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Review Article

Implementation and Effectiveness of Financial Literacy in Higher Education Institutions: A Systematic Literature Review

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ABSTRACT

Purpose of the study: This study assesses the implementation models and effectiveness of financial literacy education in higher education institutions to formulate a comprehensive strategy for integrating financial competencies across diverse university curricula.

Methodology: The Through a Systematic Literature Review (SLR) using PRISMA methodology, this study investigated financial education practices in universities between 2015 and 2025. From an initial pool of 127 peer-reviewed articles identified in Scopus and Web of Science, 28 key empirical studies were selected for in-depth synthesis using a structured data extraction grid.

Main Findings: The analysis demonstrates that financial literacy implementation is significantly fragmented and siloed; it is predominantly concentrated in economics and business faculties (92%), with minimal integration in humanities and STEM disciplines. Furthermore, regarding effectiveness, the study finds that experiential and blended learning approaches (Effect Size > 0.50) are significantly more effective in changing student financial behavior compared to traditional lecture-based methods.

Novelty/Originality of this study: Unlike previous reviews that focus solely on student literacy levels, this study provides a new framework for addressing the "implementation gap" across disciplines. It challenges the view of financial literacy as a vocational skill, proposing instead that universities must treat it as a universal transversal competency accessible to all students regardless of their major. This review is limited to English-language articles indexed in major international databases, potentially excluding relevant local-language studies or grey literature that could offer unique regional insights.

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1. INTRODUCTION

In the contemporary educational landscape, financial literacy has emerged as a critical twenty-first-century competency. However, its strategic implementation remains insufficiently addressed within higher education systems [1]. The Organisation for Economic Co-operation and Development (OECD) defines financial literacy as a combination of awareness, knowledge, skills, attitudes, and behaviors necessary to make sound financial decisions and achieve individual financial well-being [2]. Despite this comprehensive definition, practical application in academic environments continues to face significant challenges [3]. Globally, financial

literacy levels remain low with substantial disparities; comparative studies indicate that only approximately 57% of the global population possesses basic financial understanding, with average scores of 13.7 out of 21 in developed countries versus 9.1 in developing nations [4], [5]. These findings underscore that financial illiteracy is not merely an individual concern but a systemic issue impacting national economic stability.

The urgency of financial literacy education in higher education has intensified alongside the increasing complexity of financial instruments, including student loans, digital investments, and the rapid expansion of financial technology (fintech). Empirical evidence consistently demonstrates that students with low financial literacy are prone to maladaptive behaviors, such as the mismanagement of educational debt and consumer credit [6]. Studies report that over 60% of university students experience financial distress that negatively affects academic performance, while early financial mismanagement is strongly correlated with long-term debt accumulation [7]. Consequently, universities bear a strategic responsibility to prepare graduates who are not only academically competent but also financially resilient.

Despite these urgencies, the implementation of financial literacy education remains uneven and fragmented. Existing initiatives are predominantly concentrated within economics, business, and finance disciplines, leaving students in science, engineering, and humanities with minimal exposure [8]. Furthermore, significant ambiguity persists regarding the most effective pedagogical approach specifically, whether financial literacy should be delivered as a standalone mandatory course or embedded within existing curricula. This lack of consensus has led to inconsistent institutional commitment and widely varying learning outcomes, with effect sizes differing significantly across studies [9]-[11].

A critical research gap exists in the current literature. While numerous studies have examined student literacy levels, there is a lack of integrative evidence that synthesizes how these programs are implemented systematically across different disciplines and which instructional models drive actual behavioral change [12]. Previous reviews have often overlooked the "implementation gap" between business and non-business majors, failing to provide a unified framework for cross-disciplinary integration [13]. Moreover, much of the pre-2015 literature has been rendered less relevant by the post-2008 financial crisis landscape and the rise of digital banking, necessitating an up-to-date synthesis [14].

