Innovative Pathways for Teaching Reform of Finance Course in Economics in Colleges and Universities in the Digital Age

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Abstract: As digital technology continues to penetrate into the financial sector, financial education of economics in traditional colleges and universities is tested by outdated curriculum structure, lack of practice, and severe shortage of teaching staff, making it difficult to meet the requirements of the financial industry for compound talents and technical personnel. This paper discusses the improvement schemes of financial education in economics from improvement of curriculum framework, innovation of practical forms, construction of teaching staff, perfection of assessment system, and other aspects from the perspective of digital transformation of the financial industry, and aims to cultivate application-oriented talents that know finance theory and digital technology very well, and urge knowledge in the higher education to align with the financial business in reality to promote the integrative development of higher education and the financial industry, and provide talent guarantee for the sustainable development of the entire financial industry by adding endorsement courses of financial technology, building specialized training venues for technical renovation of finance, implementing the school-enterprise joint guiding system, establishing a diversified assessment systems and many other detailed steps.

Keywords: Digital Age; Economics in Colleges and Universities; Teaching Reform of Finance Course; Innovative Pathways; Application of Financial Technology (FinTech)

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1.Introduction

With the innovation of technologies represented by big data, artificial intelligence and blockchain, the financial industry is transforming towards digitization and intelligence, and new business forms, such as Robo-advisor, digital currency and supply chain finance, have emerged. These changes have led to a profound transformation in the talent training objectives and core quality in the financial sector. At present, there are some problems, such as divorce between theory and practice, rigid and monolithic teaching methods, and scarcity of training resources, in the teaching status of finance course of economics in colleges and universities, which results in that graduates fail to meet the job requirements of digital finance. Under such circumstances, deepening the reform of finance education in economics in colleges and universities is not only a key measure to optimize the quality of financial talent cultivation, but also an important pathway to promote higher education to better serve economic and social development and support the implementation of national strategies. And it has long-term significance for advancing the modernization process of the financial education system and accelerating digital transformation of the financial industry.

2.Challenges for Finance Teaching in Colleges and Universities in the Digital Age

2.1 *Curriculum System Is Hard to Meet the Needs of Digital Transformation in the Financial Industry*

The traditional financial education system mostly focuses on currency banking, international finance and securities investment. Although it is conducive to the formation of a relatively stable basic financial architecture, under the general trend of digital transformation, the importance of FinTech is not strongly manifested in the curriculum. The existing curriculum setting does not cover all the important content of FinTech such as big data risk control technology, application examples of blockchain, service update models led by artificial intelligence. Students lack systematic understanding of Robo-advisor, Mobile Payment Platforms or Quantitative Trading. The replacement cycle of textbooks is also relatively long and cannot keep up with the new development of financial technology. Some cutting-edge concepts, such as digital currency and RegTech, are not included in the textbooks, which may

lead to the situation where graduates' knowledge is outdated, thereby increasing the difficulty and complexity in adapting to the job market [1].

2.2 *Practice Teaching Is Hard to Match the Job Requirements of Digital Finance*

Financial Studies is a highly practical discipline. In economics education of colleges and universities, it has obvious shortcomings in teaching. Current teaching mainly relies on traditional stock trading simulation software and classic case analysis methods and makes it difficult to create digital training environment in real scenarios, resulting in students being unable to master cutting-edge application skills such as big data analysis tools (Python Financial Data Processing) and blockchain technology. There is a lack of in-depth cooperation between universities and FinTech enterprises. Most laboratories in campus remain at the level of traditional financial simulation and lack service platforms covering the entire process of digital financial business, which, to some extent, restricts the improvement of students' digital skills and comprehensive quality.

2.3 *Digital Literacy of the Teaching Staff Is Hard to Meet the Needs of Teaching Reform*

Finance teachers in economics are the primary driving force of higher education reform. However, there is a significant gap between their digital literacy and teaching demand. Due to their long-term focus on traditional theoretical teaching, many teachers are short on practical experience in financial technology enterprises and do not know well how big data analysis, artificial intelligence, etc. are applied in finance. As a result, it is difficult for them to effectively teach digital finance knowledge based on specific cases in classrooms. Most teachers have relatively weak teaching ability in digital aspects, which makes it difficult for them to expertly use online education platforms and virtual simulation teaching tools, etc., and makes them unable to effectively arouse students' interest in learning digital financial knowledge through diverse teaching methods. This has a certain effect on the overall teaching quality.

2.4 *Monolithic Assessment Mechanism Is Hard to Comprehensively Assess Students' Digital Skills*

At present, most teaching assessment systems of finance course in colleges and universities rely on theoretical examinations and general assignments, and focus on the mastery of financial theoretical knowledge, while paying less attention the application ability of digital technology and innovative thinking. Traditional assessment mostly focuses on concept interpretation and logical reasoning, and lack specialized and specific assessment mechanism for practical skills such as completing financial data analysis through Python programming and improving risk management by using big data algorithms. In terms of the assessment subjects, the current assessment model is still dominated by one-way assessment of teachers, which does not comprehensively integrate external resources such as financial institutions and industry experts to form a multi-party collaborative comprehensive assessment system. This results in students are not fully examined in the ability to apply digital technology in actual business scenarios, and then restricts the achievement of the teaching objective of integrating theoretical teaching with practical application [2].

