

Flujo de Bolsillo [Pocket Flow]: A Board-game Simulation for Financial Decision-making

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Abstract: Financial education remains a major challenge for young people, who often possess basic financial knowledge but struggle to apply it effectively in everyday decision-making situations. This study presents Flujo de bolsillo [Pocket Flow], a board-game-based financial simulation designed to expose players to realistic financial scenarios involving income management, compulsory expenditure, saving decisions, consumption choices and unexpected financial events. The research adopted a Design-Based Research (DBR) approach supported by an embedded mixed-methods evaluation. The prototype was developed and tested across three iterative cycles with 62 participants, including university students and professionals. Data collection combined structured observation, gameplay metrics (including turn duration and rule clarification interruptions), and post-session perception surveys. Findings indicate that participants actively engaged with simulated financial decisions, frequently adapted strategies after financial setbacks, and reflected on spending and saving behaviours. Iterative redesign improved gameplay clarity, flow and usability, particularly through refinements to board structure, instructions and financial tracking tools. The study also found that even participants with prior exposure to finance occasionally experienced difficulty applying foundational concepts during dynamic decision-making tasks, highlighting the value of experiential learning approaches. Overall, findings suggest that low-cost analogue games may provide an accessible and engaging complement to financial education, particularly in higher education and resource-constrained contexts.

Keywords: Financial literacy, Board game simulation, Experiential learning, Financial decision-making, Educational game design

1. Introduction

Financial literacy is increasingly recognised as a core life competency in complex economic environments, where young people must make decisions about saving, spending, borrowing and financial planning from an early age (Lusardi and Mitchell, 2014; Kaiser and Lusardi, 2024). Although many students possess basic financial knowledge, they often struggle to apply these concepts effectively in real-life situations, which may lead to poor financial habits and greater economic vulnerability (Garg and Singh, 2018; De la Fuente-Mella *et al.*, 2021).

This issue is particularly relevant in higher education, where students begin managing income, expenses and independent consumption choices. However, traditional financial education frequently relies on theoretical instruction, offering limited opportunities for experiential decision-making.

Game-based learning has therefore emerged as a promising alternative. Simulations and board games can provide low-risk environments in which learners test decisions, experience consequences and adjust strategies through active participation (Schultheis and Aprea, 2021; Platz, 2022). In financial education, such approaches may help learners understand trade-offs between short-term rewards and long-term financial wellbeing (Wang and Loh, 2023).

In this context, *Pocket Flow* was developed as a board game designed to engage young people in realistic financial scenarios involving income, compulsory expenses, saving, consumption and unexpected financial events. The game uses a spiral board representing an annual financial cycle, character profiles, event cards and individual balance sheets to support collaborative and applied learning.

Pocket Flow is thus part of a broader, interdisciplinary research agenda developed at the same institution and oriented towards low-cost, physical game-based interventions grounded in Global South contexts, of which the

Game Over model for entrepreneurship education constitutes a parallel strand (Marrugo-Salas 2025). Both initiatives share a common commitment to demonstrating that analogue, undergraduate-led game design can generate transferable pedagogical and design principles from within a Global South setting.

This study evaluates *Pocket Flow* through a Design-Based Research (DBR) approach, which combines iterative development, testing and refinement in authentic learning settings. The aim was both to improve the game and to generate insights for the design of educational financial simulations.

Despite growing interest in financial education games, limited evidence exists regarding analogue board games developed through iterative research methods in higher education settings, particularly in the Global South.

Accordingly, the study addressed the following research questions:

RQ1: How do participants engage with simulated financial decision-making processes while playing Pocket Flow?

RQ2: How do iterative design adjustments influence game clarity, gameplay flow and player interaction throughout the DBR process?

RQ3: What patterns of financial behaviour (saving strategies, impulsive spending and responses to unexpected events) emerge during gameplay within the simulated annual financial cycle?

By addressing these questions, the paper contributes to the literature on game-based financial education and offers practical evidence for the use of board games as learning tools in higher education.