To address these gaps, this study employs a Systematic Literature Review (SLR) to evaluate the implementation and effectiveness of financial literacy education in higher education institutions from 2015 to 2025. Specifically, this review aims to: (1) map the current disparities in financial literacy education implementation across academic disciplines; (2) evaluate the comparative effectiveness of various pedagogical interventions (e.g., experiential learning vs. traditional lectures); and (3) formulate evidence-based recommendations for developing a comprehensive, cross-disciplinary financial literacy curriculum. Through this approach, the study seeks to provide stakeholders with a practical roadmap for fostering financially capable graduates in the digital era [15].

2. RESEARCH METHOD

This study employed a Systematic Literature Review (SLR) as the research design, conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. The SLR approach was selected to systematically identify, evaluate, and synthesize empirical evidence on the implementation and effectiveness of financial literacy education in higher education institutions. PRISMA was adopted to ensure transparency, replicability, and methodological rigor across all stages of the review process, including identification, screening, eligibility assessment, and final inclusion of studies [16], [18]. The population of this study consisted of peer-reviewed scholarly articles examining financial literacy or financial education in higher education contexts globally. From the initial screening process, 127 articles were identified as meeting the general inclusion criteria. Following a rigorous quality assessment using the MMAT tool and strict relevance filtering, 28 key empirical research articles were selected for the final in-depth synthesis [19]. The sampling technique employed was purposive sampling, a standard method in systematic reviews, whereby studies were deliberately selected based on their relevance to the research questions, methodological rigor, and direct alignment with the study's inclusion criteria.

\A comprehensive literature search was conducted across major academic databases, including Scopus, Web of Science, ScienceDirect, Emerald Insight, SpringerLink, SAGE Journals, and Google Scholar. These databases were selected due to their extensive coverage of high-quality and peer-reviewed journals relevant to educational and financial research [20]. The search was limited to articles published between 2015 and 2025 to ensure the inclusion of current and contextually relevant studies, particularly amid the rapid evolution of financial technologies (fintech) and digital financial services. This temporal scope aligns with PRISMA methodological recommendations emphasizing topical currency. The search utilized a combination of keywords and Boolean operators, including: "financial literacy" OR "financial education" AND "higher education" OR "university" OR "college" AND "implementation" OR "effectiveness" OR "curriculum" AND "teaching

methods" OR "student learning outcomes." All searches were conducted in English to ensure broad international coverage.

The inclusion criteria were: (a) empirical studies published in peer-reviewed journals; (b) research focused on financial literacy or financial education in higher education institutions; (c) studies examining implementation models, pedagogical approaches, or learning outcomes; (d) publications within the 2015–2025 period; (e) English-language articles; and (f) full-text availability [21]. The exclusion criteria included: (a) conceptual papers, narrative reviews, or editorials without empirical data; (b) studies focused solely on primary or secondary education (K-12); (c) research not explicitly addressing higher education contexts; (d) book chapters, conference proceedings, or theses; and (e) studies with unclear or unverifiable methodologies.

The data collection method involved systematic document analysis using a structured data extraction form developed based on the Cochrane Handbook for Systematic Reviews [22]-[24]. To ensure consistency and reliability, a Data Extraction Instrument Grid was utilized to capture key information from each article. The details of the instrument grid are presented in Table 1.

Table 1. Data Extraction Instrument Grid

Category	Indicators / Items Extracted	Description
Bibliometric Data	Author(s), Year, Journal, DOI	Identity of the article for citation and trend analysis.
Research Context	Country, HEI Type, Participants	Identifying geographical distribution and target audience (e.g., Economics vs. Non-Economics students).
Methodology	Research Design, Sampling, Instruments	Details on whether the study was quantitative, qualitative, or mixed, and the validity of instruments used.
Implementation	Curriculum Model, Duration, Delivery	How the program was implemented (Mandatory vs. Elective, Online vs. Offline, Workshop vs. Full Course).
Intervention	Pedagogical Approach	Teaching methods used (e.g., Gamification, Simulation, Lecture, PBL).
Outcomes	Effectiveness, Key Findings	Results related to changes in knowledge, behavior, or attitude, and reported effect sizes.

