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Project-Based Learning in Digital Currency Education: A FinTech Curriculum Reform Case Study

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Abstract: *The rapid evolution of financial technology (FinTech) necessitates continuous innovation in higher education curricula, particularly in areas like digital currency. Traditional teaching methods often struggle with outdated content, insufficient practical application, and low student engagement. This study explores the implementation of a project-driven teaching reform in the "Digital Currency" course within a FinTech undergraduate program. The reform involved restructuring learning objectives, updating course content to include central bank digital currencies (CBDC) and blockchain programming, and adopting a project-based learning (PBL) methodology complemented by case studies and group collaboration. A new assessment system focusing on process and outcomes was also introduced. The reformed course was piloted in the Fall 2024 semester. Results from student surveys and project evaluations indicate a significant increase in student satisfaction (from 78% to 92%), enhanced quality of project outputs, and improved classroom dynamism. This case study concludes that the project-driven model effectively bridges the gap between theory and practice, fostering practical skills and innovative thinking. It offers a replicable pathway for enhancing FinTech education and suggests future directions, including expanding the model to other courses and strengthening industry-academia collaboration.*

Keywords: *Project-Based Learning; Curriculum Reform; Digital Currency*

1. Introduction

The global financial landscape is undergoing a profound transformation driven by Financial Technology (FinTech). Technologies such as blockchain, digital currencies, and smart contracts are reshaping traditional financial systems, creating an urgent demand for a new generation of professionals with interdisciplinary expertise. In response, universities worldwide are establishing FinTech programs. However, the pace of technological change often outstrips the speed of curricular updates, leading to a significant gap between academic training and industry needs.

The "Digital Currency" course, a core component of FinTech curricula, is particularly susceptible to obsolescence. Traditional lecture-based approaches frequently result in a passive learning experience, with content lagging behind real-world developments like the piloting of China's digital yuan (e-CNY) and the rise of decentralized finance (DeFi). Furthermore, assessment methods are overly reliant on final examinations fail to adequately evaluate students' practical abilities and innovative capacity.

To address these challenges, this paper presents a case study of a comprehensive teaching reform centered on Project-Based Learning (PBL) in the "Digital Currency" course. The study aims to investigate whether a PBL model can enhance student engagement, improve practical skills, and better prepare students for careers in the dynamic FinTech sector. The reform was implemented and evaluated in the FinTech program at Sanya University, providing empirical evidence on the effectiveness of this pedagogical shift.

2. Literature Review

2.1 FinTech Education and Its Challenges

Recent scholarship has highlighted the growing importance of FinTech education. Researchers have called for a fundamental restructuring of finance curricula to integrate technological competencies[2].

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The primary challenges identified include the rapid obsolescence of textbook content, a lack of qualified interdisciplinary faculty, and a shortage of high-quality practical teaching resources[3].

2.2 Project-Based Learning (PBL) in Higher Education

PBL is a student-centered pedagogy that involves a dynamic classroom approach in which students acquire a deeper knowledge through active exploration of real-world challenges and problems. The literature suggests that PBL enhances critical thinking, problem-solving skills, and collaboration[1]. In technical and vocational fields, PBL has been shown to effectively bridge the gap between theoretical knowledge and practical application. In the context of FinTech, scholars have discussed the potential of data-driven teaching reforms, though empirical studies focusing on digital currency courses remain scarce[4].

This study contributes to the existing literature by applying and rigorously evaluating a PBL framework specifically within a digital currency curriculum, thereby addressing a recognized research gap.

3. Current Teaching Challenges: A Pre-Reform Analysis

Between 2022 and 2025, a comprehensive analysis of the "Digital Currency" course at Sanya University revealed a range of systemic issues that hindered its effectiveness. The course content was found to be outdated, relying heavily on theoretical material while failing to incorporate recent policy developments such as the rollout of the e-CNY and emerging technological trends like decentralized finance (DeFi) and non-fungible tokens (NFTs)[9][10][11][12]. This lack of relevance was compounded by a pedagogical misalignment, as student feedback consistently highlighted a desire for practical, hands-on learning experiences that the traditional lecture-based format did not provide. Faculty members also reported significant challenges in keeping pace with rapid technological advancements and struggled to integrate interdisciplinary knowledge spanning computer science, law, and finance[7][8]. Finally, the assessment structure was inadequate, with an over-reliance on a single final exam—constituting 80% of the grade—that failed to capture students' broader abilities in innovation, research, and collaboration. Together, these issues underscored the urgent need for reform in both the curriculum and teaching approach of the course.

4. Reform Design and Implementation

The teaching reform of the "Digital Currency" course was designed around a Problem-Based Learning (PBL) core and implemented across several interconnected dimensions. First, the teaching objectives were restructured into a four-dimensional framework, guiding students to understand the fundamental principles of digital currency and blockchain, master essential tools for digital asset analysis and smart contract development, apply their knowledge to practical scenarios such as cross-border payments and supply chain finance[6], and ultimately design and innovate potential digital currency systems or applications. To support these objectives, the course content was optimized with new modules that reflected the latest industry trends, including digital currency development and regulatory policies with a focus on e-CNY pilots[9][10], blockchain technology and smart contract programming [7][8]using beginner-friendly tools, and applications of digital currency in areas like cross-border payment and supply chain finance.

The instructional methodology was transformed through the adoption of the PBL model, which emphasized project-driven learning, group collaboration, and case studies. Students worked in teams on semester-long projects such as designing a campus digital currency system or analyzing the risks and returns of a DeFi application, while instructors provided staged guidance and feedback throughout the project lifecycle. To further enhance this approach, a range of teaching resources was developed, including a self-built micro-lecture video library covering key concepts, access to simulated trading platforms such as the Bitfinex demo environment, and guest lectures delivered by industry experts in blockchain and digital finance.