The relevance of this study is reinforced by recent institutional developments: a new student initiative, the *Route for Autonomy and Professional Success*, has been introduced at the same university, through which students develop transversal competencies and earn digital badges. Financial education is one strategic dimension of this pathway, supported by an innovation ecosystem entitled *Money Pocket*, within which *Pocket Flow* is positioned as a game-based resource to strengthen students' financial capability, autonomy and decision-making skills.

This institutional momentum sits within a wider national shift: financial education in Colombia is moving from a discretionary curricular add-on towards a statutory requirement. In July 2026, Representative Santiago Castro filed Bill 067 before the Chamber of Representatives, proposing a National Programme of Economic and Financial Education that would make financial education compulsory from preschool to grade 11, in public and private institutions nationwide, and would require financial-education content within teacher-training degrees (Infobae 2026; La República 2026). The bill cites Colombia's PISA financial-literacy score of 379, over 120 points below the OECD average (La República 2026), and DANE data showing that 40.5% of Colombians cannot calculate compound interest and 60.3% cannot identify inflation's erosion of purchasing power, despite 71% making household financial decisions directly (Noticias RCN 2026). This debate underscores that *Pocket Flow's* design challenge, translating financial concepts into experiences learners can genuinely apply, extends beyond higher education into schools, disciplines and rural, resource-constrained contexts.

2. Theoretical Framework

Beyond factual knowledge, financial literacy encompasses the ability to budget effectively, evaluate risks, manage debt and make informed saving and consumption decisions (Lusardi and Mitchell, 2014; Kaiser and Lusardi, 2024). These demands intensify during the transition to independence, when individuals begin managing personal income, credit products and recurring expenses, yet many students still struggle to apply financial concepts in authentic contexts (Garg and Singh, 2018; Kaur, 2023).

Game-based learning addresses the limitations of lecture-based instruction by creating low-risk environments in which learners test decisions, receive immediate feedback and observe consequences over time (Schultheis and Aprea, 2021; Platz, 2022). This is especially valuable in finance, where decisions involve uncertainty, delayed outcomes and trade-offs between short-term gratification and long-term security, so that simulations support procedural rather than merely declarative learning (Rodríguez-Raga and Martínez-Camelo, 2022). Prior studies link game-based approaches with higher engagement, stronger persistence and improved decision-making (Kalmi and Rahko, 2022; Wang and Loh, 2023; Cannistrà *et al.*, 2024), particularly among younger learners who may perceive conventional financial education as abstract or disconnected from daily life.

A growing number of studies have explored serious games, digital platforms and simulation-based tools for financial literacy. Table 1 summarises selected examples relevant to the present study.

Table 1: Comparative Review of Existing Financial Education Games

Game / Study	Country	Target Population	Pedagogical Approach	Format	Reported Outcomes	Distinctive Contribution
<i>Moonshot</i> (Platz and Zauner, 2025)	Germany	Upper secondary students	Strategic mechanics with guided reflection	Physical serious game	Increased perceived value of financial learning	Reflection-driven instructional design
<i>FinCraft</i> (Rasco et al., 2020)	New Zealand	Young decision-makers	Personalised gamification and analytics	Digital platform	Higher engagement and adaptive learning	Personalisation through learning analytics
<i>From Classroom to Playroom</i> (Abdusattarova, 2025)	Uzbekistan	Students and young learners	Interactive classroom games	Educational game	Improved retention and active learning	Converts traditional teaching into playful practice
<i>Happy Life Game</i> (Pfändler, 2021)	Germany	Young adults	Life-event financial simulation	Serious game	Improved planning awareness	Simulates realistic life choices
<i>DreamScape</i> (Santos et al., 2025)	Portugal	Young adults	Narrative puzzles and decision-making	Online serious game	Improved critical thinking and awareness	Storytelling-based engagement
<i>Gamma Finance</i> (Marrugo-Salas et al., 2025)	Colombia	University students	Board-based negotiation with tiered difficulty levels	Physical board game	High interest and satisfaction	Hexagonal multi-level board with adjustable difficulty
<i>Pocket Flow</i> (current study)	Colombia	University students / young adults	Design-Based Research with mixed-methods evaluation	Physical board game + card modes	High engagement and iterative usability gains	Social tabletop simulation with annual financial cycle