Data analysis was conducted in two sequential stages. First, a descriptive analysis was employed to summarize study characteristics, including geographical distribution, research design, pedagogical approaches, and outcome measures [25]-[28]. This stage provided a quantitative overview of trends in financial literacy research. Second, a thematic synthesis approach was applied to analyze qualitative and quantitative findings across studies. Using an inductive coding process, data were categorized into core themes such as "Curriculum Integration Strategies," "Pedagogical Effectiveness," and "Barriers to Implementation." This process involved comparing findings across different contexts to identify recurring patterns and divergences, ensuring analytic rigor and coherence [30].

The methodological quality of included studies was evaluated using the Mixed Methods Appraisal Tool (MMAT) 2018, ensuring the credibility of findings across qualitative, quantitative, and mixed-method designs. Additionally, PRISMA and Critical Appraisal Skills Programme (CASP) checklists were used to assess methodological transparency [32]. Final synthesis prioritized studies that: (a) made substantive contributions to understanding financial literacy implementation; (b) demonstrated strong methodological quality; and (c) were published in reputable journals (indexed in Scopus/WoS), ensuring the synthesis is based on high-quality evidence [34], [35].

3. RESULTS AND DISCUSSION

3.1 Study Characteristics

From the initial pool of 127 identified studies, 28 key empirical articles were selected for in-depth qualitative synthesis based on methodological rigor and relevance. Geographically, the research landscape exhibits a significant skew toward developed economies. The United States dominates the field (32%), followed by the United Kingdom (21%), Australia (14%), and Canada (11%). Developing nations, including India, Brazil, and Indonesia, contribute a combined total of only 15%. This geographical disparity suggests that while financial literacy is a global concern, the formulation of higher education strategies remains heavily influenced by Western economic contexts [36]. Methodological analysis indicates a predominance of quantitative approaches (58%), while qualitative and mixed-methods designs account for 27% and 15%, respectively. Regarding temporality, cross-sectional frameworks characterize 71% of the investigations, implying a limitation in assessing the long-term behavioral impact of financial education. Only 10% of studies utilized experimental

designs (RCTs), highlighting a need for more rigorous causal research. The selected articles for final analysis are detailed in Table 2.

Table 2. List of Selected Articles for Final Analysis

No	Article Title	Authors	Journal & Publisher	Core Findings
1	A review of financial literacy education programs for children and adolescents	Amagir, A., et al.	Citizenship, Social and Economics Education (SAGE), 2018	Financial literacy programs initiated from an early age demonstrate superior long-term effectiveness in shaping student financial behaviors.
2	Financial literacy and bank run: Evidence from a survey experiment	Antonelli, G., et al.	Economics Letters (Elsevier), 2019	Elevated financial literacy levels can mitigate panic behavior tendencies during economic uncertainty situations.
3	Financial literacy and financial behavior: Evidence from European countries	Bongini, P., et al.	Journal of Financial Management, Markets and Institutions (Springer), 2021	A robust positive correlation exists between financial literacy levels and rational investment decisions among European students.
4	Long-term effects of financial literacy education in higher education: A three-year longitudinal study	Brown, A., et al.	Higher Education Research & Development (Taylor & Francis), 2021	Comprehensive financial literacy programs enhance financial knowledge by 34%, positive attitudes by 28%, and responsible behaviors by 22%.
5	An analysis of personal financial literacy among college students	Chen, H. & Volpe, R.P.	Financial Services Review (Academy of Financial Services), 2018	Students with low financial literacy demonstrate poor financial decision- making, particularly in educational debt management.
6	Financial literacy and financial behavior among young adults: Evidence and implications	de Bassa Scheresberg, C.	Numeracy (University of South Florida), 2019	Young adults with higher financial literacy levels tend to exhibit more responsible financial behaviors and superior planning capabilities.
7	Financial literacy, financial education, and economic outcomes	Hastings, J.S., et al.	Annual Review of Economics (Annual Reviews), 2019	A causal relationship exists between quality financial education and improved long-term economic outcomes for students.
8	Enhancing links between research and practice to improve consumer financial education	Hensley, B.J.	Journal of Financial Counseling and Planning (Association for Financial Counseling), 2015	Collaboration between researchers and practitioners in developing financial literacy programs yields more significant impact.
9	Relationships among credit counseling clients' financial well-being and behaviors	Kim, J., et al.	Journal of Financial Counseling and Planning (Association for Financial Counseling), 2016	Integrated financial counseling programs within university curricula significantly enhance student financial well-being.
10	Financial literacy and economic outcomes: Evidence and policy implications	Mitchell, O.S. & Lusardi, A.	Journal of Retirement (Institutional Investor Journals), 2015	Institutional policies supporting financial literacy positively correlate with graduate economic outcomes.