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theoretical rigor with practical immersion.

Finally, the assessment system was reformed to move away from a purely summative model toward a more balanced formative approach. Evaluation was distributed across multiple components: project final outputs and presentations accounted for 40%, stagewise project reports contributed 20%, class participation and discussion made up 10%, and the final examination was reduced to 30%. This diversified assessment structure ensured that students were evaluated not only on their final achievements but also on their learning processes, collaboration, and engagement. Collectively, these reforms created a dynamic, practice-oriented, and industry-relevant learning environment aligned with both student needs and the evolving digital finance landscape.

5. Results and Analysis

The reformed course was piloted in two FinTech classes during the Fall 2024 semester, with data collected through pre- and post-reform satisfaction surveys, project report analysis, and instructor observations. The findings highlighted both quantitative and qualitative improvements.

5.1 Quantitative Findings: Enhanced Student Satisfaction

The data in Table 1 highlights substantial improvements in student satisfaction following the teaching reform. The most striking gain appears in practical components, which rose from 52% to 88% — a 36-percentage-point increase. This suggests that the reform effectively addressed students' desire for more hands-on, applied learning experiences.

Content relevance also showed a remarkable improvement, climbing from 68% to 91%. This indicates that course materials became more aligned with students' academic and professional needs, enhancing their perception of the curriculum's value.

Classroom interaction improved from 60% to 85%, reflecting a more engaging and participatory learning environment. This change points to the success of reforms in fostering dialogue, collaboration, and active involvement during lessons.

Finally, overall satisfaction rose from 78% to 92%, underscoring the comprehensive impact of the reform across multiple dimensions. The consistent upward trend across all metrics demonstrates that the reform was not only well-received but also transformative in improving the quality of the student learning experience.

Table 1: Comparison of Student Satisfaction before and after Teaching Reform

Metric	*Pre-Reform Satisfaction (%)*	*Post-Reform Satisfaction (%)*
Content Relevance	*68*	*91*
Practical Components	*52*	*88*
Classroom Interaction	*60*	*85*
Overall Satisfaction	*78*	*92*

5.2 Qualitative Findings: Improved Learning Outcomes

The reform yielded clear qualitative improvements in student learning. The final projects demonstrated significantly higher quality, with several groups earning recognition in university-level innovation and entrepreneurship competitions[6]. Classroom dynamics also shifted positively, as instructors reported a more interactive and energetic atmosphere in which students actively participated in discussions, peer reviews[1][4], and collaborative problem-solving. Student feedback echoed these observations, with open-ended survey responses highlighting strong enthusiasm for project work. Learners consistently emphasized its real-world relevance and expressed a sense of accomplishment derived from tackling authentic challenges[2][3]. Collectively, these outcomes confirm that the PBL-driven reform not only elevated satisfaction but also fostered deeper engagement, stronger collaboration, and more innovative learning experiences.

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6. Discussion

The findings provide robust evidence of the effectiveness of the PBL model in digital currency education[1][4][6]. The marked increase in satisfaction—particularly in areas related to practical components and content relevance—demonstrates that the reform successfully addressed the core weaknesses of the traditional curriculum. By engaging in tangible projects, students transitioned from passive recipients of knowledge to active creators, which enhanced both their understanding and retention. These results align with prior studies in higher education pedagogy that emphasize the value of experiential learning and collaborative problem-solving in fostering deeper cognitive engagement.

The redesigned assessment system, which placed equal emphasis on process and outcomes, offered a more comprehensive and equitable evaluation of student capabilities. This approach aligns with contemporary educational theory that prioritizes competency development over rote memorization. By integrating formative elements such as stagewise project reports and class participation, the reform encouraged continuous reflection and iterative improvement, thereby cultivating critical thinking and adaptability—skills essential in the rapidly evolving digital finance sector.

Nevertheless, certain limitations must be acknowledged. The study represents a single case within one institution and is based on a relatively modest sample size[2][3]. Moreover, the long-term impact on employability and career trajectories remains to be assessed through extended follow-up[12],and future research should incorporate longitudinal tracking to evaluate whether the competencies gained translate into sustained professional advantages.

Looking ahead, the reform model could be further strengthened by integrating emerging technologies such as AI-driven simulation platforms and blockchain-based learning environments, which would provide students with even more authentic and immersive experiences. Expanding the pilot to multiple institutions and diverse student cohorts would also help validate the scalability and adaptability of the approach. Ultimately, the evidence suggests that a PBL-centered design, coupled with balanced assessment and industry-relevant resources, holds significant promise for advancing digital currency education and preparing students for the challenges of the global financial landscape.

7. Conclusion and Recommendations

This study demonstrates that project-driven teaching reform can substantially improve the quality and relevance of digital currency education within a FinTech program[6][7]. By fostering a student-centered environment, the reform cultivates essential practical skills and nurtures innovative thinking

Building on the success of the pilot, the study puts forward several recommendations to guide future development of FinTech education. First, the project-based learning model should be scaled to other core courses, including Financial Derivatives and RegTech, ensuring that the benefits of active, practice-oriented learning extend across the curriculum. Second, stronger industry links are essential; closer collaboration with FinTech companies would allow students to engage with authentic business problems and gain valuable internship opportunities[8][9], thereby bridging the gap between academic study and professional practice. Finally, the creation of interdisciplinary teaching platforms is encouraged, integrating expertise from finance, computer science, and law[7][8]. Such cross-faculty initiatives would enrich both the curriculum and the resource base, equipping students with the diverse skill sets required to thrive in the rapidly evolving digital finance landscape. By embracing these innovations, higher education institutions can more effectively prepare graduates to navigate the complexities and seize the opportunities of the digital finance era.

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