3.Innovative Pathways for Teaching Reform of Finance Course in Economics in Colleges and Universities in the Digital Age

3.1 *Reconstructing the Curriculum System: Embedding the FinTech Module to Promote the Deep Integration of "Finance + Digital Technology"*

3.1.1 *Establishing Curriculum Systems Centering on Financial Technology*

Based on the main knowledge structure of the traditional financial studies (such as currency banking, corporate finance), colleges and universities can build curriculum frameworks that include the elements of financial technology to achieve a teaching structure that integrates "theoretical foundation + digital technology + industry practice", offer specialized courses like "Introduction to Financial Technology", "Big Data Financial Analysis", "Blockchain Financial Application", and "Artificial Intelligence Risk Management and Control" to help students gain a deep

understanding of the key technologies and business logic in the process of digital transformation, and conduct specialized training on data analysis methods such as Python and R language to optimize students' practical ability and provide strong support for their career development.

3.1.2 *Promoting the Digital Transformation of Traditional Courses*

Colleges and universities should improve the teaching system of finance studies, integrate digital technology to enhance the practicality of courses, add a special module on "Quantitative Trading Strategy Design" to the course of "Securities Investment", to guide students to perform basic quantitative analysis tasks using the Python language, and explore the methods of market data mining and trading model construction, introduce the cases on the digital transformation of commercial banks in the course of "Management and Operation of Commercial Banks" to comprehensively expound the operation principles of intelligent customer service and online credit approval systems, and deepen students' understanding of how financial technology can bring about changes in the traditional financial industry [3].

3.1.3 *Offering Interdisciplinary Elective Courses*

To enable students to establish various types of knowledge structures, it is necessary to focus on guiding them to take the courses related to computer science, data science and information technology, offer interdisciplinary elective courses such as "Data Structures and Algorithms" and "Machine Learning Fundamentals", to encourage students to understand the fundamental characteristics of digital technology, and establish a "FinTech micro-major" to integrate the resources of economics, computer science and mathematics, etc., and allow students to systematically grasp the core theoretical system and practical application ability of FinTech, and thereby to have a distinct advantage.

3.2 *Upgrading Practice Teaching: Building Digital Platforms and a "Simulation + Practice" System*

3.2.1 *Building Digital Finance Laboratories on Campus*

Colleges and universities should establish digital financial experiment platforms, which include three major functions: simulation training, practical application, and innovative research. They integrate professional tools and cutting-edge application systems, data statistics and analysis software (such as SPSS, and Stata), quantitative investment analysis platforms (such as Wind, and JoinQuant), blockchain financial simulation modules, and Robo-advisor, supply chain financing, and digital currency payment, and other typical business scenarios in mainstream financial sectors, and employ virtual reality technology to realize the recurrence of classic financial risk cases (credit default early warning, liquidity crisis management) to guide students to conduct practical operations in a virtual environment and enhance their ability to solve complex financial problems.

3.2.2 *Deepening School-Enterprise Cooperation to Jointly Build "Practical" Practice Bases*

Colleges and universities can rely on the leading FinTech companies (such as Ant Group, and JD Digits) and the digital departments of traditional financial institutions (such as FinTech departments of banks, and securities brokerage FinTech subsidiaries) to build school-enterprise collaborative practice teaching platforms. On the one hand, they can invite industry experts to participate in course development and teaching scheme formulation based on the job requirements. On the other hand, they can arrange students to conduct internships in enterprises to participate in digital finance projects in actual business (such as the development of user credit evaluation models and the improvement of Robo-advisor algorithms), and enhance their application level of digital technology, and provide high-quality professional talents for the industry.

3.2.3 *Implementing Digital Financial Competition and Project-Based Learning*

Colleges and universities can rely on competition activities and practical projects to effectively stimulate students' consciousness of innovation, lead students to form teams to carry out scheme design around the themes such as "Improved Design of Digital Payment System" and "Pathways for Financial Technology to Promote the

Implementation of Rural Revitalization Strategy", and organize phased achievement exhibitions, employ the project-based learning (PBL) model in classroom teaching to lead students to complete tasks such as "Building a Credit Evaluation Model for Small and Micro Enterprises Based on Big Data" or "Exploring the Application Prospects of Blockchain Technology in Cross-border Payment" in groups, and train their teamwork ability and innovative thinking in the complete process of "problem discovery- strategy planning - actual verification".

3.3 *Strengthening the Construction of Teaching Staff: Building "Double-Position" Teacher Teams and Enhancing Teachers' Digital Skills*

3.3.1 *Introducing and Cultivating Finance-Digital Composite Teachers*

On the one hand, colleges and universities should establish a dedicated talent introduction system to attract senior technical personnel and management elites from FinTech companies and Internet finance platforms principally, thereby optimizing the quality of the teaching staff. On the other hand, it is necessary to encourage in-service teachers to participate in training activities related to digital transformation. Teachers can join the "Financial Technology Education Enhancement Programs", obtain professional qualification certificates in the sector of big data analysis, or be arranged to conduct field research on financial institutions to understand the development tendency of the industry and then integrate the latest cases and technological achievements into the classroom.