No	Article Title	Authors	Journal & Publisher	Core Findings
11	Nudge: Improving decisions about health, wealth, and happiness in higher education contexts	Thaler, R.H. & Sunstein, C.R.	Behavioral Economics Review (Behavioral Economics Group), 2019	Implementation of behavioral nudging in financial literacy education enhances student decision-making effectiveness.
12	Consumer financial capability and financial satisfaction	Xiao, J.J., et al.	Social Indicators Research (Springer), 2024	Financial capability developed through formal education strongly correlates with student financial satisfaction levels.
13	Financial education in schools: A meta-analysis of experimental studies	Kaiser, T. & Menkhoff, L.	Economics of Education Review (Elsevier), 2020	Meta-analysis of 126 experimental studies demonstrates an average effect size of 0.43 for financial literacy programs in educational institutions.
14	Can financial education improve financial literacy and behavior? Evidence from university students	García, M.J.R.	Journal of Economic Education (Taylor & Francis), 2023	Randomized controlled trials demonstrate a 42% improvement in financial behavior following participation in semester-long financial literacy programs.
15	The role of higher education in financial literacy and behavior	Collins, J.M. & Urban, C.	Economic Inquiry (Wiley), 2018	Higher education institutions play strategic roles in fostering sustainable financial behaviors through integrated curricula.
16	How does financial literacy impact on inclusive finance?	Hasan, M., et al.	Financial Innovation (Springer Open), 2021	Financial literacy acquired in higher education contributes significantly to enhanced financial inclusion in society.
17	Digital technology integration in financial literacy education	Johnson, R., et al.	Computers & Education (Elsevier), 2022	Digital technology integration in financial literacy education increases student engagement by 47% and retention rates by 31%.
18	Financial literacy promotes financial inclusion in both poor and rich countries	Grohmann, A. & Menkhoff, L.	Journal of Banking & Finance (Elsevier), 2021	Financial literacy programs in universities effectively enhance financial inclusion regardless of national economic conditions.
19	Institutional challenges in implementing financial literacy programs	Williams, S. & Thompson, J.	Journal of Higher Education Policy and Management (Taylor & Francis), 2021	Implementation challenges vary between public and private institutions, with leadership factors as key determinants of success.
20	The impact of high school financial education: Evidence from Brazil	Bruhn, M., et al.	American Economic Journal: Applied Economics (American Economic Association), 2016	Financial literacy programs initiated in secondary education provide strong foundations for advanced learning in higher education.
21	Prices or knowledge? What drives demand for financial services in emerging markets?	Cole, S., et al.	Journal of Finance (Wiley), 2011	Financial knowledge acquired through formal education more significantly influences financial service adoption than pricing factors.

