

“What’s your turnip price?”:

Animal Crossing and Adolescent Economic Education

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Abstract

Animal Crossing: New Horizons, one of the most popular video games of 2020, has shown economic promise and teaching potential through game procedures such as: stocks, financial practices, and community trading. This research project aimed to discover if *Animal Crossing* could teach economic principles to adolescents aged 13-18. Education within video games have been shown to increase motivation and allow students to learn with systems they enjoy. Gaming teaches players critical thinking skills through in-game procedures loved by many. Through the use of a survey encompassing financial habits and game preferences, this research was able to answer the research question by surveying thirty-five *Animal Crossing* players and twenty-seven control cases. Results found that players believe *Animal Crossing* not only improved their financial habits, but also their mental health. Implications of this research could include applying video games as an educational supplement in schools.

Introduction

This may sound surprising, but millions of teenagers pay off loans, fundraise for public infrastructure, and invest thousands of bells in the “stalk” market to relax each day. Of course, this is all in the bubbly universe of *Animal Crossing*, but is still fascinating, nonetheless. With *Animal Crossing: New Horizons* being introduced at the beginning of the COVID-19 pandemic there was a rush of players, with 5 million copies sold in the first month of release. There has to be some benefit to the hundreds of hours spent in the game, right?

Animal Crossing: New Horizons was a game released in March 2020. The player is the primary human invited to an “island getaway” package provided by the quirky character Tom Nook and his colleagues, Timmy and Tommy. The player arrives on the island with two anthropomorphic animals and are asked to renovate the overgrown tropical island. As the game continues, the player is able to upgrade their house, recruit more villagers, and buy local goods to improve the rating of their island. *Animal Crossing: New Horizons* is known for its relaxing nature, especially during the unprecedented times of COVID-19.

According to Kelly Griese from in.gov, there are economic principles hidden in the depths of the game. These applicable financial skills include the infrastructure, “stalk” market, and loans. Aspects of the game like these promote financial learning and excitement in adolescents, allowing them to spend and save without real-life consequence. Players were able to become curious about these specific facets of the game.

Not only has *Animal Crossing* been hypothesized to hold educational potential in many different fields with players learning about wildlife, art, and community, but there is also merit in the mental health benefits within the game. Within the game, players can visit their friends’

islands, shop at their stores, and communicate with their villagers. Multiplayer has also been utilized for players to trade coveted seasonal items or villagers for a specific price depending on the value deemed by the community. From building a capitalistic empire to watering roses, *Animal Crossing* has much to offer for all ages.

While video games and virtual worlds are being further considered academically as they rise in popularity, there is still a stigma among parents and educational leaders. The gap filled through this research provides at least some benefit for future video game education and promotes enjoyable learning in schools nationwide.

The research question this project asked was: how does *Animal Crossing* promote economic individuality and social skills in teenagers ranging from 13-18?

Literature Review

With the rise of videogames as modern-day entertainment in the twenty-first century, many studies have been performed to see how they can be applied educationally. In Monika Simkova's article, "Using of Computer Games In Supporting Education," Simkova studied how effective the use of video games were in an educational environment. The author concluded that, "[video games] can be used to learn the fact that the principles of complex problem solving, creativity or can provide practical examples of concepts and rules that would be otherwise difficult to illustrate in the real world." (Simkova, 2014). Simkova additionally claimed that video games provide a safe space for players; a world where mistakes have little consequence. Simkova's result is similarly seen in Goh Kok Ming's article, "The Use of Minecraft Education Edition As A Gamification Approach In Teaching and Learning Mathematics Among Year Five Students," Ming tested a group of year five students regarding their knowledge of basic statistics.

The participants were given a statistics questionnaire before and after a demonstration through Minecraft Education Edition, and the players showed significant improvements after playing. The author concludes by claiming Minecraft has educational potential. When students were presented a world of little consequence, and given the opportunity to learn freely, the pressure was removed.

