

GAMING THE SYSTEM: TEACHING SOCIOECONOMIC INEQUITY THROUGH ROLEPLAYING AND DISCUSSION USING AN EDUCATIONAL BOARD GAME

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Abstract

Gamification is a popular pedagogical tool for increasing student engagement and teaching threshold concepts. Our paper describes the development and assessment of an educational board game. *The Landlord Game* uses roleplaying and productive negativity to help students develop a deeper understanding of socioeconomic inequality. This game purposely places players in an intense, often frustrating struggle for socioeconomic mobility. This aims to help them build empathy and challenge received understandings of the relationship between wealth and poverty. The game is a multiplayer, turn-based board game that reimagines the popular board game *Monopoly*TM by problematizing its reductive economic model and resisting bootstrap theories, such as Social Darwinism. Through qualitative and formal assessment of the gameplay in different undergraduate courses using pre- and post-attitudinal surveys and discussion, we found that *The Landlord Game* helped students engage with and reevaluate their understanding of the systemic inequities inherent to contemporary capitalism.

Keywords: game, socioeconomic, roleplaying, economics, inequality

1 INTRODUCTION

In the United States and many other parts of the world, it has become apparent that income inequality has risen to the level of a problematic—a socioeconomic crisis shot through our social formation—from religion, to politics, to education. In the realm of higher education, colleges and universities have increasingly begun to include some form of examination of income inequality at various levels of its curriculum. For example, at the University of Notre Dame, the problematic of wealth disparity and income inequality occupy several weeks of a year-long First Year Experience requirement for all undergraduates. This component of the course is meant to teach not sympathy, but empathy, an identification with the communal ties we share with, and our responsibilities to, the economically disenfranchised. This runs ideologically counter to understandings of poverty provided by theories such as Social Darwinism as described in the work of Olson, James and Mendoza on Social Darwinism [1], which holds that natural selection, acting on variations in the population (the ‘natural’ inequalities among individuals) results in survival of the best competitors, and thereby the continual improvement of the population. Social reform only interferes with class stratification, which is justified since wealth represents the only true measure of an individual’s fitness under capitalism. Wealth is explained after the fact as the measure of an individual’s temperance, industriousness, and frugality.

Nuanced pedagogical approaches to socioeconomics can be challenging to design, particularly if they must counter students’ oftentimes entrenched received opinions about poverty. Gamification has emerged and gained popularity as a creative tool for addressing such reticence in students. Gamification may be understood as a method of instruction which leverages the structures, affordances, activities, and general shapes of games and related forms of ludic activity. We acknowledge the continuing discussion over utility of the term gamification as defined by Deterding et. al. [2], as well as the pessimistic outlook for gamification, especially on electronic devices suggested by the latest Horizon Report [3]. However, we believe that the concept of gamification still offers many productive avenues for increasing student engagement with active learning. In his seminal work in this area[4], Gee has famously argued that video games, through their procedural nature, are especially adept at instruction, offered a number of ways in which they engage players in ways users find rewarding: Games help users invest in an identity (skills, strategies and ideas are easier to learn in the context of an identity); games provide information on demand (users process information best when they need it and how they need it); games act like sandboxes (users feel safe to explore when risk is simulated and mitigated); games are pleasantly frustrating (users require a challenge that is hard but

achievable with some struggle”); games help users develop system thinking (contextualizing skills, strategies, and ideas as part of a larger systems which make them more meaningful).

The Landlord Game represents our attempt to use these principles of gamification to bridge the gap between game and simulation—something akin to the work of serious or persuasive games as described by Bogost [5] and the works of Ferrara [6]. The Landlord Game deploys procedural rhetoric, with the aim of deterring students from adopting or continuing in a reductive ideology like Social Darwinism. We intend The Landlord Game as a direct critique of Monopoly [7]. In doing so, we employed each of the components of Gee’s system, above, to keep players pleasantly frustrated. The game is procedural, and while players may experience several different outcomes, players must move inexorably acquire capital, and deviating from that leads to certain failure. To mitigate this negative affect, our game asks users to invest in an identity or social class role. We assign colored role cards (Fig. 2) which make the social class hierarchy clear—poverty written on the body, so to say. Because the game is a socioeconomic sandbox, players may feel temporarily powerless but never truly defeated, even if their persona in the game is barely surviving or worse.