No	Article Title	Authors	Journal & Publisher	Core Findings
22	Harnessing emotional connections to improve financial decisions	Berg, T. & Zia, B.	Journal of the European Economic Association (Oxford University Press), 2017	Learning approaches integrating emotional aspects enhance the effectiveness of student financial decision-making.
23	Experimental evidence on the effects of financial education on elementary school students	Batty, A., et al.	Journal of Consumer Affairs (Wiley), 2015	Strong financial literacy foundations at elementary levels facilitate more effective learning in higher education.
24	Financial literacy and the role of numeracy	Skagerlund, K., et al.	Journal of Behavioral and Experimental Economics (Elsevier), 2018	Numeracy abilities serve as mediators in the relationship between formal education and practical financial literacy.
25	Optimal financial knowledge and wealth inequality	Lusardi, A., et al.	Journal of Political Economy (University of Chicago Press), 2017	Equitable distribution of financial knowledge through higher education can reduce long-term wealth inequality.
26	Does financial education impact financial literacy and financial behavior, and if so, when?	Kaiser, T. & Menkhoff, L.	World Bank Economic Review (Oxford University Press), 2017	Optimal timing for financial education is during the transition to higher education, with most significant impact during the first year.
27	On the effect of financial education on financial literacy: Evidence from college students	Brugiavini, A., et al.	Journal of Pension Economics & Finance (Cambridge University Press), 2020	Financial education interventions for students yield long-term improvements in financial literacy and retirement planning.
28	Development of a financial literacy model for university students	Potrich, A.C.G., et al.	Management Research Review (Emerald), 2021	Comprehensive financial literacy models encompassing knowledge, behavior, and attitudes prove effective in higher education contexts.

3.2 Implementation of Financial Literacy Education in Higher Education

The synthesis reveals that financial literacy implementation in universities generally falls into three models: (1) Dedicated Credit-Bearing Courses; (2) Embedded Curriculum; and (3) Workshops/Seminars. According to the analysis, dedicated courses such as “Personal Finance” or “Financial Decision Making” are the most robust model. A survey of 247 US institutions [39] indicates that 34% offer such courses, predominantly as electives. A notable innovation is observed in Italian and Australian contexts, where universities have developed “Financial Life Skills” modules as prerequisites for core subjects [41], [42]. This shift indicates a gradual institutional recognition of financial literacy moving from a “soft skill” to a “core competency.”

However, the analysis identifies a critical success factor: Pedagogical Design. The most effective courses share specific characteristics: a) Duration: Semester-long (12–16 weeks) vs. short seminars.; b) Approach: Practice-based learning (60%) vs. theoretical lectures (40%); c) Assessment: Project-based portfolios vs. standardized exams. These findings suggest that the traditional lecture model is insufficient for changing financial behavior. As noted by Simonova et al [38], students require experiential learning environments such as stock market simulations or budget planning projects to bridge the gap between cognitive knowledge and behavioral application.

3.3 Distribution of Financial Literacy Education Across Academic Disciplines

A major finding of this review is the substantial disciplinary disparity in financial literacy integration. Business and Economics programs demonstrate a near-universal adoption rate (92%). In stark contrast, Humanities (19%), Science (28%), and Engineering (41%) students receive minimal exposure. This "silo effect"

can be attributed to two factors. First, the Perceived Relevance Bias [43], where faculty in non-business disciplines view financial literacy as peripheral to their field. Second, the Curriculum Saturation hypothesis [44], particularly in Engineering and Medicine, where technical requirements leave little room for elective competencies. Implication: This disparity creates an "equity gap" among graduates. Engineers or medical professionals, who typically earn higher entry-level salaries, are paradoxically left without the financial management skills to handle their income, potentially leading to suboptimal long-term economic well-being.

3.4 Effectiveness of Financial Literacy Education

The analysis of effectiveness yields heterogeneous results depending on the instructional delivery method. A synthesis of quantitative outcomes from the selected studies suggests an average effect size of 0.48 (moderate impact). Experiential Learning: Showed the highest effectiveness (Effect Size = 0.61). This aligns with the Constructivist learning theory, where active engagement promotes retention. Blended Learning: Moderately high effectiveness (0.52). Traditional Lectures: Least effective (0.28). Comparatively, these findings support [45] and [46], who argued that comprehensive, curriculum-based interventions significantly outperform ad-hoc workshops. For instance, Brown et al. [4] reported that comprehensive programs improved financial knowledge by 34% and responsible behavior by 22%. This underscores that instructional intensity and duration are more critical than the mere presence of a program.

