

Gamification of Financial Literacy

Game Your Finances (Website Name)

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Aim: This Independent study aims to understand the current level of financial literacy, especially in young adults. We wish to create a website that will be a one-stop solution for financial literacy for all age groups. This website will be integrated with social media for higher reach and for more people to access it. In the first phase, we wish to create games that people can play for age groups but have its primary target audience of children from 9 to 14 years. These are simple games inspired by existing ones, making financial knowledge and knowing how accessible it is for everyone. The idea is to teach them at a young age so that they are well aware of the opportunities and responsibilities when the time comes.

Procedure to Study:

We created a survey to understand our target audience's struggle with finance and kept the study for the ages 18 to 28 since we wanted to keep it for young adults. The greatest challenge faced by this age group is the pressure of managing finance and then feeling overwhelmed in handling it. Just to get a clearer picture, the following were our results:

The Google Form Link - <https://forms.gle/dvGj9m6wMeCG5gSD6>

The responses from the google form are- [Responses](#)

Analyzing the Data for Financial Literacy

Understanding the Data Limitations:

Before delving into the analysis, it's crucial to acknowledge the limitations of the provided data. The sample size is relatively small, so it's challenging to draw definitive conclusions about the broader population.

Based on the provided data, several vital observations emerge:

1. Limited Financial Knowledge: A significant portion of respondents exhibit a lack of basic financial knowledge. This is evident in questions about interest rates, credit cards, and investment options.
2. Overreliance on Family: Most respondents' primary financial information source is their family. This suggests a potential gap in formal financial education.
3. Low Savings Rates: While most respondents have savings accounts, the percentage of income saved is generally low. This indicates a potential challenge in building financial security.

4. Debt Management Concerns: The small sample size, outstanding debt and a limited understanding of credit scores highlight potential financial challenges.
5. Lack of Long-Term Planning: Few respondents have actively started saving for retirement, suggesting a lack of long-term financial planning.
Loan Usage: Most respondents (64%) have not taken a loan. Among those who have, education loans are the primary type.
6. Information Sources: "Parents/family" is the most cited source of financial information, followed closely by the "Internet." This implies that young adults in this sample primarily rely on their families for financial advice.
7. Confidence Levels: Confidence in making financial decisions varies, with a relatively even distribution between ratings of 2, 3, and 4. Confidence in financial decision-making seems moderate overall.

Implications:

These findings suggest that a significant portion of the surveyed population may struggle with financial independence due to limited financial literacy. The overreliance on family for financial advice and a lack of formal education contribute to this issue.

Gamification:

Gamification is our key strategy for making financial literacy engaging and fun. We aim to motivate and enhance user engagement and learning by integrating game mechanics into our website, especially for young adults. This section outlines our planned gamification techniques, their applications, and some exciting game ideas, with a particular focus on our primary game, FinLife.

Techniques:

1. **Points and Rewards**: Awarding points for completing tasks, answering questions correctly, or progressing through levels. Users earn points for completing financial quizzes or achieving milestones in the game. Points can be redeemed for virtual rewards or badges.
2. **Badges/Achievements**: Providing visual tokens of accomplishment for reaching certain milestones. Users receive badges for mastering financial concepts, like "Budgeting Pro" or "Investment Guru." These badges can be displayed on their profiles, encouraging continued engagement.
3. **Levels and Progress**: Implementing a system where users advance through levels by completing tasks. Users start at a beginner level and progress through more advanced financial topics as they complete games and quizzes, unlocking new content.
4. **Challenges and Quests**: Setting specific tasks or challenges for users to complete. Daily or weekly challenges on various financial topics keep users engaged and returning to the website regularly.

5. **Leaderboard:** Displaying user rankings to foster competition. Leaderboards show top performers in financial literacy quizzes and games, motivating users to improve their scores and climb the ranks.