As shown in Table 1, much of the existing literature has focused on digital serious games, online platforms or single-format interventions. While these approaches offer advantages such as scalability and automated feedback, fewer studies have examined physical tabletop games that combine structured financial simulation, face-to-face interaction and iterative evidence-based development. Board games may offer distinctive pedagogical benefits. They encourage peer discussion, negotiation and collaborative reasoning, while physical artefacts such as boards, tokens and balance sheets can make abstract financial processes more visible and manageable. *Pocket Flow* was designed to address this gap through a board game simulating an annual financial cycle involving income, compulsory expenses, saving decisions, consumption choices and unexpected events. In addition, the game was developed through a Design-Based Research process, allowing repeated refinement based on user feedback and observed gameplay behaviour.

The design of *Pocket Flow* was informed by the Mechanics–Dynamics–Aesthetics (MDA) framework (Hunicke, Leblan and Zubeck, 2004; Junior and Silva, 2021). In this model, mechanics refer to formal rules and systems, dynamics to the behaviours emerging through play, and aesthetics to the emotional and experiential responses of players. Applied to this study:

- Mechanics: income allocation, expenses, event cards, savings opportunities, balance sheets.
- Dynamics: budgeting, prioritisation, competition, risk-taking and strategic adaptation.
- Aesthetic / experiential outcomes: enjoyment, tension, reflection, awareness of spending habits and financial planning.

This framework supports analysis of how game systems can generate meaningful learning experiences.

Overall, the literature indicates that financial education benefits from active and applied pedagogies, while game-based learning offers strong potential to enhance motivation and behavioural understanding. However, further evidence is needed regarding physical board games developed through rigorous iterative methods. *Pocket Flow* was conceived as a response to this need, combining financial simulation, social play and Design-Based Research within a higher education context.

3. Methodology

This study employed a Design-Based Research (DBR) methodology supported by an embedded mixed-methods evaluation. DBR was selected because it is particularly suitable for developing educational innovations through iterative cycles of design, implementation, analysis and refinement in authentic learning settings (Design-Based Research Collective, 2023; Jong *et al.*, 2017). DBR allows progressive improvement of the educational artefact while simultaneously generating transferable design knowledge. In the present study, the approach was used to refine *Pocket Flow* across multiple testing stages and to examine how design changes influenced usability, engagement and simulated financial decision-making. The mixed-methods component combined quantitative gameplay indicators with qualitative evidence from observations, participant comments and post-session feedback. This enabled a comprehensive evaluation of both system performance and learner experience. A total of 62 individuals participated across three iterative development phases. The first phase involved 16 university students aged between 18 and 22 who participated in low-fidelity prototype testing (See Figure 1 and 2). The second phase involved six professionals from finance, business and game development who evaluated an intermediate version of the game (See Figure 3). The third phase involved 40 university students from finance-related programmes who participated in final high-fidelity implementation sessions (See Figure 4). Participants played in groups of two to five individuals, including one facilitator or administrator when required. Sampling was purposive, focusing on participants relevant to the intended educational context. The study was conducted at a private university in Latin America within Financial Mathematics courses, where *Pocket Flow* was integrated as part of regular instructional activities. These courses involved undergraduate students from finance, accounting, business administration and digital marketing programmes, providing a relevant context for examining financial decision-making processes in applied educational settings.

Pocket Flow is a board game designed to simulate personal financial decision-making within an annual cycle. The intervention aimed to help players practise budgeting, saving, consumption management and responses to unexpected economic events. As illustrated in Figure 5, the game board represents an annual financial cycle structured in a spiral format representing the months of the year. During gameplay, participants receive income, pay compulsory expenses, make consumption choices, encounter opportunities and respond to random financial shocks. Players record transactions using an individual balance sheet. The game also includes character profiles representing different financial tendencies, designed to stimulate discussion and identity-based engagement. Two gameplay modes were tested: [1] Board Mode -the main simulation mode, available in annual or shorter quarterly formats. [2] Financial Education Card Mode -a complementary mode using multiple-choice and reflective question cards to reinforce concepts.