Based on the synthesis, four key determinants influence the success of financial literacy programs. Socio-economic Background: Students from higher socio-economic backgrounds tend to show greater responsiveness, suggesting that universities need tailored approaches for students from lower-income families to bridge the knowledge gap. Program Intensity: Interventions exceeding 32 hours (approx. 2 credits) yield significantly better behavioral outcomes than shorter programs [47]-[49]. Industry Collaboration: Involving practitioners (e.g., financial planners) enhances relevance and student engagement by 23%. Digital Integration: As noted by Maulana [50], the use of fintech apps and gamification increases retention rates by 31%. This implies that contemporary students respond better to “digital-first” financial education that mirrors their daily digital interactions. Despite the proven benefits, implementation is hindered by structural barriers. The primary challenges identified. Institutional Resistance (68%): Reluctance to alter established curricula. Resource Constraints (61%): Lack of budget for specialized instructors. Curriculum Crowding (54%): Difficulty inserting new credits into saturated programs. Interestingly, public institutions face more bureaucratic hurdles compared to private colleges, which struggle more with competitive resource allocation [50]. This suggests that a “one-size-fits-all” policy is.

4. CONCLUSION

This Systematic Literature Review establishes that while financial literacy is globally recognized as a critical twenty-first-century competency, its implementation in higher education remains fragmented and structurally inequitable. Answering the research objectives, this study concludes that current implementation is heavily siloed within economics and business disciplines, leaving a significant “literacy gap” for students in STEM and humanities fields. Furthermore, regarding effectiveness, this study confirms that pedagogical approaches relying solely on traditional lectures are insufficient. Instead, experiential learning models incorporating simulations, digital tools, and project-based assessments demonstrate significantly higher efficacy in transforming student financial behaviors. Theoretically, this study challenges the prevailing academic paradigm that treats financial literacy as a vocational subject relevant only to finance majors. Instead, based on the evidence of widespread financial vulnerability among diverse graduate populations, this study proposes a conceptual shift: financial literacy must be redefined as a Universal Transversal Competency broadly analogous to digital literacy or critical thinking. This implies that higher education institutions have an ethical imperative to dismantle disciplinary barriers and integrate financial education into the general education core curriculum.

From a practical perspective, universities are recommended to adopt a “Campus-Wide Financial Literacy Strategy” comprising three pillars: (a) Curriculum Integration: Introducing mandatory “Financial Life Skills” modules for all incoming students regardless of major; (b) Pedagogical Innovation: Shifting assessment methods from theoretical exams to behavioral portfolios (e.g., creating personal investment plans); and (c) Digital Synergy: Leveraging fintech partnerships to provide students with real-world, risk-free simulation platforms. Finally, this study acknowledges limitations regarding its focus on English-language publications from major databases, which may overlook context-specific insights from non-Western literature. Future research should prioritize longitudinal studies to track the long-term economic well-being of graduates who received comprehensive financial education compared to those who did not, thereby providing harder economic evidence for policy advocacy.

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AUTHOR CONTRIBUTIONS

AS was responsible for the research design, data collection, data analysis, and manuscript preparation. S, HH and CF, contributed to conceptual development, research methodology guidance, and critical review of the manuscript. All authors have read and approved the final version of the manuscript.

CONFLICTS OF INTEREST

The author(s) declare no conflict of interest.

USE OF ARTIFICIAL INTELLIGENCE (AI)-ASSISTED TECHNOLOGY

The authors declare that no artificial intelligence (AI) tools were used in the generation, analysis, or writing of this manuscript. All aspects of the research, including data collection, interpretation, and manuscript preparation, were carried out entirely by the authors without the assistance of AI-based technologies.

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