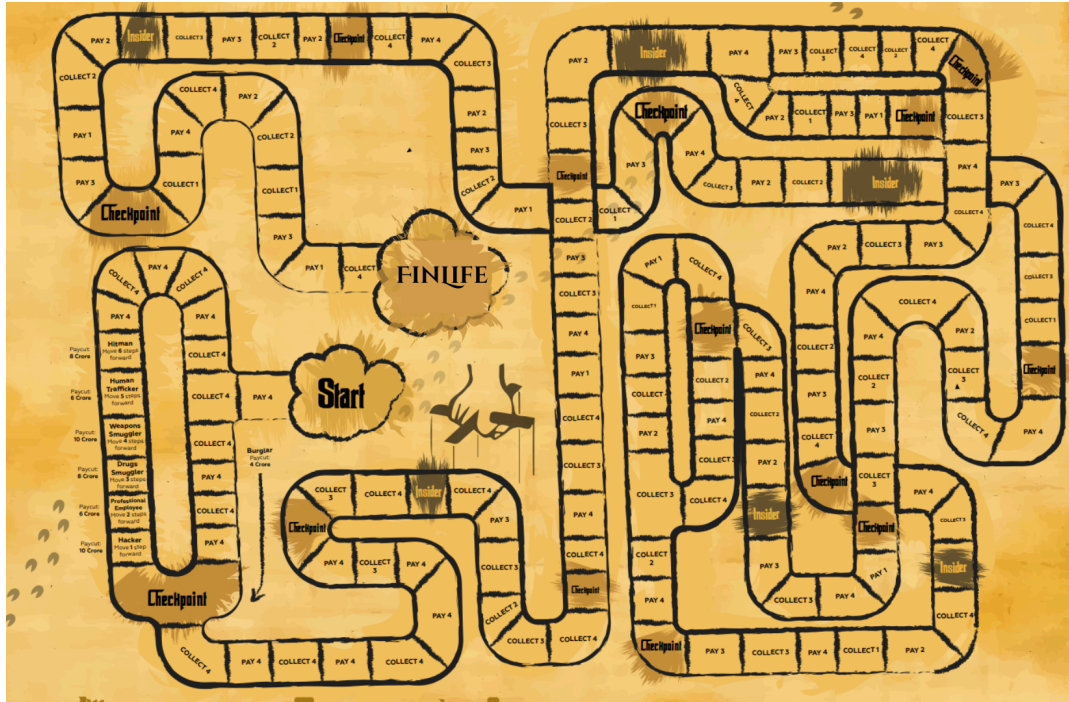
Potential Ideas:

1. **Budget Quest:** Players are given a monthly income and must allocate it wisely to various expenses, savings, and investments. Unexpected events test their budgeting skills. Teach the importance of budgeting and managing finances.
2. **Investment Adventure:** Players invest virtual money in different assets, like stocks, bonds, and real estate. They navigate market fluctuations and economic changes. Educate players on the basics of investing and risk management.
3. **Savings Sprint:** A timed game where players make quick decisions on saving versus spending, with obstacles that challenge their financial discipline. Highlight the benefits of saving and delayed gratification.
4. **Debt Dash:** Players must manage their debts by making timely payments and balancing their budgets. They face penalties for missed payments. Emphasize the importance of debt management and the consequences of poor financial decisions.

Our Game - FinLife

Considering all the factors, we decided to build an interactive game that people enjoyed, and that was successful among children. Building this game fulfilled the criteria and built it around The Game of Life and Snakes and Ladders. Both of them are very popular and help realize the importance that you might win the game by touching the finish line first; however, the real winner is the one who has the maximum assets.

Our first iteration included imitating the game of life with paydays and checkpoints. This is followed by cards being picked up throughout the game journey. At the end of the game, we had the winner with the maximum money.



Pic1: a low-fi model of our game, finlife.

However, we realized that the negotiation and card would make the game heavy digitally, reducing the game's accessibility.

Hence, we devised a simpler version of the game, inspired by snakes and ladders, with the simple rule that whoever reaches the finish line first will win.

We started designing the game with the idea of keeping prompts that will take you a few steps ahead or behind, all centered around financial decisions.

Introduction to the Game

Welcome to FinLife, an engaging and interactive board game that transforms the complexities of financial decision-making into an exciting adventure. Modeled after "The Game of Life" but with a unique twist, this game uses the design style of Snakes and Ladders to guide players through ten levels, each representing a decade of a person's financial journey.

In Level 1, players will navigate the early years of a child's life (ages 0-10), focusing on the financial responsibilities and opportunities of raising a young child. Each level represents 10 years in a person's life, and the financial encounters, and discoveries have been molded according to the generic situations faced by people in India. As the game progresses, players will encounter various financial scenarios, make strategic decisions, and learn valuable lessons about saving, investing, and budgeting.