However, in the case of The Landlord Game, the most important component of Gee’s framework must be the way in which it helps them develop systems thinking, for this is the primary “threshold concept” represented by the game. Threshold concepts are defined as “particular concepts (for any subject) that can be considered as akin to a portal, opening up a new and previously inaccessible way of thinking about something. A threshold concept represents a transformed way of understanding, or interpreting, or viewing something without which the learner cannot progress” [8]. A threshold concept will be transformative and troubling, irreversible, integrative, and discursive. Since we hoped our students would begin to engage with the threshold concept of inequality as systemic, we were glad to see some evidence of it in a student’s commenting that they found it “really interesting to see how exactly the privileges you start out with determine how successful you’re likely to be in the future, and how that likelihood grows exponentially.”

Similar pedagogical approaches have been adopted especially where the subject matter is complex and unintuitive. Board games, specifically, have been used as pedagogical tools for a variety of different topics ranging from Eisenack’s climate change board game, Keep Cool [9]. In Vahed’s work [10], we see serious games used in the board game format for education in the dental technology field. O’Rourke et. al have studied the use of games in the agribusiness area [11] and in the several landmark works of Gauthier and Jenkinson [12] where they use serious games and productive negativity to teach complex molecular biological concepts in emergent systems. Most popular commercial economics-based board games, such as Acquire [13] and Stockpile [14], align with the goals of winning by amassing wealth and outplaying opponents, thereby celebrating capitalist principles. Even Anti-Monopoly [15], ultimately celebrates the capitalist impulse to acquire.

In this paper, we share our experience of designing and developing our educational roleplaying board game The Landlord Game, which we use as a tool to help students engage with, examine and reflect on their perceptions of socioeconomic classes and mobility within. In sections 2, 3 and 4 respectively, we briefly describe the game, its development and selected game mechanics such as game roles, capital management, life events, etc. In sections 5, we describe our methodology and our experience of using the board game in different types of undergraduate courses. We share our qualitative and quantitative assessment development and results in section 6 and discuss our plans for future work.

2 GAME DESCRIPTION

The Landlord Game builds on the work of serious or persuasive games [5][6]. It was developed by the first author in consultation with economists, poverty studies scholars, and academic librarians. It was designed to educate undergraduate students by gamifying the economic dimensions of social justice. It aims to challenge students’ preconceived attitudes toward wealth and poverty as indicators of virtue, and to challenge assumptions of fairness and social equality, in an embodied way which encourages students to carry what they learn in the game world into their real life experiences.

The game is an homage to Lizzie Magie’s *The Landlord’s Game*, one of the earliest board games addressing the issue of socioeconomic inequality. Magie’s game was later stripped of its ideologically challenging elements to become the popular zero-sum game we know today as Monopoly. The

Landlord Game leverages players' familiarity with Monopoly in order to challenge its overly simplistic understanding of contemporary capitalism as the survival of the fittest in an otherwise egalitarian setting. In Monopoly, the assumption of a level socioeconomic playing field represents an impoverished model equating socioeconomic success with winning. Our game complicates the traditional game world of Monopoly by adding concepts such as social class, military service, higher education, healthcare, incarceration, and political activism. The Landlord Game thus represents a parodic critique of Monopoly, adjusting, rewriting, and at times completely abandoning the rules of Monopoly to more closely reflect social class inequality. It does this in order to stimulate a frustration so comically absurd that gameplay evolves into a discussion among players about the inequalities inherent in contemporary U.S. capitalism.

Upon start of play, inequality immediately manifests, as players assume randomly selected roles spanning the socioeconomic spectrum: the 'unemployed' or underemployed poor, the middle class 'employee', the upper class 'manager', and the wealthy capitalist 'owner'. The inequalities between these roles are demonstrated through specific game mechanics, such as different monthly incomes, movement rates, and social privileges for each role. As an example, Fig. 2 shows Owner's role card. Players may attempt to move up the socioeconomic ladder, although they often continue to struggle to purchase capital or build savings when faced with economic imperatives which mount relentlessly, as the manager and owner classes continue to be easily able to purchase most of the capital (properties). Beyond the difficulty of buying property, players encounter life events (some positive, some negative) through Change cards, such as having a child, losing a job, being caught for insider trading, being the victim of identity theft, sitting for job interviews, getting an income tax refund, and many more.