Figure 1: Focal groups (First phase)



Figure 2: First prototype

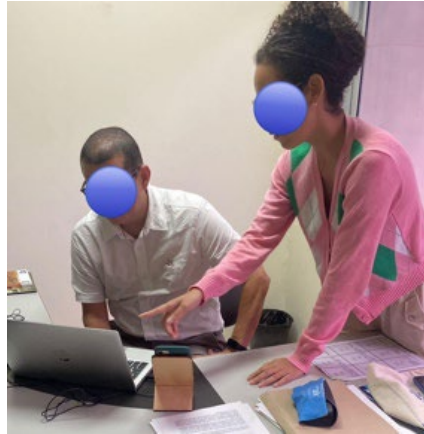


Figure 3: Expert validation session during prototype evaluation



Figure 4: Gameplay session during pilot implementation with students

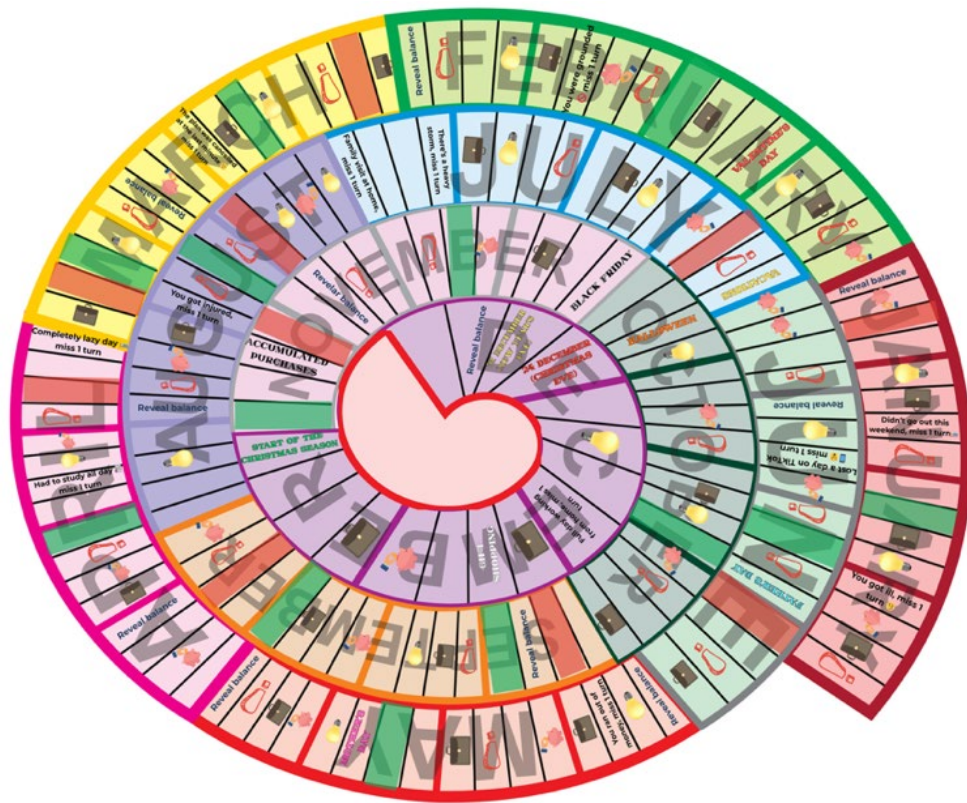


Figure 5: Pocket Flow board representing the annual financial cycle

Table 2: Core Components and Game Mechanics of Pocket Flow

Component / Symbol	Type	Function	Pedagogical Purpose
Spiral board	Structural	Represents the annual financial cycle	Visualises time-based financial decision-making
Balance sheet	Tool	Records income, expenses and savings	Supports financial tracking and reflection
Offer cards	Card deck	Rapid purchase or investment decisions with risk/reward	Simulates impulsive and strategic consumption
Event cards	Card deck	Unexpected positive or negative situations	Introduces uncertainty and financial shocks
Savings cards	Card deck	Mandatory reserved funds	Reinforces saving behaviour and financial discipline
Financial education cards	Card deck	Multiple-choice and reflective questions	Promotes conceptual understanding and decision awareness
Boost spaces	Board mechanic	Advance two spaces	Introduces positive acceleration and reward
Setback spaces	Board mechanic	Move back two spaces	Simulates financial setbacks
Reveal balance	Game rule	All players disclose financial status	Encourages transparency, comparison and reflection
Calendar spaces (holidays)	Board mechanic	Mandatory spending events (e.g. Christmas, Black Friday)	Reinforces unavoidable financial commitments
Character profiles	Player role	Represent financial behaviours (spender, saver, investor, distracted)	Encourages identity-based learning and behavioural reflection

Table 2 summarises the core components, symbols and mechanics of *Pocket Flow*, including their functional and pedagogical roles within the simulation.

The game was refined through three main DBR cycles. *Iteration 1: Initial Prototype Testing*. A basic prototype was trialled to test core mechanics such as income allocation, expenses and random events. Early sessions revealed difficulties with board interpretation and rule clarity. *Iteration 2: Structural Redesign*. The board layout was reorganised, decision sequences simplified and visual clarity improved to reduce cognitive load and gameplay interruptions. *Iteration 3: Final Refinement*. Narrative elements, character profiles and more realistic life scenarios were introduced to strengthen immersion, engagement and connections with everyday financial behaviour.

Multiple sources of evidence were collected throughout the study. Quantitative data included: total game duration; average turn duration; number of rule interruptions; frequency of decision pauses; post-session Likert-scale responses on clarity, enjoyment and perceived learning. Qualitative data included: structured observations during gameplay; field notes on player interaction and decision-making; participant comments during reflection stages; comparative observations between guided and non-guided sessions. Sessions generally lasted between 12 and 40 minutes depending on