Rules of the Game

1. Players and Setup:

- The game is designed for a minimum of two players.*
- Each player starts at the beginning of the board (square 1).*
- Players take turns rolling a dice and moving forward the corresponding number of squares.*

2. Game Board and Movements:

- The board is numbered from 1 to 100, similar to Snakes and Ladders.*
- Invisible "snakes" (penalties) and "ladders" (rewards) are hidden throughout the board.*

3. Prompts and Scenarios:

- Each square has a prompt or scenario related to financial decisions and events.*
- Positive financial decisions (e.g., saving money, investing wisely) move players forward (ladders).*
- Negative financial decisions (e.g., spending recklessly, poor investments) move players backwards (snakes).*

4. Special Events:

- Certain squares will have specific prompts related to key life events such as receiving gifts, investing money, or encountering financial setbacks.*
- Examples:*
 - Square 40: "The Baby received money on its birthday from all its relatives." Move forward by rolling the dice again.*
 - Square 45: "Parents spent all the money on toys." Move 5 steps back.*
 - Square 50: "Invested the money and gained a 12% return." Move 4 steps forward.*
 - Square 55: "Market crashed and the money halved." Move 2 steps back.*

5. Winning the Game:

- The first player to reach square 100 wins the game.
- Players must navigate through financial ups and downs to reach the end, learning valuable financial lessons.

6. Educational Objectives:

- The game aims to enhance financial literacy by teaching players about budgeting, saving, investing, and making informed financial decisions.
- Players will experience the impact of their financial choices and learn how to manage money effectively.

Enjoy the financial growth and wisdom journey, and may the best planner win!

#The prompts for each level will get jumbled and changed whenever the player reloads, making it much more interesting and making them not feel bored if they play it again.

Level 1 : 0 to 10 years

1. Start
2. Parents set up a savings account for the child (+2)
3. Parents forgot to budget for baby supplies (-2)
4. Received gifts of gold jewelry at birth (+3)
5. Parents bought too many baby clothes that were never used (-1)
6. Received money for the first birthday (+2)
7. Money spent on an expensive birthday party (-3)
8. Invested in a mutual fund (+2)
9. Stock market crash, investment halved (-2)
10. Parents set up an educational fund (+2)
11. Parents took a high-interest loan for unnecessary items (-3)
12. Baby shower gifts received (+2)
13. Parents bought an expensive stroller not needed (-2)
14. Received money for first food bite ceremony (+3)
15. Money spent on non-essential baby gadgets (-1)
16. Parents started a college fund (+2)
17. Parents didn't research and lost money in a bad investment (-3)
18. Received money for entering preschool (+2)
19. Parents bought toys instead of investing (-2)
20. Invested money in a high-interest savings account (+2)

21. Emergency expense drained savings (-3)
22. Parents received a financial literacy book as a gift (+2)
23. Ignored advice from the financial book (-2)
24. Grandparents gifted a valuable bond (+3)
25. Bond matured at a lower value than expected (-2)
26. Received money for first academic achievement (+3)
27. Spent the achievement money on a vacation (-2)
28. Parents invested in a diversified portfolio (+2)
29. Portfolio underperformed (-2)
30. Received money for starting main school (+2)
31. Spent money on expensive school supplies (-3)
32. Parents attended a financial planning workshop (+2)
33. Workshop advice not followed (-2)
34. Parents received a government grant for the child's education (+3)
35. Grant spent on non-educational expenses (-2)
36. Child won a local art competition, received prize money (+2)
37. Prize money spent on entertainment (-3)
38. Parents invested in a low-risk bond (+2)
39. Bond returns were lower than inflation (-1)
40. Received money for birthday from relatives (+3)
41. Birthday money spent on toys (-2)
42. Parents made a small investment in gold (+2)
43. Gold value dropped (-1)
44. Parents set up a health insurance plan for the child (+2)
45. Insurance premium increased unexpectedly (-2)
46. Received money for second academic achievement (+2)
47. Money spent on non-essential items (-2)
48. Parents started a side business to earn extra income (+3)
49. Business faced initial losses (-2)
50. Parents attended another financial literacy workshop (+2)
51. Advice followed, improved financial planning (+2)
52. Received money for annual birthday (+2)
53. Birthday money spent on parties (-2)
54. Parents invested in a child's savings bond (+2)
55. Savings bond matured, but with minimal interest (-1)
56. Parents received a tax refund for education expenses (+2)
57. Tax refund spent on luxury items (-2)
58. Child won a scholarship for an extracurricular activity (+3)
59. Scholarship money used for non-educational purposes (-2)
60. Parents invested in a child's college fund (+2)
61. College fund value decreased due to market conditions (-2)
62. Received money for entering higher classes (+2)
63. Money spent on unnecessary gadgets (-2)
64. Parents opened a high-interest account for the child (+2)