3 DEVELOPING THE GAME

One of the inherent pitfalls of serious games is presenting what Meyer and Land term a "naive version" of a threshold concept. Because threshold concepts are meant to trouble and problematize students' received notions, when a threshold concept is presented through a reductive model, they warn, it may encourage students to simply accept the naive version as the truth. The, students are not able to use the threshold concept to perceive a new reality [8]. A primary concern in developing The Landlord Game was to bring the game closer to parity with the economic realities of contemporary capitalism, producing negative affect, while also introducing elements of humor and fun which might provide a counterbalance of positive affect.

To ensure the game world represents real-world economic disparity, then, The Landlord Game was developed with domain experts in the fields of economics. They helped ensure player roles corresponded to actual socioeconomic classes. Roles were developed early on according to approximate salary ranges which corresponded to the functional aspects of social stratification, i.e., social class rather than social status. [16, 2]. Widely varying salaries, movement rates, and specific benefits and penalties were coded directly onto the role cards so that students embodied their socioeconomic class. A domain expert in the field of poverty studies helped ideate on how specific Change cards might better foreground how the cycle of poverty is perpetuated. Sixty new Change cards were mapped to affect specific roles, with 32 cards applying to Unemployed and Employees, and 28 cards applying to Managers and Owners. Cards were mapped across major life events where approximately 26 cards have good or neutral effects and 21 cards have negative effects.

The real estate schema of our game as shown in Fig. 1 was adapted from *Monopoly*. This was a purposeful choice allowing us to challenge schema players previously held from Monopoly. Like Monopoly, the board consists of four progressively wealthy neighborhoods broken down into themes relevant to the discussion of the economic dimensions of social justice: ghettos, prominent African-Americans, labor leaders, white collar crime, political economists, fictional characters, scammers and scoundrels, and the white house under president Trump. While properties in *Monopoly* are quaint abstractions, in Landlord, properties have tangible connections to real historical people, places and events with a deep connection to the socioeconomic dimensions of social justice. During the game, many Change cards cause players to engage with the economic or technological significance of the property's namesake or event.

While we made the game extremely challenging for at least half the roles, we encouraged productive negativity by balancing the continual failure experienced by those players (and witnessed by all players) with happier ludic elements. For example, we allowed students to play with those fellow

students they chose, in the hope this would encourage better discussion. Performative elements were also included to remind students of the ludic aspect of the game, such as running for president or sitting for an interview. Puns and other humorous aspects written into game artifacts, aimed at breaking the fourth wall and elevating the students to reflect on the game as play.

4 SELECTED GAME MECHANICS

Several game mechanics were developed to focus students on the factors which contribute to and perpetuate socioeconomic inequality. We discuss some selected mechanics here.

4.1 Roles and socioeconomic mobility

Moving up a socioeconomic class is typically possible only by joining the military or attending college or drawing a specific rare Change cards. Military and College options offer immediate promotion to the next social class. Without a scholarship (a lucky roll of the die), college costs money. The military is free to join and offers educational and healthcare benefits but it also includes a penalty to movement and a not insignificant chance on every turn that the player will be killed in combat. These options are included to highlight the limited options available to the lower classes to advance socioeconomically.

4.2 Life events through Change cards

Change cards address a range of life events related to socioeconomic success, such as: banking, including payday loans, predatory lending, vagaries of the stock market, and even crowdsourced charity; the costs of healthcare, including standard costs and unforeseen events, food deserts, and pseudoscientific wellness brands; incarceration, including drug abuse and the school to prison pipeline; insurance, including basic fiscal responsibility, legal representation, and care of the elderly; and many more. The myth of rags-to-riches is also addressed, with cards representing playing the lottery, or being discovered by a talent agent. The "Trading Places" card forces players to trade identities (roles and all money and properties) with another player at random. Unlike the other Change cards, the Trading Places card are not referencing the actual inequity of a specific life event, but serve instead as a powerful way to create empathy between players as they learn what it feels like to be 'othered'.

