

Videogames: A Promising Strategy for Improving Financial Literacy

It is widely known that most American families are not saving enough money for the future and are carrying too much debt. Of those families, the most vulnerable are those that earn the least—about 75 million households earning low to moderate incomes, many of which rely on costly loan services to get from one paycheck to the next or face high late fees on credit card bills. Financial education can help these households improve their prospects, but it is difficult to reach them through traditional programs. Like many Americans, low-income employees often do not attend—or stay engaged in—financial education programs. The traditional approach to this problem has been to focus on the supply side: that is, to increase the availability of financial education programs. A promising new approach is to focus instead on the demand side by increasing the appetite for financial education through videogames.

This concept has been developed by the Doorways to Dreams Fund (D2D), a nonprofit organization dedicated to expanding savings and other financial opportunities for Americans with low to moderate incomes. With support from the Financial Literacy Center, D2D developed and disseminated a series of videogames that immerse players in the role of a business owner or financial advisor who must learn quickly how to make smart financial

decisions or face bankruptcy. The concept, which D2D calls Financial Entertainment, is to make the games fun—even exhilarating—and to impart basic principles of financial management during the course of play without using traditional instruction.

This policy brief describes the concept behind the games, how they are being disseminated, and the extent to which the games are stimulating demand for this form of financial education. Although a rigorous assessment of the games' value has yet to be done, preliminary research suggests they are a promising approach to teaching financial literacy and promoting positive financial behaviors, particularly for households with the least financial security.

Educational Game Concept

The concept behind Financial Entertainment is to leverage the power and popularity of videogames to attract people to an experience that has an instructional purpose. In contrast to the experience of passive listeners in a classroom, the goal is to stimulate players with the game's visual effects, story, sound, and pace. Because players are motivated to win, they will continue to navigate the increasing challenges the game presents, reinforcing their new skills through repeated practice. They can also play at

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their own pace, making it less likely they will get frustrated and give up. The role-playing experience of a game can also be fun and free from the anxiety some people feel while in a classroom.

Financial Entertainment uses videogames that are free or low-cost to the public; easy to play; and accessible to anyone online, on a smart phone, or via Facebook. These games are referred to as *casual* or *social* games. Unlike traditional videogames that are costly and require advanced skills to play and powerful personal computers to run, social videogames are available to nearly anyone with access to a computer, smart phone, or PDA. Some social games have become extremely popular—Angry Birds, for example, has been downloaded by one billion people. Their appeal is due to several features: (1) game mechanics that are easy and addictive, (2) game motifs that are popular and nonviolent, and (3) game structures built for short, often episodic, play times.

Social games can also appeal to a broader demographic than traditional videogames. The average social gamer is a 43-year-old woman. According to one source, one out of every five Americans over the age of six has played an online social game at least once. More than one-third of social gamers have had no previous videogame experience. Most important, their users are represented across the income spectrum, social games have the potential to capture a larger share of audiences looking for low-cost forms of entertainment.

As of 2012, D2D has developed five games, along with two variations, each of which focuses on different financial lessons (see textbox). In *Celebrity Calamity*, for example, players become the financial manager for three up-and-coming celebrities—Alice Albudget, Ryan “Buster” Buyin, and Missy Moolah—who spend beyond their means. Players must effectively use a bank account, debit card, and credit card to keep their clients from bankruptcy. While focused on fun, the game’s explicit learning objectives include:

- paying more than the minimum credit card payment
- minimizing credit card finance charges
- avoiding fees, including bank overdraft fees, and credit card late payment and over-limit fees
- making good annual percentage rate (APR) choices.

In another game, *FarmBlitz*, players are farmers who have to borrow money during the growing season and invest in savings once they are paid for their crops. Players accumulate savings by purchasing trees, which, like a savings account, grow in value at a relatively low rate. But if they borrow too much money before harvest, players experience firsthand how quickly compounding debt—from high-interest credit cards and payday loans, for example—can make it impossible for saving habits to take root. Rabbits, with their reputation for rapid reproduction, represent forms of high-interest debt. The more rabbits the players introduce to their farms, the more quickly they reproduce and consume the farm’s crops. This game’s learning objectives include:

- minimizing high-interest, short-term debt
- maximizing low-interest, long-term savings
- understanding compound interest.

In *Bite Club*—inspired by Diner Dash, one of the most popular casual games of all time—players manage a “day club” for vampires. Over the course of the game, players experience the tension between servicing debt, spending money, and saving for the future. As vampires, who live

 <p><i>Celebrity Calamity:</i> Manage credit & debt</p>	
 <p><i>FarmBlitz:</i> Manage resources to build savings</p>	 <p><i>Bite Club:</i> Vampire retirement savings</p>
 <p><i>Groove Nation:</i> Dance budget game</p>	 <p><i>Refund Rush:</i> Make the most of a tax refund</p>

forever, players must save a substantial amount of money to finance their dream of retiring to the No-Sun Belt.