group size and game mode. Each session followed four stages: introduction to objectives and rules; gameplay as a simulated financial cycle; post-game reflection on decisions and strategies; completion of evaluation instruments. Some sessions were facilitated, while others were intentionally conducted with minimal guidance to assess the clarity and autonomy of the game system. Quantitative analysis was exploratory and descriptive, given the developmental purpose of the study and modest sample size. Quantitative data were analysed using descriptive statistics to assess gameplay flow, usability and participant perceptions across iterations. Comparisons between guided and non-guided sessions were also examined. Qualitative data were analysed thematically, focusing on recurring behavioural patterns such as saving strategies, impulsive spending, risk-taking, confusion regarding rules and reflections connecting the game to real-life financial experiences. The integration of both strands allowed triangulation of findings and supported interpretation of how design features shaped engagement and learning processes.

4. Results

The findings are presented in relation to the three research questions guiding the study. Evidence was drawn from gameplay observations, session records, participant feedback and post-session perception instruments. Across the iterative cycles, results highlighted patterns of engagement, improvements in usability and emerging forms of financial behaviour during the simulated annual cycle.

Table 3: Demographic Summary

Variable	Result
Female	58%
Male	42%
Age Range	18+
Finance students	55%
Marketing students	10%
Accounting students	2%
Other students	23%
Professionals	10%

4.1 Engagement with Simulated Financial Decision-Making (RQ1)

Overall, participants demonstrated active engagement with the financial scenarios presented in *Pocket Flow*. Depending on group size and gameplay mode, sessions lasted between 12 and 40 minutes. Average turn duration was approximately one to two minutes in facilitated sessions, while between three and six rule clarification interruptions were typically observed across sessions. Despite these interruptions, many participants remained involved throughout gameplay and showed increasing commitment as the simulation progressed. Observed emotional responses included enthusiasm when receiving rewards, overcoming opponents or obtaining favourable outcomes. In friendship groups, laughter and spontaneous interaction were frequent, suggesting a positive social climate. Competitive elements also appeared to help sustain attention. Observational evidence further suggested that non-facilitated sessions tended to involve longer pauses and more requests for clarification than guided sessions, particularly during early turns and when using the balance sheet. At the same time, some participants demonstrated uncertainty regarding foundational financial concepts such as expenditure, investment and fixed costs. This indicates that engagement with the game did not automatically guarantee conceptual clarity, reinforcing the importance of facilitation and post-game reflection.