4.3 Capitalism and the division of labor

Ownership of capital (properties) is designed to focus students on the division of labor which underwrites U.S. capitalism. The wealthy capitalist owner begins the game owning two revenue-generating utilities, for which other players must pay each time they pass the Payday square. This means that half the unemployed player's salary is already owed to the Owner each Payday. Because owners earn far greater salary (15 times greater than the unemployed) and move faster around the board, they are able to purchase capital in the form of rent-generating properties. This perpetuates and quickly exaggerates the wealth gap between roles which only grows unless players enact new rules to reverse this trend.

4.4 Loans

As an educational board game, The Landlord Game resists the notion of winning. Players may still lose by going bankrupt or dying. Loans, then, become a significant way in which players can build capital or simply survive financially. Unemployed players cannot receive bank loans and must take loans from other players to pay rent. Putting the player at the mercy of another player is intended as an analog of any of the predatory lending practices which regularly disenfranchise the poor. Employees may assume loans from the bank, although the interest rate is decided entirely by the player playing the banker. The unemployed and employees thus have far fewer options to rise socioeconomically besides assuming risky loans to pay debts and help buy properties. Eventually, astute players recognize that the only way to thrive in the game is to become a landlord, to own property. However, interestingly enough, most students don't immediately think to take loans. Instead they work at paying off debts immediately. Our post-play class discussions, especially in socio economics classes, frequently begin by interrogating this resistance to entrepreneurship and long-term strategic thinking about capitalism.



Figure 1. Board layout for The Landlord Game. All players start at the Payday square.



Figure 2. Owner Role Card from The Landlord Gam

4.5 Healthcare and Incarceration

Healthcare remains one of the largest cost centers for the U.S. economy. Many players encounter the hospital square as many Change cards send players to this square. Players' roles determine what they pay when they land on the square, with owners paying the least amount, on down to Unemployed, who pay the most, an analog for lack of insurance. One lucky Change cards allows players to pay insurance and eliminate all hospital costs. Players generally debate whether it is unfair that wealthy people pay the least amount of healthcare and make the most money. This game mechanic has spurred energetic debates among players about socialized medicine and the economic paradoxes of contemporary U.S. healthcare.

By varying the penalties between roles for incarceration, we create space for discussion and reflection around issues like the school to prison pipeline and legal representation. The owner also spends no time in Jail, due to their lawyer on retainer and pays only a fraction of the penalty for landing on Back Taxes. The Manager's access to legal representation results in her spending only half the required time in Jail. Some players have remarked how unfair it is that only Owners make money while incarcerated.

4.6 Politics

Rule-making also engenders debate. Unlike the fixed rules of Monopoly, The Landlord Game, in an analog to modern political activity, encourages players to democratically reshape their 'society' in at least three ways. Running for president is open only to Owners who have significant power to change game mechanics, but must be voted in with a simple majority. All players can become 'politically active' by skipping a turn and proposing a new rule.

5 METHODOLOGY - GAMEPLAY IN COURSES

Our overarching research question is whether the game intervention can help students engage with socioeconomic concepts of class and class mobility, and ideologies such as Social Darwinism. The game has been played in many different sessions in several courses since it debuted in the Money Worries museum exhibit in January 2018 [17]. All those gameplay sessions were observed by the first author but no formal assessment was conducted. In the Spring of 2019, the gameplay sessions were formally evaluated in selected courses.

The five courses in our formal assessment study were: ECON 252 Principles of Microeconomics, ECON 352 Intermediate Microeconomics, and ECON 192 Economic Development at St. Mary's College, FYS 10101/10102 The Moreau First Year Experience Seminar and FTT 40108 Film, Television and Theatre: Interactive Storytelling at the University of Notre Dame. It is important to note that we were not instructors of record for all but one of the courses where assessment was conducted. In most of the courses, our intervention was one lecture long. In a typical session, students play in a classroom setting, where the instructor and the first author facilitate and observe.