The game aims to instill three major learning objectives:

- saving for retirement
- paying down debt
- managing current consumption.

Outreach Strategies to Attract Players

In addition to designing games that players are likely to find engaging, D2D has pursued innovative strategies to market and disseminate those games. It has established effective partnerships for distributing the games and developed social marketing strategies with those partners to target specific populations. Two such partnerships are described below.

Fort Hood

D2D ran an initial pilot with Fort Hood, one of the largest Army installations in the world. Fort Hood decided to partner with D2D because it recognized the need to help the military community manage its finances, and was having difficulty getting people, especially spouses, to attend traditional financial education sessions on base. Along with officials at Fort Hood, D2D devised a strategy to attract young enlisted personnel and their families to play *Celebrity Calamity*. Leveraging the natural competition that exists in this community, the pilot consisted of a game tournament that featured prizes for top scorers and for the strongest unit participation. The game was introduced through a trusted source, the base financial coaching network, which invited soldiers and family members to play. Computer labs on the base were dedicated to the tournament. Information about the competition was spread through email blasts from base financial coaches to their assigned units and through flyers handed out on the base. After the tournament, a public awards ceremony brought attention to the competition and its winners.

According to one Fort Hood family member, the structured competition was an effective way to generate sustained engagement: “I think it’s a great idea to play for high scores against others in your military commu-

nity. I played far, far longer than I would have otherwise and the repetitive play drilled the recommended procedures...into my head.”

Ivy Tech Community College

D2D conducted another pilot with Ivy Tech Community College in Indiana, the nation’s largest state-wide community college with single accreditation, offering low-cost education to nearly 200,000 students a year. For this community, the marketing strategy was to create a tailored portal site available to all of its 11 campuses. Using that portal, D2D organized two tournaments, one in 2010 for *Celebrity Calamity* and one in 2011 for *FarmBlitz* and *Bite Club*. The tournaments were promoted through the Campus Connect intranet; a compelling graphic on the Ivy Tech home page; email blasts to students with customized messages for different populations, including nontraditional students; and announcements on Twitter and Facebook.

Results of Tournament Outreach

The level of participation in the Fort Hood and Ivy Tech outreach efforts and tournament pilots is evidence that D2D’s distribution tactics and marketing tools are working. Table 1 shows data gathered by Google Analytics from the tournament websites. Besides the thousands of players who registered for the competition, thousands more were attracted to the portals dedicated to the tournament. The Ivy Tech tournament attracted 45,000 visitors to the game portal—an extraordinary number that represents nearly a quarter of the school’s entire student body. Players in both tournaments showed a high level of engagement, averaging 45 to 49 minutes of play per game.

The table also displays the characteristics of the registered players who responded to the survey (85 percent of players at Fort Hood and 94 percent of players at Ivy Tech). At Fort Hood, 67 percent of the respondents were men and 63 percent of the respondents reported annual household incomes under \$40,000. At Ivy Tech, 80 percent of the respondents were women and 82 percent reported household incomes of less than \$40,000.

The total number of registered players in all D2D distribution pilot tests, including those at Fort Hood and

Table 1. Results of Tournament Outreach

Total Visitors and Players During Tournament	Fort Hood	Ivy Tech
Portal visitors (during pilot periods)	5,300	45,000
Estimated game plays (all visitors)	6,127	45,708
Registered users	1,300	4,500
Average play time (registered users)	45 min	49 min
Demographic Percentages from Registered User Survey		
Gender		
Male	67	20
Female	33	80
Ethnicity		
African-American/black	28	11
Asian	3	1
Hispanic/Latino	18	3
White	43	82
Other	8	3
Annual household income		
0–\$19,999	14	52
\$20,000–\$39,999	49	30
\$40,000–\$59,999	26	12
\$60,000 or more	12	6

SOURCE: Google Analytics

Ivy Tech, was 16,182, and they averaged 34 minutes on a single game. Over 60 percent of the registered players were female and over 80 percent were from low- or middle-income households. About one in five players came back to play the game again.

Overall, as shown in Table 2, the videogames developed by D2D reached over 280,000 people nationwide during their distribution pilot testing efforts. That figure includes participants in all their tournaments and players who visited the portal sites supported by distribution partners.

Cultivating Financial Capability: Preliminary Evidence

The goal of the game developers at D2D is to build financial capability and thereby improve real-world financial decisions and sustain behavioral change. Future research

will need to be conducted to demonstrate that game play can achieve these effects. In the meantime, there is promising evidence that the D2D games improve financial capability. One source of such evidence is the informal testing D2D carried out during the game development process with user groups of low- and middle-income adults between 18 and 35 years old. Although the sample size was small (about 80 adults) and the games were not finalized at the time of testing, quantitative measures indicated an improvement in both knowledge and confidence across the testing groups.