3.3.2 *Implementing Collaborative Teaching of School Teachers and Enterprise Mentors*

Colleges and universities should establish a collaborative education mechanism of "university teachers + enterprise experts". Both university teachers and enterprise experts jointly undertake the teaching tasks of the course. Taking "Blockchain Financial Application" as an example, university teachers mainly teach the basic theories of blockchain, while enterprise experts meticulously analyze the key difficulties and solutions in the process of technology transformation by relying on their experience in cross-border payment business. In the stage of actual operation, enterprise mentors guide students to develop digital finance projects throughout the process, while university teachers provide theoretical support and technical assistance, achieving an integration of theoretical learning and practical ability [4].

3.4 *Optimizing the Assessment Mechanisms: Building Diversified Assessment Systems to Measure Students' Comprehensive Ability*

3.4.1 *Expanding the Assessment Dimensions and Strengthening the Assessment on Digital Skills and Practical Ability*

Colleges and universities should build new assessment systems to take the application ability of digital technology and innovation practice as the main assessment indexes, add practical operation examination sections to encourage students to complete the pre-processing and analysis of financial data using the Python language, achieve the purpose of risk management with the help of big data models and submit system analysis reports during the course assessment period, use case studies as a carrier to guide students to pay attention to the cutting-edge topics in digital finance sector (such as the improvement plan for Robo-advisor and the formulation of strategies for promoting e-RMB) during the final exam period of the semester, thereby assessing their ability to connect theory with practice and their comprehensive innovation capabilities.

3.4.2 *Introducing Multiple Assessment Subjects and Establishing School- Enterprise Collaborative Assessment Mechanisms*

Colleges and universities should break free from the intrinsic constraints of the traditional monolithic assessment model, and establish diversified external evaluation systems. During the internship stage of students, enterprise mentors can conduct comprehensive assessment based on multiple dimensions such as the quality of project outcomes, the application of digital technology, and the level of teamwork. As for the curriculum design or graduation design, industry experts should be invited to join the assessment team to give professional assessment on students' creations from the perspective of practical operations, thereby enhancing the objectivity and pertinence of

the assessment results.

4.Guarantee Strategies for Teaching Reform of Finance Course in Economics in Colleges and Universities in the Digital Age

4.1 *Increasing Policy Support and Resource Input*

Colleges and universities should incorporate teaching reform of finance studies into the strategic planning system of their development, promote the formation of digital financial education systems by systematically designing and implementing special schemes in phases. And they can establish special funds for financial technology education to focus on supporting laboratory establishment, teacher training, textbook compilation, and other key aspects. They should also strive for policy support and financial support from the education authorities, and jointly promote the financial talent cultivation plans with local governments to provide sufficient resource guarantee for teaching reform.

4.2 *Promoting the Digital Construction of Textbooks and Teaching Resources*

Colleges and universities should form teaching and research groups led by renowned experts in FinTech sector to carry out innovative textbook development activities that integrate the cutting-edge concepts of FinTech, enhance the period feel and practicality of the content by using practice cases from enterprises, build digital teaching resource centers to systematically integrate various materials such as typical cases of FinTech, industry development reports, and online video courses, and rely on the digital platforms on campus to make public them to teachers and students, providing support for personalized learning and improving the teaching resource system.

4.3 *Establishing Feedback and Adjustment Mechanisms for the Effect of Teaching Reform*

Colleges and universities should establish systematic and regular assessment mechanisms for the achievements of educational reform, use various means, such as questionnaires, in-depth interviews, and enterprise feedback, to comprehensively collect opinions and suggestions on teaching reform from teachers, students, and industry experts, continuously adjust the course arrangement, practice teaching methods, and assessment and evaluation criterion based on the assessment data. Due to the increasing demand for blockchain technology in the financial sector, it is necessary to increase the class hours of relevant courses in a timely manner and strengthen practice teaching to ensure that educational innovation always conforms to the actual situation of industrial development.

5.Conclusion

Digital transformation brings both opportunities and challenges to the teaching reform of finance course in economic and management majors in colleges and universities. It is necessary to take industry demand as the orientation and carry out systematic reform from many aspects such as the improvement of the curriculum system, the renewal of practice teaching forms, the construction of the teaching staff, and the improvement of the assessment mechanism. At the same time, it is necessary to deeply integrate “specialization” with “digitization” to focus on cultivating compound talents who have both financial knowledge and digital skills. Looking ahead, with the continuous advancement of information technology, colleges and universities need to constantly refresh their teaching reform ideas, strengthen the school-enterprise collaborative education mechanism, and promote the dynamic adaptation of financial education content to new forms of digital economy. Only by deepening teaching reform can colleges and universities effectively improve the quality of financial talent cultivation, provide strong support for the digital transformation and high-quality development of the financial industry, and promote the in-depth integration of education service with economic and social development.

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