The students taken to the game website where they are told that “The Landlord Game is a free educational board game designed to help faculty gamify the economic dimensions of social justice for their students.” The students then answer the pre-game attitude assessment survey and then they are use the game instructions on the website to start playing the game in their self-selected teams. After gameplay, students take the postgame attitude assessment survey individually. Then the class, as a whole, discusses the experience of the game.

Most game sessions are allowed about 40 minutes of game play time as it allows players time to experience many of the major events of the game, including changing socioeconomic class, being incarcerated, paying for healthcare, going bankrupt, and/or dying. The longest games we have witnessed occurred in the Interactive Storytelling course and ran for two hours, by which time, all students had experienced most of the major events and threshold concepts the game was designed to help them encounter.

5.1 Gameplay observations and reflections

Productive negativity involves striking the right balance of negative and positive affect to successfully effect radical transformation in attitudes, driven by empathy. A representative selection of student comments about the gameplay indicates that many students found the game extremely challenging, intellectually rigorous, and fun to play. Across the range of courses examined, players found the game to be sometimes painfully and hilariously realistic. Especially for those players inhabiting roles on the lower rungs of the socioeconomic hierarchy, and for whom progress was markedly difficult, the game’s realism was marked. “This isn’t a game, it’s real life!” one player commented. “I really liked how socially conscious it was,” agreed another.

Instructor-solicited comments support that The Landlord Game troubles students productively, asking them to rethink received understandings of many social institutions, cultural practices, laws and policies. “I started thinking,” remarked one student, “about my actual life and considered if I would really want to join the military. It was scary playing the health check to see if I live or die.” Another student remarked on the perpetual cycle of impoverishment. “There was never an opportunity to be content with what you have. You have to keep acquiring and moving.” And, wrote another, it “started good but the game changed to survival by the third turn because so many bad change cards happened.”

We found that gameplay differed drastically based on the combination of students, even within the same classroom. For example, in one session of the Interactive Storytelling course, one playgroup composed of one male and four female students engaged actively in rulemaking to change their society a self-proclaimed ‘feminist utopian poetry collective’ where improvised haikus replaced currency. In contrast, in the same session, a neighboring group of four male students played extremely competitively. These students did not engage in any rule-making and focused on using the existing rules to disadvantage their opponents. One of the players died multiple times in the game through poor luck in the change cards. As the group was enjoying the competitive gameplay, the members decided to resurrect him, but chose to balance the repeated resurrections by finding ways to stymie his progress further each time he was brought back. The group appeared to enjoy the gameplay, mainly for the competitiveness of it.

Across the different sessions in different courses, we found that the Change card ‘Trading Places’ often caused scenarios hilarious for some, painful for others, but which led to deeply empathic postgame reflections. One such player, forced to switched from Owner to Unemployed was unpleasantly surprised at the lack of wealth and resources she was forced to assume, remarking: “You have nothing! What have you been doing over here?” They initially perceived the Unemployed player’s lack of wealth as a failure of industriousness. In postgame reflection, many players who switched roles described how difficult it was to cope with the game in the disadvantaged role. In another case of Owner-to-Unemployed swap, the player that had been actively making game rules that disadvantage only the wealthy. As he was now no longer wealthy, he realized he would have to work to change the system he helped create if he wanted the rules to serve him in his new role.

Often the Unemployed player has the least enjoyable game experience, other than engaging in play with their friends. The game mechanics disadvantage the player in terms of their ability to move or buy property. However, sometimes those restrictions get compounded by unfortunate life events through

the change cards. In one such occurrence, an Unemployed player received a Change card sent her to the hospital to have a baby, and so into immediate debt. Unable to borrow from the banks, she was forced to assume a high interest loan from another player and given only two rounds to pay it. Her next several moves landed her in jail twice, which caused her to default on her loans, and to be removed from the game. In contrast, witnessing the Owner receiving immunity from incarceration and a full payday, she remarked “This is really unfair, I cannot do anything.”