Similarly, in “Effects of A Computer Game on Mathematics Achievement And Class Motivation: An Experimental Study,” Kebritchi et al.’s dissertation produced results of a similar nature. High school students’ motivation to learn improved after playing. Kebritchi et al. states in their results, “The game motivated students because it was an alternative way of teaching, a positive change that got the students away from pencils and paper and engaged them in mathematics activities.” (Kebritchi, 2008). Removing students from the everyday classroom environment is exciting; allowing them to absorb the material while “..pass[ing] the game missions.” (Kebritchi, 2008). In another study focusing on a case study, “Learning English With The Sims: exploiting authentic computer simulation games for L2 learning,” by Jim Ranalli studied how English language learners could practice English using The Sims. His results were positive, and similar to Kebritchi’s results on motivation. The avatars in The Sims all speak a fictional language, meaning players need to read and interpret items, notifications, and events through reading. The students found The Sims to be fun, so the entertainment overruled the stress of learning.

While research has primarily shown positive results, there are sources claiming that video games have little to no educational value. For casual games such as Animal Crossing, the primary danger is video game addiction. According to “Online video gaming: what should educational psychologists know?” Griffiths explains the positives and negatives of gaming. He

claimed, “All addictions (whether chemical or behavioral) are essentially about constant rewards and reinforcement.” (Griffith, 2010). If video games were to be implemented in educational environments, positive reinforcement from teacher, parents, and peers could present symptoms of video game addiction, such as, “withdrawal symptoms, conflict with other activities, mood modifying effects, and relapse.” (Griffith, 2010). Video game addiction is unlikely even in recreational environments, but the possibility of risk in education will need to be considered. Treatment for addiction includes the removal or modification of gaming and the addition of social activities (Griffith and Meredith, 2009).

Additionally, Ian Bogost’s “The Rhetoric of Video Games,” demonstrated the effects of Animal Crossing on his five-year-old son. While going through his routine in Animal Crossing, his son quickly realized that in order to continue collecting new furniture and clothing articles, he would need to upgrade his house and assume another debt. His son needed to make smart financial choices; instead of buying the goods, he realized it was wiser to set aside money towards a mortgage for a larger house. While discussing the universe of Animal Crossing, Bogost, (2008) stated in his article,

Animal Crossing is a game about everyday life in a small town. It is a game about customizing and caring for an environment. It is a game about making friends and about collecting insects. But Animal Crossing is also a game about long-term debt. It is a game about the repetition of mundane work necessary to support contemporary material property ideals. It is a game about the bittersweet consequences of acquiring goods and keeping up with the Joneses. Animal Crossing accomplishes this feat not through moralistic regulation, but by creating a model of commerce and debt in which the player

can experience and discover such consequences. In its model, the game simplifies the real world in order to draw attention to relevant aspects of that world. (p. 119)

The learning Bogost witnessed was not only through his son, but in the online community of *Animal Crossing: Wild World*. Players would create strategies for finding specific bugs or fish, and share that knowledge with other players to grow the community as a unit. With this learning in mind, Bogost discussed the perception of video games both in parents and the media. Playing a video game requires manipulating systems and exploring the given set of procedures.

Therefore, "...playing video games is a kind of literacy. Not the literacy that helps us read books or write terms papers, but the kind of literacy that helps us make or critique the systems we live in...*Animal Crossing* presents a model of consumer capitalism that players might embrace, reinforcing their interest in property in the material world." (Bogost, 2009). They can represent real-life practices and systems unattainable through the classroom, further expanding everyday education.