Additional evidence comes from a modest randomized trial to compare the effects of *FarmBlitz* with the effects of more traditionally delivered, printed financial education materials. In the spring of 2011, D2D partnered with two local nonprofit organizations to implement a 207-person experiment that measured financial confidence, knowledge, and action taking. Participants were randomly assigned to either play *FarmBlitz* for 30 to 45 minutes or read a brochure that contained financial education material available on the web. Both before and after their task, all participants were given surveys of financial confidence (12 questions in which participants were asked to rate their confidence on a scale of 1 [not confident] to 5 [very confident]) and financial knowledge (10 true or false questions). Both groups were also offered financial actions, such as signing up to receive free financial information, pledging to save, pulling their credit report, and buying a savings bond.

Table 2. Overall Reach of D2D's Financial Entertainment Innovation

Game	Approximate Number of Plays
<i>Celebrity Calamity</i>	101,441
<i>FarmBlitz</i>	65,180
<i>Bite Club</i>	44,337
<i>Groove Nation</i>	18,556
<i>Refund Rush</i>	19,651
Total number of plays	260,785
Total site visits	281,918
Percentage of return visitors	18

SOURCE: Google Analytics

Results from these surveys show that both the game players and the readers achieved statistically significant improvements in several measures of financial capability. Because those who read the pamphlet were given financial information that was directly relevant to the questions on the surveys, and they completed the exit survey immediately after reading the pamphlet, this group's improvements are not surprising. In contrast, the game does not “teach to the test,” it focuses instead on players demonstrating the ability to pay off high-interest debt while investing in low-interest savings.

Results show that nearly 70 percent of participants from both the player and reader groups decided to take some action: the greatest effect was among those who signed up for additional financial information (about 32 percent of the game players and 30 percent of the readers) and the most promising effect was among those who bought a bond (about 4 percent of the game players and 2 percent of the readers).

Because of the small number of participants in this experiment, the results are not conclusive. They do suggest, however, that the games may be as effective as reading a brochure at teaching basic financial principles and motivating action. Additionally, the videogames have the advantage of attracting significantly larger numbers of participants, and therefore could be more effective at improving financial literacy among low-income people who have little appetite for more traditional financial education programs.

Motivating Real-World Financial Decisions

In another partnership, with Staples and New York Life Retirement Services, D2D has built opportunities to make real-world decisions about personal finances into the game itself. A customized version of *Bite Club*, the game about retirement planning for vampires, allows Staples employees to take the following steps, among others:

- One opportunity prompts users to fill in their email address for more information about saving for retirement—the decision with the lowest barriers to action.
- The second opportunity provides players with a link to their Staples employee accounts and prompts them to make changes to their actual 401(k) contribution.

Award-winning Staples *Bite Club* Marketing



In one pilot outreach effort, some participants enrolled in a 401(k) or increased the amount they contribute to their 401(k) while playing the game. This outcome suggests that D2D may be able to directly affect financial behaviors by embedding decision-making into the games themselves. D2D is currently pursuing more ways to achieve this integration in their games and is seeking additional partnerships with employers that are willing to conduct such experiments.

Conclusions and Next Steps

Data collected on the effects of dissemination strategies targeted at specific populations show that D2D's casual videogames can have great appeal among those who are hardest to reach with the classroom approach to financial education. Thousands of people with incomes below the national average, many of whom are women, can be drawn into competitive play through innovative outreach efforts—a clear testament to the power of this approach. Preliminary assessments of the effects of gameplay on financial understanding, while not definitive, suggest that playing these games for at least a minimum duration can bolster financial knowledge and confidence—and

sometimes motivate real-world decisions to increase financial savings. Further research will be needed to validate these effects.

D2D plans to expand upon its current partnerships as well as develop additional partnerships to test different game variations and new marketing strategies. It will also experiment with new ways of linking gameplay with different levels of real-world financial decisions that impose light to heavy demands on the player. Lighter demands include clicking through a website for further information, while more demanding actions might involve joining a group, signing up for a class (on buying a home or completing an income tax form, for example), or making a financial pledge (to save more or pay off some debt). Heavier demands might include using personal financial management tools, making a deposit, enrolling in a 401(k), opening an account, or buying a bond.

The challenge is how best to integrate these choices into gameplay. Should they be embedded at stressful moments (such as when the player accumulates a mountain of debt) or when an important level of achievement has been attained (such as reaching Farm God status in *FarmBlitz*)? And how can they be inserted into the game without interrupting the flow of the game? What about rewarding players for both game-based actions and real-world financial actions?

Ultimately, Financial Entertainment represents a paradigm shift in the field of financial education. It demonstrates that financial education can be engaging, fun, and interactive. D2D's most innovative step may be building a bridge between the world of the game and the real world so that players can make decisions about their own finances in the game itself. It is a pioneering concept that deserves to be refined, tested, and assessed in future research. ●