6 ASSESSMENT AND RESULTS

Our formal assessment in five different courses used pre- and post surveys we designed specifically to gauge attitudes on socioeconomic inequality and selected game events (e.g., healthcare, military, college, etc.). Our assessment builds heavily on the work of Soper and Walstad [18] where they used a three point Likert scale and popular statements on poverty, such as “People should not have to pay taxes.” We also studied the work of Clark and D’Ambrosio [19] about attitudes towards the causes of income inequality, and Kreidl’s work [20] on popular perceptions on poverty in parts of the western world. We chose to employ an ordinal Likert 7-point scale from “strongly agree” through to “strongly disagree” for the attitude statements. Only the questions and the Likert scale were shared with the students. To evaluate the effectiveness of this goal, pre- and post-play attitudinal surveys were administered which measured deltas in student’s acceptance of the essential tenets of Social Darwinism. We chose to form attitude assessment statements on a similar basis, presenting statements representative of Social Darwinist thought. After several iterations screening for overlap with game constructs, we selected the statements shared in Table 1 along with the student response means for pre and post rating scores and the categories of the statements. The statements were intentionally constructed to avoid obviously ‘correct’ or ‘incorrect’ ratings to counter student bias toward instructor expectations. For example, our first statement “AQ₁: A person’s socioeconomic class is determined by how hard they work,” is a common trope that equates wealth to virtue, implying that members of lower socioeconomic classes are less hard-working. If we examine AQ₃ and AQ₈ closely, they pose the beneficiaries of capitalism to be only the wealthy and everyone, respectively. These two views are not diametrically opposed, but these are also commonly held beliefs about the fairness and advantages of capitalism.

Table 1. Attitude survey questions and mean of pre and post responses (n=69).

Code	Question	Mean response in Pre	Mean response in Post	Category
AQ ₁	A person’s socioeconomic class is determined by how hard they work.	3.75	3.36	hard work
AQ ₂	A college education is necessary for financial security.	4.07	4.43	education
AQ ₃	Capitalism is only truly beneficial for the wealthy.	3.71	4.33	capitalism
AQ ₄	Participating in politics is an effective way to make socioeconomic change.	4.67	4.68	social change
AQ ₅	People can break out of poverty by simply working harder.	3.32	3.17	hard work, poverty
AQ ₆	Government welfare programs encourage the poor to stay poor.	3.90	3.72	poverty
AQ ₇	Military service is one of the few paths out of poverty.	3.71	5.03	military, poverty
AQ ₈	Capitalism is beneficial for everyone in society.	3.71	3.55	capitalism
AQ ₉	We all have access to the same economic opportunities.	2.49	2.25	equality
AQ ₁₀	Debt is the result of poor financial choices.	3.75	3.23	poverty
AQ ₁₁	Any citizen can be president, if they try.	3.17	2.74	politics
AQ ₁₂	Free medical care should be provided for all Americans.	4.30	4.32	healthcare

We share the results of our attitudes survey and present a plan for further study and improvement of the effectiveness of using the Landlord Game to teach socioeconomic inequity. Our assessment was developed to satisfy the overarching goal of whether the gameplay helped students to engage with and think about their perceptions of socioeconomic inequality and some other Social Darwinist views.

We weren't trying to gauge student's attitudes per se, but to observe if there was a possible change after the game interaction. As our assessment goal was that students engage with the material, all we really wanted was for the students to demonstrate some change in their pre and post attitudes. The direction of the change was not considered extremely important, as our goal is not to convince students against Social Darwinism principles, but to help them engage with it and reevaluate their impressions.

We have gender data on the students but we did not collect race or economic background data. Across the economics courses, all the 43 students surveyed were female. In the freshman Moreau course, 18 students played the game and answered surveys, out of which 6 were female and 12 identified as male. In the interactive storytelling course, 12 students played the game and participated in the postgame reflection and discussion, but only 8 answered the surveys, out of which only 1 student was female and 7 were male. We discuss our results of our analysis for the entire set of 69 students across the different courses who played the game, participated in postgame discussion and also answered both pre and post attitude surveys.

We share some preliminary quantitative analyses of our pre and post surveys. We chose to perform a paired samples t-test on the pre and post survey data per question, for all the student responses across the different sessions. The students were presented with exactly the same survey attitude questions in the pre and post versions. The post version of the survey also asked students to include information about what roles they played in the game and also whether they encountered some game events like college, jail, military, death, etc. Table 2 describes our results of the paired samples t-test and the calculated p-values comparing the mean responses before and after the gameplay for all of the student surveys ($n = 69$) across the different courses.