Post-session responses suggested broadly positive perceptions of the game as a learning tool. Most participants perceived that *Pocket Flow* supported financial understanding, planning awareness and reflection on spending habits. Strongest perceptions were associated with saving behaviour, financial knowledge and planning skills.

More mixed responses were found regarding motivation, risk-based decision-making and recognition of the consequences of impulsive spending. These areas may require stronger feedback mechanisms or more explicit debriefing in future versions.

Table 4: Positive Perception Ratings (n = 18)

Dimension	Positive Responses
Financial knowledge	94.4% (17/18)
Saving awareness	94.4% (17/18)
Planning skills	88.9% (16/18)
Analytical thinking	88.9% (16/18)
Problem solving	88.9% (16/18)
Risk decision-making	83.3% (15/18)

Dimension	Positive Responses
Reflection on habits	83.3% (15/18)
Motivation	72.2% (13/18)

Note: Percentages are based on the 18 valid responses received to the post-game perception survey (a five-point Likert scale, from Strongly disagree to Strongly agree, administered digitally after gameplay), out of 40 participants in the final implementation phase (a 45% response rate). Respondents comprised 13 players, 3 observers and 2 subject-matter experts drawn from two course groups (Financial Mathematics, $n = 15$; Digital Transformation, $n = 3$), of whom 12 took part in guided sessions and 6 in non-guided sessions. Positive responses combine the categories Agree and Strongly agree; raw counts are shown in parentheses.

4.2 Influence of Iterative Design Adjustments (RQ2)

Table 5: Iterative Improvements

Iteration	Problem Identified	Adjustment Implemented	Observed Outcome
1	Rules unclear; low dynamism	New spaces, clearer rewards/penalties	Greater engagement
2	Board too small; repetitive layout	Larger board; new icons	Better immersion
3	Balance sheet confusion	Redesigned sheet; clearer prompts	Improved financial tracking

Rule clarification interruptions appeared more frequent during early iterations and less common in later sessions following redesign of the board layout and simplification of instructions. Participants in later phases navigated the system more easily and required fewer clarifications. Gameplay flow also appeared stronger in smaller groups, where waiting time between turns was reduced and players remained more consistently engaged. Physical usability was further strengthened through clearer token differentiation and refinement of the balance sheet layout. The introduction of character profiles and more recognisable life scenarios in later versions appeared to increase immersion and helped players relate game events to everyday financial experiences. Overall, the iterative process transformed an initially functional prototype into a more coherent and user-friendly educational game.

4.3 Emerging Financial Behaviour Patterns (RQ3)

Several recurring behavioural patterns were observed during gameplay: planning behaviour, impulsive spending, risk-taking and responses to unexpected events.

Planning behaviour emerged when players carefully tracked resources, organised entries on the balance sheet and prioritised future stability over immediate spending. Some participants developed deliberate saving strategies in anticipation of later expenses or unexpected events. *Impulsive spending* was also common. Certain players made rapid purchasing decisions without calculation, particularly when responding to attractive offers or open card prompts. These moments often led to later financial constraints within the game. *Risk-taking behaviour* appeared when players invested resources in uncertain opportunities or selected bold responses during decision-based challenges. In some cases, this reflected experimentation, in others, overconfidence. *Responses to unexpected events* revealed varying levels of resilience. Some participants adapted strategically after setbacks, while others became reactive and less systematic in subsequent decisions.

Together, these patterns suggest that the simulation elicited financially relevant choices rather than purely game-oriented behaviour: the iterative DBR process substantially improved game clarity and usability, while gameplay itself generated meaningful opportunities for reflection on saving, spending and financial planning.