Virtual worlds hold much potential for players to make their own money-based decisions and practice entrepreneurship. In "User innovation and entrepreneurship in the virtual world: A study of Second Life residents," Chandra and Leenders study innovation and entrepreneurship in virtual worlds, using the online game *Second Life* as a case study. The authors explained *Second Life*'s entrepreneurship systems as, "...[allowing] users to create their own products and [the ability to] transmit them at a very small to zero cost. Information is generated, shared and transmitted freely within and out of the communities...Free sharing of information within *Second life* induces improvement and reciprocity, lowers the rivalry and increases collaboration." (Chandra and Leenders, 2012). To answer their research question, the authors

studied four specific players. All participants would create content for the marketplace aspect of the game; ranging from 3D modeling to fashion design.

With Chandra and Leenders' results in mind, the ability to make custom designs is a large aspect of the Animal Crossing community. Those who make custom designs share and collaborate with other members of the community, including Animal Crossing content creators who advertise and promote other designs. Additionally, entrepreneurship is a large aspect of Animal Crossing: New Horizons' player base. Players have created their own form of entrepreneurship through online services like Nookazon; a website where Animal Crossing: New Horizons players can trade and bid on in-game items. Players may not create content for the game like users from Second Life, but they utilize the items from within the game to trade with other players and earn different forms of currency. The Animal Crossing online community is an appealing part of the game full of players who support and help each other.

With COVID-19 causing people to quarantine and remain indoors around the time of *Animal Crossing: New Horizons*' release, millions of people around the world downloaded and spent hours on their islands with friends when they were separated in real life. Even before COVID-19, online gaming was a platform for those who suffer with shyness and social anxiety. According to "The Relationship Between Online Video Game Involvement and Gaming-Related Friendships Among Emotionally Sensitive Individuals," those who are uncomfortable in social situations are able to express themselves freely in an online community. Players found solace in the online environment, where they could, "...overcome their traditional social difficulties, generate new friendships, and strengthen old ones." (Kowert et al., 2014). Through Nintendo's online friend system, players are able to "island hop" through their island's airport, where they can chat with friends, hangout with villagers, and shop in other stores. There is also the ability to

chat through the NookPhone, allowing islanders to keep in touch with their online, and real-life, friends.

Methodology

This research paper's methodology includes a survey distributed to adolescents ranging from 13-18. The survey included questions regarding financial practices and game preferences. If the participant wished to do so, they were able to participate in a drawing to win 100 Nook Miles Tickets (NMTs) distributed by the principal investigator. There were little to no risks involved in taking this survey. The only concern was possible distress from the mathematics question. The survey was distributed on social media platforms and online discussion forums such as; Discord, Instagram, and Facebook. A wide audience of participants were recorded before the survey closed. For a full timeline, the survey was spread from early April 2021 to early May 2021. After closing of the survey, sixty-two responses were recorded and analyzed to answer the study question.

Results

The sixty-two responses to the survey had uncovered notable findings. Out of all participants, thirty-five were *Animal Crossing* player cases (56.6%) and twenty-seven did not play *Animal Crossing* (controls, 43.5%). Ninety-seven-point one percent of the cases who did play *Animal Crossing* primarily played *Animal Crossing: New Horizons* and spent five hours or more playing the game per week. Although all ages within the 13-18 limit contributed to the survey, the majority were ages 17-18. Out of all the ages, 69.4% were female, 24.2% male, and 6.4% contained other.

Financially, majority of the participants felt that on a scale of 1-5, with five being saving their money very well and one being not at all, they saved at about a three. The option with the least responses were those who felt they saved money at a one, with only two participants. Overall, many felt they saved their money well, with the data distributed towards the 3-5 range. When asked how much money they spend in a given week, 37.1% claimed to spend \$11-\$24. The additional choices, \$25-\$49 and under \$10 were close at 21% and 29%, respectively. The highest choices, \$50-\$99 and \$100 or more, were only selected four times each. For the questions regarding the best price when shopping and the understanding of the value of items, almost all participants claimed that they practiced valuable shopping habits. Only 14.5% disagreed they had no value of goods and 11.3% felt they did not look for the best price when shopping.