Table 2. Results of paired samples t-test on the pre and post survey responses for each attitude survey question ($n=69$).

Attitude Question	Mean diff.	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		T	df	p-value Sig. (2-tailed)
				Lower	Upper			
AQ ₁	-.391	1.297	.156	-.703	-.080	-2.506	68	.015
AQ ₂	.362	1.403	.169	.025	.699	2.144	68	.036
AQ ₃	.623	1.177	.142	.340	.906	4.398	68	.00004
AQ ₄	.014	1.219	.147	-.278	.307	.099	68	.922
AQ ₅	-.145	1.498	.180	-.505	.215	-.804	68	.424
AQ ₆	-.174	1.188	.143	-.459	.111	-1.216	68	.228
AQ ₇	1.319	1.460	.176	.968	1.670	7.503	68	.000000002
AQ ₈	-.159	1.158	.139	-.438	.119	-1.143	68	.257
AQ ₉	-.246	1.265	.152	-.550	.058	-1.618	68	.110
AQ ₁₀	-.522	1.378	.166	-.853	-.191	-3.144	68	.002
AQ ₁₁	-.435	1.604	.193	-.820	-.049	-2.252	68	.028
AQ ₁₂	.014	.962	.116	-.217	.246	.125	68	.901

Our specific research question for the assessment is: *Is there a difference in attitude assessment responses before and after the game session?*

Our null hypothesis is H_0 : *There is no difference in mean pre- and post- survey responses.* This is further specified for each of the twelve attitude survey questions numbered H_0QA_1 to H_0QA_{12} .

Our alternative hypothesis is H_1 : *There is a difference in mean pre- and post- survey responses.* We break our alternative hypothesis into further sub hypotheses per each survey attitude question, naming them H_1QA_i for questions QA_i where i goes from 1 to 12.

Regarding our hypotheses, there is strong evidence in terms of statistically significant p-values and t values as shown in Table 2 for some of the attitude statements, especially for hypotheses H_1QA_1 , H_1QA_2 , H_1QA_3 , H_1QA_7 , H_1QA_{10} and H_1QA_{11} . These relate to areas of hard work, education, capitalism, military, poverty and politics. For the rest of the survey questions, the difference in means was not statistically significant.

We also observed that 24 out of the 69 students decreased their agreement with the statement of AQ_1 related to hard work being the determinant of socioeconomic class. Another 37 out of the 69 did not change their rating after gameplay. We hope that struggling as members of low socioeconomic standing or watching their friends struggle with it, while watching Owner players thrive would help some students perceive that hard work is not the sole determinant of one's social class. It is possible the poor struggle and work hard and are still unable to move to more comfortable socioeconomic classes unless some political action intentionally supports them. They also saw that political action can help shape who benefits the most from the current system, understanding the systemic nature of inequity through observation.

We found that 38 out of 69 students increased their agreement with the statement of AQ_3 related to capitalism benefiting primarily the wealthy. Another 26 out of the 69 students did not change their rating between the pre and post surveys. We could say that engaging with some aspects of capitalism through the gameplay may have helped some students reevaluate how capitalism favors the rich, whereas those with less wealth do not necessarily benefit the same from capitalistic principles.

We also found that 29 out of the 69 students decreased their agreement rating with the statement of AQ_{10} which talks about debt being related to poor financial decisions, where another 27 out of the 69 students remain unchanged in their agreement rating. We hope that through the gameplay, some students were able to empathize with members of a relatively disadvantaged socioeconomic class, contrary to the popular belief that the poverty is only for those unwise with their money.

7 CONCLUSIONS AND FUTURE WORK

We found that post play reflection time is key in students making the most of their experience. We recommend that instructors have a brief discussion at the end of play, and ask their students to think through their play in writing more fully, outside of class time.

Our survey form also captured some details about player's role(s) during gameplay, and in a more recent version of the survey, we captured whether the players experienced scenarios related to college, military, healthcare, jail or death. For future analysis, we will study if experiencing one or a combination of roles and events leads to specific types of changes in player's attitudes.

