the central thread and data ethics and professional integrity as the core, aiming for aligned objectives, embedded content, integrated methods, and closed-loop evaluation. In its concrete implementation, the research adheres to the principle of “taking technical instruction as the body and integrity education as the soul,” advancing progressively across four levels: curriculum design, classroom implementation, practical expansion, and assessment and evaluation. It translates integrity requirements into teachable, experiential, and assessable instructional behaviors, enabling students to build a solid ideological defense through technical learning and uphold professional bottom lines in practical training, thereby achieving the resonance of value guidance, knowledge transmission, and skill development.

##### 5.1. Path for Restructuring Curriculum Content

A dual-track framework that equally emphasizes “technical competency modules” and “professional ethics modules” is adopted to construct a training structure that balances professional skills and professional integrity. In terms of the teaching model dimension, relying

on distinctive teaching resources, including data authenticity verification and abnormal transaction monitoring, the “curriculum ideology and politics scheme” is innovated, ultimately achieving the training objective of “producing talent with both moral integrity and professional competence.” The two systems support each other, forming a complete educational chain from knowledge transmission to value guidance. Using the entire financial big data operational workflow as the foundation, each knowledge point’s integrity education connotation is precisely identified, resulting in an embedded content system where “knowledge points-ideological and political points-literacy points” correspond one-to-one. In the data collection stage, integrity requirements such as data authenticity, compliance of original vouchers, and prohibition of fabricated data sources are embedded, establishing that the legality and authenticity of data sources constitute the foremost bottom line of financial work. In the data cleaning and preprocessing stage, professional ethics such as eliminating false data, maintaining proper documentation trails, and rejecting tampering are emphasized, along with awareness of risks associated with data distortion, earnings manipulation, and false processing. In the SQL data analysis and anomaly detection stage, anomaly transaction identification, fraud characteristic analysis, and compliant query operations are highlighted as instructional priorities, enabling students to understand, through technical practice, the significance of integrity in preventing financial risks and safeguarding corporate interests. In the data visualization and reporting stage, professional principles of objective presentation, fair analysis, non-misleading decision-making, and non-embellishment of results are underscored, embedding integrity awareness throughout the entire chain of financial data processing, thereby achieving a natural and organic integration of professional content and integrity education.

## 5.2. Path for Classroom Teaching Implementation

Breaking away from traditional lecture-based teaching models, diversified methods including case-driven learning, scenario-based simulations, task-oriented instruction, and blended teaching are adopted to transform integrity education from passive listening to active comprehension and hands-on practice. Drawing on typical industry cases such as financial fraud, data manipulation, and information leakage, case-based discussions and risk analyses are conducted, guiding students to use their acquired technical skills to identify problems, analyze causes, and understand consequences, thereby tightly integrating integrity education with skills training. Scenario-based simulation tasks in financial data processing are designed, featuring common workplace situations such as conflicts of interest, external interference, and temptations to falsify data, allowing students to make compliant choices and strengthen their integrity judgments through role-playing. Using big data training platforms, online practical exercises are conducted, embedding integrity operation norms into task instructions and operational steps, so that through repeated practice, students develop professional habits of compliant operation, honest processing, and integrity-based practice. At the same time, offline and online lectures by industry experts are introduced to interpret financial data compliance requirements, professional ethics norms, and legal responsibilities, aligning classroom teaching with industry realities and enhancing the relevance and persuasiveness of integrity education.

## 5.3. Path for Practical Education Expansion

The research explores the integration pathway of “technical ethics and integrity culture.” By designing scenario-based instructional tasks such as corporate role-playing, students’ sense of responsibility is strengthened through practical data processing activities involving conflicts of interest. The study adheres to the principle of integrating on-campus instruction with off-campus practice, establishing school-enterprise collaborative and virtual-real blended practice platforms to promote the transition of integrity education from the classroom to real-world settings and from cognitive understanding to actionable behavior. Relying on on-campus big

data laboratories and financial training centers, specialized training projects covering data compliance, anti-fraud identification, and data security are offered, enabling students to complete the entire process from data processing to risk prevention and control in simulated environments, thereby strengthening their practical ability to perform integrity-based operations. Through school-enterprise cooperation, real-world corporate financial data governance and internal audit projects are introduced, and team-based project training is conducted, embedding integrity requirements such as data confidentiality, operational compliance, and honest performance into authentic tasks, achieving “integrated learning and practice with dual cultivation of integrity and skills.” Students are also organized to visit corporate finance departments, big data centers, and audit institutions for on-site observation and practical research, allowing them to directly experience industry integrity standards, internal control processes, and compliance benchmarks. This process transforms integrity education from theoretical knowledge into professional commitment and from classroom requirements into established behavioral norms.

#### **5.4. Path for Closed-Loop Assessment and Evaluation**

Moving beyond the limitations of single-dimensional technical assessment, a composite evaluation system that combines process-based assessment with summative assessment, and places equal emphasis on professional skills and integrity literacy, is constructed, using evaluation as a mechanism to ensure the effective implementation of integrity education. The evaluation dimensions are divided into two major components: technical competency and professional integrity. Technical competency focuses on assessing professional proficiency in data processing, SQL operations, and visualization analysis, while professional integrity focuses on evaluating key aspects such as data honesty, compliant operations, sense of responsibility, and integrity performance. In process-based assessment, students’ classroom performance, compliance with operational norms in training, attitudes toward case-based discussions, and honest behaviors in team collaboration are tracked and recorded. In summative assessment, content such as integrity ethics judgment, data compliance case analysis, and professional ethics discussion is added, and multiple evaluation subjects—including instructor evaluation, peer evaluation, and corporate expert evaluation—are introduced to form comprehensive and multidimensional assessment results. By establishing clear evaluation criteria, providing timely feedback on results, and addressing specific weaknesses, a complete closed loop of “teaching-practice-assessment-improvement” is formed, ensuring that the integration of integrity education into the course is actionable, effective, measurable, and continuously improvable.

### **6. Conclusion and Outlook**

#### **6.1. Research Conclusion**

Integrating integrity education into the course “Foundations of Financial Big Data” is a necessary choice for fulfilling the fundamental task of fostering virtue through education, adapting to industry demands, and deepening curriculum ideology and politics. The course and integrity education are highly aligned in content, objectives, and scenarios. By reconstructing the dual-dimensional curriculum system, innovating collaborative teaching models, and improving composite evaluation mechanisms, the problem of the “two separate systems” can be effectively addressed, and students’ professional competencies and integrity literacy can be significantly enhanced, yielding important theoretical and practical value.

#### **6.2. Research Outlook**

Future efforts can be deepened in three areas: first, continuously updating the case and resource libraries to keep pace with regulatory and industry changes; second, extending the model to courses such as Accounting Information Systems, Big Data in Auditing, and Financial

Analysis to form a professional cluster integrity education system; third, improving training mechanisms for teachers' ideological and political capabilities, establishing long-term school-enterprise collaborative mechanisms, and developing outcome dissemination mechanisms to promote the normalization and institutionalization of integrity-oriented talent cultivation.

In the digital era, integrity serves as the foundation for finance professionals, while technology constitutes the core competency for career development. Only by adhering to the principle of integrating moral education and skills training, combining education with practical application, and embedding integrity education into every professional course and every teaching link can higher education institutions truly cultivate high-caliber, integrity-conscious financial talent that earns the trust of the nation, the confidence of the industry, and the recognition of society, thereby contributing educational strength to the construction of a Clean China and the high-quality development of the financial industry.

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