

DESIGNING AND USING GAMES TO TEACH BUSINESS SKILLS TO CHILDREN

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ABSTRACT

In this paper, we describe the value of fostering business skills in children and draw focus to how games and simulations can be used for that purpose. The author and his colleagues designed the game described herein and tested it in 2019 (over a 1-month period) with more than 60 children aged 9-12 in North America. We also conducted a survey at baseline and following the use of the game to understand whether children in the sample intended to become entrepreneurs and whether and how this intent changed after a month of business education tailored to their learning needs.

Keywords: *Gaming, childhood education, curriculum innovation, entrepreneurship, pedagogy, business education*

1. INTRODUCTION

We live during a time of accelerated technological change. Shifting demographics, global competition, and automation are eroding wages and job stability. In fact, automation alone is threatening 25% of the jobs in the United States (mostly low-wage, low-skilled jobs) (Muro, 2019). During the previous century, particularly between 1950's and 1980's (Uchitelle, L, 2006), there were more stable wage-earners and the majority of the public, at least in the Global North, did not need to learn business skills. Now, the freelance workforce is growing at 3-times the rate of the traditional workforce. By 2027, projections indicate that half of the workers in the United States will be freelancers (Upwork, 2019).

Given these considerations, it is becoming increasingly urgent to teach business skills at an early age to prepare the next generation of employees and foster continued economic growth (Johansen, 2007). This is further supported by the fact that there are 22 self-made billionaires on the “Forbes 400” list, who started their business during or immediately following high school (Au-Yeung, 2017).

2. LITERATURE REVIEW

2.1 Children, games, and business education

While there is a rich body of literature on adult business education, there are fewer studies concerning the value and potentially far-reaching impact of teaching business skills to children. Because many children are motivated and willing to assume risks (which is crucial for success in the context of a business environment), it stands to reason that they could begin their training and build their capacity in business at an early age, as young as 4 years old (Stevenson & Lundström, 2002). However, if they are not encouraged and supported by adults, then their entrepreneurial spirit could be undermined (Rabbior, 1990).

As a departure from rote memorization and didactic lessons, games encourage children to actively experiment. Teaching through games helps children take ownership of their decisions and learn from their mistakes (Lee, 2006).

2.2. Children as consumers of value versus children as generators of value

Nowadays, children have more access to money than historical averages. The downside is that they are better at spending money than strategically investing it and creating future wealth (Braunstein & Welch, 2002). In the United States alone, teenager consumers account for \$159 billion spent annually (Teen Research Inc, 2005). Accordingly, many marketers are now targeting teenagers as a demographic group.

2.3 Loss of entrepreneurial spirit with age

Leading researchers and our own experience pointed to the same conclusion: one’s entrepreneurial spirit diminishes with age. In more detail, 25% of children in pre-school exhibit key entrepreneurial characteristics including the need to take risk. This number drops dramatically to 3% by secondary school (Kourilsky, 1980). According to a 2016 Gallup poll, 55% of students in grades 5-8 want to start a business and this drops to 27% for students in grades 9-12 (Gallup, 2016). The same study shows that, over the last 5 years, intentions to start a business have declined across all ages.

Our study was conducted during a summer school program and lasted for one month. During that time, we had five sessions with the participants; each session lasted for 1 hour. We measured entrepreneurship intentions, attitudes, and skills. At the beginning of the program, only 16% of participants answered that they would “probably start a business or work as freelancers.” One

possible reason for these low numbers could be the lack of exposure to business knowledge and skills-building in a formal educational setting. For instance, high schools in most countries are not required to teach business skills. In the United States, only 17% of high schools require students to take a personal finance class (Council for Economic Education, 2018).

Parents also tend to be reluctant to talk about money with their children; so much so, in fact, that more than 70% avoid the topic altogether (T. Rowe Price, 2017).

2.4 Aspirations for the future and trends

Our survey revealed participants' preferences for future occupations. Our findings were importantly different from the Bureau of Labor Statistics (United States Department of Labor, 2018).

TABLE 1
Most desired occupations by children versus rates of current occupations

| | What do you want to do for employment as a grown-up? (please list 3 options) | Percentage of actual workforce employed in this occupation type |
|------------------------------------|---|---|
| Athlete | 25% | Less than 1% |
| Doctor | 16% | 5% |
| Lawyer | 15% | 1% |
| Teacher, educator | 15% | 5% |
| Designer (interior, graphic) | 13% | 2% |
| ... | | |
| Business executive or entrepreneur | 7% | 21% |

While there is growth in the demand for the first 5 “most preferred” professions (by an average of 6% over the next 10 years), the general balance of occupations will remain stable (United States Department of Labor, 2018).

3. GAME DESIGN

3.1 Target

Our plan was to expose 60 children (aged 9-12) to the educational games.

3.2 Objectives

The full intervention included 5 1-hour sessions on the following topics:

Session 1: Introduction to business

Session 2: Career options and personal finance (i.e., the game shown below)

Session 3: Innovation and creativity

Session 4: Create your business plan

Session 5: Present your business plan. Wrap-up.

Sessions 1-3 each included different business classroom games that were designed or adapted for children aged 9-12.