There were a wide range of Animal Crossing players with experience amongst all variations of the game. The most popular of the group was the latest version: *Animal Crossing: New Horizons* (2020). 42.9% of these players spent over five hours per week playing Animal Crossing, 22.9% spent less than one hour, and 17.1% played 1-3 hours and 3-5 hours per week. When asked if they believed Animal Crossing: New Horizons taught them to spend money conservatively in their real lives, 54.3% agreed and 45.7% disagreed. With currency in mind, 91.4% of players had a minimum number of Bells they liked to keep in their account at one time, and when asked a brief math question on interest, 51.4% of participants got the question correct. The players were then asked if they participate in Animal Crossing's fictional "Stalk Market," and 65.7% said yes and 34.3% said no. After this, players were asked how many Turnips they would buy if the NPC was selling them for 90 bells/Turnip, and the majority, 48.6%, of respondents said they would purchase less than 1000 Turnips. The other choices to this question;

1000-3000, 3000-5000, and >5000 Turnips were all equal at 17.1% each. Additionally, only 71.4% would not allow these Turnips to spoil on Sundays. The most popular day of the week to sell Turnips was Thursdays with 37.1% of players aligning with that choice.

After the questions on individual game practices, the Animal Crossing players were asked about their online practices. Seventy-one-point four percent of players claimed they would charge visitors to visit their islands to sell their turnips when they have a high turnip price. Out of the three options for a price to sell Turnips, 71.4% did not charge anything, 20% charged Nook Miles Tickets (NMTs), and 8.6% charged Bells. Forty-two-point nine percent of players used the online trading website, Nookazon. Of those who did use Nookazon, 45.7% believed that they learned how to value an item due to the online capabilities of trading items. When compared, 51.4% of respondents to that same question did not use Nookazon. Many users of both Nookazon and Discord trade villagers in exchange for in-game currency. There were 57.1% of participants that did not sell villagers; those who did sell villagers, 34.3% sold them at a higher price based on their popularity. Of the two main forms of in-game currency, NMTs and Bells, 71.4% preferred to receive Nook Miles Tickets for selling villagers. Furthermore, 37.1% of participants would rather accept NMTs when offered 50 NMTs or two million bells for a trade. Concerning trades in general, 54.3% of participants traded with players often, with 28.6% believing trading has taught them how to save money in their real lives. Furthermore, 51.4% of respondents to that question claimed to not use Nookazon.

The final set of questions were those on Animal Crossing and mental health. Of the 35 cases in the Animal Crossing group, 80% believed playing the game improved their mental health for the better. Many respondents left helpful and kind comments regarding their love for

the game, and how they feel it has improved their mental state and schedule; particularly during the unsettled times of the pandemic.

Discussion

In terms of the first section, the combined control and data collection groups had similar results. The wide age range produced age-dependent results, such as the amount of money an adolescent spends in a week. A thirteen-year-old would spend less than an eighteen-year-old because younger adolescents require more dependence on parental funds. With this being said, the amount of money spent on items varied greatly amongst both groups, but the *Animal Crossing* population spent more money weekly. While gaming could be educational, the habit could be considered financially draining. Therefore, the *Animal Crossing* gamers were likely to spend more money than non-gamers. The amount of money one spends in a week is very subjective though, so the results still supported the study question. While the data collection group spent more money, both groups had majority agree towards looking for the best price when shopping and having an understanding for the value of items. To reiterate a previous point, the answers varied greatly amongst each age, and were likely based on worldly experience.

The answers of the *Animal Crossing* data collection sections were particularly interesting. Those who played 3-5 hours or over five hours of *Animal Crossing* each week were more likely to get the math question correct than incorrect. The math question on the survey read as follows, “If ABD has an interest rate of .05% and you have 1,000,000 Bells in your account, how many Bells of earned interest will the “Bank of Nook,” return back to you?” When compared to those who play less than three hours of *Animal Crossing* per week, participants who played longer got the question correct.