5. Discussion

The findings indicate that *Pocket Flow* represents a promising game-based approach to financial education by transforming abstract concepts into active and situated decision-making experiences. The game enabled participants to engage directly with budgeting, saving, spending and uncertainty within a structured simulation. This supports previous research suggesting that financial literacy is most effectively developed when learners can apply concepts through authentic practice (Lusardi and Mitchell, 2014; Kaiser and Lusardi, 2024).

Participants generally demonstrated sustained engagement throughout gameplay, particularly when sessions involved competition, rewards and peer interaction. Positive emotional responses such as enthusiasm, laughter and strategic rivalry were common, especially in friendship groups. These findings are consistent with literature indicating that game-based learning can enhance motivation by providing immediate feedback, challenge and a sense of progression (Platz, 2022; Chiu, 2025).

From the perspective of Self-Determination Theory, the game appears to support autonomy through player choice, competence through successful resource management, and relatedness through social interaction, dimensions frequently associated with deeper engagement and persistence. However, motivation was not uniform: some participants showed lower involvement when rules were unclear or waiting times became prolonged, suggesting that pacing, clarity and group structure remain important design variables.

A key contribution of the study was the emergence of authentic behavioural patterns during play. Participants demonstrated saving strategies, impulsive spending, risk-taking and adaptive responses to unexpected events. These behaviours are particularly relevant because they reflect real-world financial tendencies more effectively than traditional declarative assessments.

This finding aligns with behavioural economics, particularly research associated with Kahneman and Tversky (1979), which highlights that economic decisions are often shaped by heuristics, emotion and short-term bias rather than purely rational calculation. In *Pocket Flow*, immediate rewards frequently competed with future stability, allowing participants to experience these tensions directly. Reflective comments linking gameplay with everyday life further suggest that the simulation may support participants' ability to relate fictional scenarios to their personal financial awareness; however, as this evidence is based on self-reported perceptions and observed comments, it cannot by itself demonstrate durable transfer of learning to real-world financial behaviour.

The iterative DBR process was central to the development of the intervention. Early prototypes revealed problems related to unclear rules, limited flow and weak usability. Through repeated cycles of testing and redesign, the game evolved into a more coherent and engaging educational tool. Adjustments to board structure, visual organisation, iconography, character design and balance sheet usability reduced interruptions and improved gameplay fluency. These findings support DBR literature emphasising the importance of refinement through authentic user interaction. Importantly, each design principle can be traced to a specific problem-adjustment-outcome sequence documented across the three DBR cycles (Table 5). First, unclear rules and low dynamism in Iteration 1 were addressed through new spaces and clearer rewards and penalties, yielding greater engagement; this points to a principle of visible, unambiguous rule feedback as a precondition for sustained play. Second, a small, repetitive board layout in Iteration 2 was redesigned with a larger board and clearer iconography, yielding better immersion; this points to a principle of legible visual information architecture, particularly important given the low-resolution reproduction of some game components in the present figures. Third, confusion around the balance sheet in Iteration 3 was addressed through a redesigned sheet with clearer prompts, yielding improved financial tracking; this points to a principle of embedding meaningful, low-friction consequences directly into the physical tracking tool. Taken together with the opportunities for post-game reflection built into each session, these three evidence-based principles constitute the study's transferable contribution to the design of educational board games, independently of the specific financial content of *Pocket Flow*.

An important finding was that even participants with prior academic exposure to finance occasionally demonstrated uncertainty regarding foundational concepts such as expenditure, investment and fixed costs. This suggests that familiarity with financial terminology does not necessarily translate into procedural understanding when learners face dynamic decision-making tasks. In addition, some participants engaged only minimally with written instructions, which created occasional difficulties in using the balance sheet and contributed to confusion during non-facilitated sessions. This indicates that educational games should not assume that learners will independently process written guidance, even within university contexts. These findings highlight the importance of onboarding processes, concise rule communication and scaffolded facilitation. Gameplay also appeared more fluid in smaller groups, where waiting times were reduced and support could be more responsive. Consequently, implementation conditions such as group size and facilitator presence may significantly influence both usability and learning outcomes.