Below, the author will share more details about the game used in the 2nd session.

We theorized that, by participating in the game, children would be able to:

- Understand what it feels to have their first job
- Learn basic concepts about income and expenses
- Make decisions and simulate the long-term impact on their financial well-being
- Avoid common business mistakes made by adults
- Collaborate among each other and share key insights

There were 2 additional objectives: (1) the game had to be highly realistic in terms of numbers, distribution of professions, and expenses; and (2) it had to be highly engaging and generate emotional reactions from children.

3.3. Game process

3.3.1 Choose your first job

One of the key learning outcomes we wanted participants to gain from this experience was that in order to fulfill your dreams and have the occupation you want you need to work hard and be proactive.

Figure 1
Profession cards



For this, we experimented with several ways of lining children up in a row, such that the first participant would have a wide range of options to choose from for their profession. As the row advances, there are fewer left. For example, the last person in the group to choose a profession was left with limited options, none of which were particularly attractive. We followed the average occupation distribution in selecting professions for the children to choose from (United

States Department of Labor, 2018). Out of 100 professional cards, only 1 was for an athlete, yet 25% of participants expressed their desire to be athletes.

This part of the game proved to be highly emotional, as the participants who were last to choose grew increasingly frustrated. This led to an opportunity to debrief at the end of the game.

3.3.2 Receiving your first paycheck

A key assumption we relied on is that not all people in the same profession earn the same wage. For example, 2 doctors could earn different amounts of money at the beginning of their careers.

3.3.3. A month of your life

Participants were exposed to common scenarios of daily life, such as deciding where to live, where and what to eat, whether or not to exercise, and what clothes to buy. These decisions were reflected on their expense sheets and they were expected to categorize them as “survival expenses,” “rent and services,” “commuting,” “entertainment,” and “other.”

Figure 2
Financial statement card

The image shows two overlapping financial statement cards. The front card is titled 'Financial statement card' and has a blue border. It contains the following sections:

- SURVIVAL** (red header): Shopping cart icon, followed by a calculation $__ + __ + __ =$ and a red box.
- RENT AND SERVICES** (yellow header): House icon, followed by a calculation $__ + __ + __ =$ and a yellow box.
- COMMUTING** (green header): Car icon, followed by a calculation $__ + __ + __ =$ and a green box.
- ENTERTAINMENT AND OTHERS** (blue header): Ticket icon, followed by a calculation $__ + __ + __ =$ and a blue box.
- TOTAL EXPENSES** (grey header): A grey box.

The back card is titled 'Financial statement card' and has a white background. It contains the following sections:

- Income - Expenses**: A calculation $__ - __ =$ followed by a yellow box and the text 'Multiply by 60'.
- CREDIT** (red header): A red box and the text 'You need more cash? Write how much you need. The amount cannot exceed two times monthly income.'
- Business and Investments** (blue header): A calculation $__ - 1.5 \times __ =$ followed by a grey box.
- Business/Investment**: A grey box.
- END RESULT**: A grey box.

If a participant ran out of cash, they could borrow from the bank. The interest rate was set at 20% per year according to the US credit card average interest for new offers (McCann, 2019). When borrowing money, we attempted to simulate real-life scenarios where conditions are not always clear (e.g., small print) and it is easy to borrow money. In order to make the experience more realistic, we also simulated random life events and social pressures. Participants were faced with unexpected situations and we observed how they would spend their money. For example, one such situation was “Your new colleagues invite you out for dinner. Would you go and spend \$50

or stay home?”. All situations represented multiple option decision trees, and after a specific option is taken, the participant needs to pay the corresponding cost.

Figure 3
Game interface



3.3.4 Five years later

After the first month we calculated how much money (if any) participants were left with. They multiplied this number by 60 to get an estimate of how much equity in cash they could generate if they maintained their current earning and spending pattern.

3.3.5 Starting or buying a business

Those with enough cash left over could bid to buy or start a business. Participants were presented with several options for various types of businesses and had to pay initial investment capital required.

One twist was that their previous professional experience or traits in the game could increase their chances of success. For example, if they chose a business that required a digital acumen and they had the qualifications (for example their first profession was as an engineer), then their chances of success increased.

3.3.6 The winner and debriefing

In the end, participants calculated their final net worth and the winner was announced. The facilitator led a discussion and debriefed on key learning points.

Figure 4
Gameplay



4. CONCLUSION AND FUTURE PLANS

Our 1-month program was rated highly by 72% of the participants. The biggest achievement, however, was that the intention to start a business almost tripled among participants over the course of the program (as evident in Table 2).

Table 2

| | Beginning of the program | End of the program |
|-----------------------------------|--------------------------|--------------------|
| “I am likely to start a business” | 16% | 46% |

We defined several opportunities for further research and improvement in the game design:

- Track results from participants through their participation in related clubs/after-school programs and, if possible, compare it with how they do in terms of entrepreneurship activity or equity generated 5 years later.
- The level of attitudes and knowledge is very different among the age ranges, so the game should be customized for different levels of participants.
- Involve the most knowledgeable participants as game facilitators and peer mentors.

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