There are several ways in which we intend to improve the effectiveness and reach of the game. We intend to add wiki-type entries for all properties to the game website. Faculty might use these to further explore the concepts only implicitly referenced in the game, such as race. For example, one African-American player appreciated the nod to African-American activists in the names of certain properties remarked "way to integrate race into gameplay." In post-play discussion, she opined that the game "should be in every black household" because the game was more realistic than Monopoly. We also intend to conduct the gameplay and assessment in different types of courses, to see if type of course affects how students engage with the material. We also plan to investigate any correlations that may exist between gender, race and engagement with the game. We are creating a discussion guide for instructors to facilitate more productive post-play discussion and more nuanced written reflections.

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REFERENCES

- [1] J. Olson, S. James, A.O. Mendoza. "Social Darwinism." *American Economic History: A Dictionary and Chronology*. 2015.
- [2] S. Deterding, D. Dixon, R. Khaled, L. Nacke. "From Game Design Elements to Gamefulness: Defining 'Gamification'." *In Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments*, pp. 9-15, 2011.
- [3] B. Alexander, K. Ashford-Rowe, N. Barajas-Murph, G. Dobbin, J. Knott, M. McCormack, J. Pomerantz, R. Seilhamer, and N. Weber. *EDUCAUSE Horizon Report 2019 Higher Education Edition*. EDU19, 2019.
- [4] J.P. Gee. "Learning by Design: Good Video Games as Learning Machines." *E-Learning*, Vol. 2, 2005.
- [5] I. Bogost. *Persuasive Games: The Expressive Power of Videogames*. Cambridge, MA: MIT Press, 2010.
- [6] J. Ferrara. "Games for Persuasion: Argumentation, Procedurality, and the Lie of Gamification." *Games and Culture*, Vol 8, no. 4, pp. 289–304, 2013.
- [7] L. Magie and C. Darrow. *Monopoly*. Hasbro, 1935.
- [8] J.H.F. Meyer and R. Land. "Threshold Concepts and Troublesome Knowledge (2): Epistemological Considerations and a Conceptual Framework for Teaching and Learning." *Higher Education: The International Journal of Higher Education and Educational Planning*. Vol 49, No. 3, pp. 373-388, 2005.
- [9] K. Eisenack. "A climate change board game for interdisciplinary communication and education." *Simulation & Gaming* 44, no. 2-3 (2013): 328-348.
- [10] A. Vahed. "The tooth morphology board game: an innovative strategy in tutoring dental technology learners in combating rote learning." *In 2nd European Conference on Games Based Learning*, pp. 467-480. 2008.
- [11] P.D. O'Rourke, D. Page, and J. G. Donelan. "Current use of agribusiness simulation games: Survey results of university agribusiness and agricultural economics programs." *In Developments in Business Simulation and Experiential Learning: Proceedings of the Annual ABSEL conference*, vol. 28. 2014
- [12] A. Gauthier and J. Jenkinson. "Game design for transforming and assessing undergraduates' understanding of molecular emergence (pilot)." *In proceedings of the 9th European conference on games based learning*, pp. 656-663. 2015.
- [13] S. Sackson, Acquire. *Hasbro*, 1999.
- [14] B. Solobol and S. Van Orden, Stockpile. *GaGa Games*, 2015.
- [15] R. Anspach, Anti-Monopoly. *University Games*, 1973.
- [16] L. Ellis, A.W. Hoskin and M. Ratnasingam, *Handbook of Social Status Correlates*. Elsevier Science & Technology, 2018.
- [17] B. Malewitz. "Notre Dame's Snite finds artistic, intellectual value in 'Money Worries'." *South Bend Tribune*. 11 February, 2018. Retrieved from <http://bit.ly/landlord-snite>.
- [18] J.C. Soper, and W. B. Walstad. "On measuring economic attitudes." *The Journal of Economic Education* 14, no. 4, pp. 4-17, 1983
- [19] A. E. Clark, and C. D'Ambrosio. "Attitudes to income inequality: experimental and survey evidence." *Handbook of Income Distribution*. Vol. 2., pp. 1147-1208, Elsevier, 2015.
- [20] M. Kreidl. "Perceptions of poverty and wealth in western and post-communist countries." *Social Justice Research* 13.2, pp.151-176, 2000.