Surprisingly, those who did not use Nookazon were more likely to get the math question correct. For non-Nookazon users, they were 60% more likely to answer correctly, and Nookazon users lagged at 43%. This was odd, considering the support of online communities tends to promote cooperation and learning amongst gamers (Bogost, 2009). One confounding factor to this result was the addition of trading. Many online traders who used Nookazon did not prefer one form of currency over the other, while non-Nookazon users favored Bells when accepting a trade. The value of both NMTs and Bells have been argued, but NMTs are more difficult to acquire. NMTs are acquired through tasks and achievements, while Bells are simply earned through selling items and turnips. When trading, 50% of Nookazon users were more likely to depend the price on the item, while only 20% of non-Nookazon users would perform the same practice. This could be interpreted in different ways, but one interesting consideration was an increased sense of in-game value. Nookazon users were able to see the value of items through the website, while non-Nookazon users were unable to do so. Almost all players agreed that they value other items or articles of clothing over others though, so all players have a sense of emotional value, but Nookazon users seem to have more of a lucrative value.

When asked, 91.4% of players agreed that they prefer having a minimum number of Bells in their account at all times. Keeping a minimum number of Bells in an account ensures adequate funds for bridges, trading, and mortgage payments. This result was especially exciting because it presents a sense of financial responsibility amongst all ages. Furthermore, many of the Animal Crossing players believed they successfully save their money, with majority maintaining values over a three on a scale of one to five, solidifying the idea that Animal Crossing has potential to inspire healthy financial values.

One positive conclusion was the genuine love for the game. When asked if *Animal Crossing* had improved their mental health, 80% of respondents explained their encouraging experiences with the calming world of Animal Crossing. A participant claimed, “It was a reason why I woke up every day instead of sleeping all day. It provided me with a schedule. I don’t have a schedule because of covid so it help[ed] me get up in the morning.” Another player had a similar reaction, “It gives me something to do every day. I feel like I can have some kind of structure to my day even though we are quarantined and in a pandemic.” The real-time aspect of the game created a schedule for these players, and a reason to get up in the morning to check their Turnip prices and catch fish only available in the morning. Other participants preached the calming nature of Animal Crossing, “It gives me a break from my regular stresses and allows me simple control. The villagers are also nice to me :).” The ability to sit back and engage with the villagers while listening to the calming music created a sense of happiness for players in a time of unpredictability and stress.

Conclusion

There were a few limitations to the results of this study. As previously mentioned, age was a big confounding factor in the results of various question on weekly spending and math problems. Further research would benefit from singling out a smaller age group, but in order to reach a large number of responses, this research remained in the 13-18 group. A larger study population would allow the data to be stratified to compare different age groups. Additionally, many of the online questions were limited to those who subscribe to Nintendo Online. Nintendo Online is a subscription service permitting Nintendo gamers to utilize online features. Those who are unable to maintain a subscription were automatically incapable of answering some questions due to lack of experience.

The information from this survey fostered positive results; both towards the excitement of education and mental health. This research paper was given permission to add this quote from a private message after completion of the survey, "...[t]hat was so interesting, I have never reflected on the answers in that [survey] before, really made me think!" (anonymous, 2021). This was just one of many comments participants discussed in private direct messages, explaining how they did not previously consider *Animal Crossing* in an instructive context.

Therefore, *Animal Crossing* does hold educational merit in the field of economics. Whether or not this could be applied to all students was ultimately unknown, but through the literature review and analysis, this research agrees that educational facilities could benefit from game-based supplements in their curriculum. A simple twenty-minute Minecraft demonstration of gravity through falling blocks could even suffice – just enough to allow students to enjoy the material. Using games as a form of learning helps players become curious over the systems in these video games, such as the Stalk Market in *Animal Crossing* or the farming in *Minecraft*. The outreach for education in gaming is endless, and hopefully facilities notice that value too. Through *Animal Crossing*, players learned how to foster financial habits, determine the value of in-game items, and improve mental health in a time of need.

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