From the perspective of the MDA framework (Hunicke, LeBlanc and Zubeck, 2004), the results suggest a coherent relationship between game structure, player behaviour and experiential outcomes. At the level of mechanics, income allocation, compulsory expenses, event cards, savings requirements and individual balance sheets

structured the decision-making environment and defined the constraints under which players operated. These mechanics generated observable dynamics, including planning behaviour, impulsive spending, risk-taking and adaptive responses to unexpected events, as documented during gameplay. At the level of aesthetics, participants displayed enthusiasm, competition, frustration after setbacks and reflection on personal financial habits, particularly evident in social contexts where laughter and strategic rivalry were frequently observed. Overall, the alignment between mechanics, dynamics and aesthetics contributed to sustained engagement and facilitated meaningful reflection on financial decision-making within the simulated environment.

Beyond the immediate classroom findings, the study has broader relevance for higher education strategies focused on student autonomy and professional readiness. Accordingly, *Pocket Flow* could be explored as a potential component of an institutional strategy to strengthen students' financial capability and life-readiness.

Several limitations should be acknowledged. The study focused primarily on engagement, usability and perceived learning rather than causal measurement of objective learning gains. The study was conducted primarily with university students from a single institutional context, which limits broader generalisability. In addition, the use of self-reported perceptions does not necessarily demonstrate long-term knowledge retention or behavioural change. Future studies should include secondary school learners and more diverse populations, including rural and resource-constrained settings where structured, in-person financial education has historically been least accessible, apply objective pre- and post-tests of financial literacy, and examine longitudinal behavioural outcomes. This direction is reinforced by the legislative momentum described in Section 1: should Colombia's proposed National Programme of Economic and Financial Education be enacted, low-cost, iteratively validated tools such as *Pocket Flow* could plausibly support its rollout across schools and disciplines with uneven access to specialised financial-education staff. Hybrid versions combining physical gameplay with digital tracking systems may also provide valuable opportunities for future development.

6. Conclusion

This study examined the design and evaluation of *Pocket Flow*, a board game supporting financial education through simulated decision-making and experiential learning. Using a Design-Based Research framework, the project shows how iterative development can generate a coherent, pedagogically meaningful learning tool. Findings indicate that *Pocket Flow* engaged participants in realistic financial scenarios and made visible behavioural tendencies such as impulsive spending, strategic saving and adaptive decision-making under constraint.

Successive refinements to rules, board structure and tracking tools improved gameplay flow and reduced confusion, reinforcing the value of DBR for educational game development. Although the study focused on engagement, usability and perceived learning, results suggest that board-game simulations may offer an effective complement to traditional financial literacy education.

Future research should examine wider populations, incorporate pre- and post-assessment measures, and explore hybrid physical-digital versions of the game. Overall, *Pocket Flow* represents a promising contribution to game-based financial education and a candidate component of wider institutional strategies such as the Money Pocket ecosystem supporting student autonomy and professional readiness.

Ethics Declaration: This study was conducted within a regular educational innovation context and involved low-risk pedagogical activities. Formal ethics committee review was not required under the applicable institutional context. Participation was voluntary. All participants were informed about the purpose of the study, the use of anonymised data for academic research purposes, and their right to withdraw at any time without consequence. No sensitive personal data were collected. All responses were anonymised prior to analysis and handled in accordance with applicable Colombian personal data protection regulations.

AI Declaration: Artificial intelligence tools were employed in a supportive capacity during the preparation of this manuscript, particularly for the translation of content from Spanish into academic English, language refinement and stylistic improvement. Machine-assisted outputs were critically reviewed, edited and validated by the authors to ensure technical accuracy, contextual coherence and disciplinary appropriateness. All substantive intellectual contributions, methodological decisions and final interpretations remain the responsibility of the authors. This human-supervised approach preserved academic integrity while enhancing the clarity and communicative quality of the manuscript.

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