65. High-interest account returns were low (-1)
66. Child received a prize for a science project (+3)
67. Prize money spent on non-essential activities (-2)
68. Parents made a small real estate investment (+2)
69. Real estate value depreciated (-2)
70. Parents received an inheritance for the child (+3)
71. Inheritance invested poorly (-3)
72. Child received money for third academic achievement (+2)
73. Money spent on entertainment (-2)
74. Parents attended an advanced financial planning workshop (+2)
75. Advanced workshop advice followed (+2)
76. Received money for annual birthday (+2)
77. Money spent on expensive hobbies (-2)
78. Parents invested in a diverse mutual fund (+2)
79. Mutual fund returns were lower than expected (-1)
80. Parents received a grant for the child's extracurricular activities (+2)
81. Grant spent on non-educational expenses (-2)
82. Child won a local sports competition, received prize money (+3)
83. Prize money spent on entertainment (-2)
84. Parents invested in a long-term bond (+2)
85. Long-term bond value decreased (-1)
86. Received money for entering senior classes (+2)
87. Money spent on unnecessary gadgets (-2)
88. Parents set up a trust fund for the child (+3)
89. Trust fund faced administrative fees (-2)
90. Child received a national award for academic excellence (+3)
91. Award money used for non-essential purposes (-2)
92. Parents invested in a child's health and wellness (+2)
93. Health expenses unexpectedly increased (-2)
94. Received money for annual birthday (+2)
95. Birthday money spent on luxury items (-2)
96. Parents received a government subsidy for child's education (+2)
97. Subsidy used for non-educational expenses (-2)
98. Child received a special grant for a project (+3)
99. Grant money spent on non-essential activities (-2)
100. End of Level 1: Child's financial foundation is set!

A Working Prototype of our game using PyGame can be accessed from the following link :

https://colab.research.google.com/drive/14dw23X_M_NtCN-VPIGwlr8lHpDVmMs9M?usp=sharing (Only Level 1)

The prompts for all the levels are on this document :

https://docs.google.com/document/d/15FQc9d5RPEGxR6fbrk-wHN-AQxRF0gViQ_wv54UR7GA/edit?usp=sharing

BLOGS ON THE WEBSITE

Modules:

- Student Loan
 - College Students
 - Insurance
 - Mutual Funds
 - and Investment Opportunities
 - Financial Goals
 - Education save
 - retirement
 - personal asset - house, car
 - non-returns expense - medical or celebration (marriage/anniversary, etc)
1. Progress bar for goals and rewards for savings.
Similar to <https://cred.club/>
 2. Different Financial Institute - Banks, Muthoot, Direct Finance and Indirect Finance, Collateral Free Loans,
 3. Opportunities for Finance, Government, and Private Institutes. (Rang de)
 4. **Books and Articles Suggestions**
 - a. "Your Money or Your Life" by Vicki Robin
 - b. Articles from reputable financial websites like Investopedia and The Balance
 5. **Online Courses**
 - a. Coursera: Financial Planning for Young Adults
 - b. Khan Academy: Personal Finance
 6. **Podcasts and Videos**
 - a. "Planet Money" by NPR
 - b. YouTube channels like Graham Stephan and The Financial Diet

The proposed website link for the financial website are:

1. <https://game-your-finance-hub-hrmp0m4.gamma.site/>
2. <https://twisha21432.wixsite.com/game-your-finance>

The learnings from the book The Nudge- Improving decisions about health, wealth, and happiness.

"Nudge: Improving Decisions about Health, Wealth, and Happiness" by Richard H. Thaler and Cass R. Sunstein examines how little adjustments to the way options are presented can have a big impact on choices. Some important lessons from the book are as follows:

1. Choice Architecture: The concept of "choice architecture," which focuses on creating many options for people to be presented with and how these presentations affect people's ability to make decisions, is introduced in the book.
2. Nudges: Nudges are subtle design adjustments that have a big impact on behavior without limiting possibilities. These are subliminal indications or recommendations that can help people make better choices.
3. Libertarian Paternalism: Thaler and Sunstein support "libertarian paternalism," which is a compromise between complete control and complete freedom. This method helps individuals make better decisions while respecting their right to make their own decisions.
4. Default options: Creating advantageous default settings is a potent motivator. For example, automatically enrolling workers in a retirement savings plan and allowing them to withdraw from it significantly boosts participation rates.
5. Simplifying: People can make better selections by narrowing their options and simplifying difficult situations. Making bad or paralyzing decisions can result from having too many options.
6. Feedback and rewards: Positive conduct can be promoted by giving prompt feedback and suitable rewards. People can lower their energy consumption, for instance, by using smart meters that display real-time energy usage.
7. Social Norms: Emphasizing the behaviors of the majority can persuade others to adopt similar behaviors. For example, recycling rates can rise if people are told that a large portion of their neighbors recycle.
8. Effects of Framing: Decisions can be influenced by the way information is presented. Different approaches to presenting the same information can result in different decisions. People might respond differently, for instance, to a glass that is described as "half-full" as opposed to "half-empty."
9. Anchoring: When making judgments, people frequently place an undue emphasis on the first piece of information they are given, or the "anchor". The decision's outcome can be altered by adjusting the anchor.
10. Loss Aversion: In general, people are more driven to prevent losses than to make comparable gains. People can be encouraged to adopt healthier habits, such as cutting back on expenses or giving up smoking, by using this idea.

11. Accessible Heuristic: People use this heuristic to estimate the frequency of an event by considering how simple it is to remember an example. For instance, because homicides are more frequently covered by the media than suicides, some may believe that homicides occur more frequently than suicides. This can result in overestimating hazards and making decisions (such as buying needless insurance or governments giving less important social issues priority) that aren't supported by reliable data.
12. Representativeness Heuristic: When determining a hypothesis's likelihood or frequency, people employ this heuristic to account for how closely the hypothesis matches the existing evidence. The idea that basketball players can get "hot" and are more likely to make following shots after making a run of clutch shots is one example. The distribution of successful injections is really frequently random, and the perception of trends might lead to erroneous conclusions—such as the mythical notion of "cancer clusters."
13. Status Quo prejudice: This prejudice encourages people to continue in their existing roles or ways of doing things even when it may not be optimal for them. For instance, after a free trial, a lot of magazine subscriptions continue automatically, so many individuals wind up paying for periodicals they never read because they forget to manually cancel. People's tendency to stick with the status quo out of inertia can keep them from making positive changes.
14. The term "herd mentality" refers to the way in which people's decisions are significantly impacted by the behavior of others. This was illustrated in a well-known study by Solomon Asch, which showed how peer pressure might lead people to accept an inaccurate group's response to a straightforward issue. This propensity to follow the herd can result in illogical decisions being made as well as the spread of false beliefs or practices.
15. Thinking Systems: Automatic and Reflective- Our nimble, automatic thought process, known as the Automatic System, takes swift action without conscious thought. When someone throws a ball at you, you should duck, feel afraid during plane turbulence, and smile when you see a lovely puppy. These are examples of this system in operation. The Reflective System, on the other hand, stands for our methodical, sluggish thought process that requires thoughtful deliberation and self-awareness. Whether picking a college to attend, making travel plans, or determining whether or not to get married, this mechanism is at work. Your brain's Automatic System essentially acts as your brain's autopilot, taking care of basic tasks and quick reactions, while its Reflective System acts as your deliberate planner, taking over for more difficult decisions that need careful consideration.

Conclusion from the Book "Nudge"

"Nudge" demonstrates that small, subtle changes in the way choices are presented can significantly influence decision-making, helping individuals make better decisions about their health, wealth, and happiness without restricting their freedom to choose. By understanding and applying concepts like choice architecture, nudges, and the differences between the Automatic and Reflective Systems of thinking, policymakers and businesses can create environments that naturally guide people towards more beneficial outcomes. The book talks about the importance

of designing systems that consider human behavior and cognitive biases, ultimately fostering a more informed and proactive society.

Conclusion for Project Website

With our financial journey board game, we hope to provide an entertaining and instructive experience while developing a strong backend and a fully functional website. The game will include a visually appealing interface and new features like a leaderboard, fund balancing, a 30-day challenge, a community system that functions like Reddit for money, and an immersive banking experience. In addition to making the game more entertaining, these improvements will offer insightful advice and useful money management techniques, create a community where players can exchange experiences and expertise, and motivate them to make better financial decisions. Our goal is to develop a platform that gives people the confidence and success to navigate their financial journeys by fusing fun with financial awareness.