The Effects of Using Popular Culture to Explain Stock Market Concepts to High School Students

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Abstract
The ability to make educated financial decisions is a crucial skill that many teenagers lack. Without this knowledge, teens are unable to make astute and educated decisions about their finances– one facet of which is investing. The goal of this study was to make foundational investing concepts simpler by using popular culture references that teens can relate to. It was hypothesized that if this approach was taken to educate teens on investing, they would score higher on a basic assessment that covers the concepts explained by popular culture references. The students, grades 9-12, took a pre-assessment on basic investing concepts and their scores were recorded. After the lesson was taught using pop-culture analogies, the students participated in the same assessment and scored significantly higher than their pre-assessment. Students reported that this method of teaching aided in their future financial success and advancement in their personal investment strategies.

Introduction
In this day and age, teenagers highly rely on social media and the internet for all mediums of information. One of the most common of these mediums is popular culture. Pop culture is not necessarily a medium with which people associate education– however, using a medium that is familiar to teenagers can help adequately prepare them to make their own educated financial and investing decisions.

Pre-existing research conducted by Greenlight Financial Technology, conducted in February of 2021, showed that 3 out of 4 teens don't feel confident in their personal finance education ((Greenlight Financial Technology, Inc. "Survey Finds Gen Z Lacks Knowledge and Confidence in Personal Finance and Investing.")). Considering that financial literacy is the backbone of adult life and that knowing how to invest your money plays a fundamental part in life planning, retirement, and lifestyle, teenagers are at a major disadvantage when it comes to their financial responsibilities.

This lack of financial knowledge, however, is not directly correlated to Gen-Z's desire to learn more about finance and investing. In the same survey conducted by Greenlight, 86% of teens are interested in investing, and 73% want more in-depth personal finance education ((Greenlight Financial Technology, Inc. “Survey Finds Gen Z Lacks Knowledge and Confidence in Personal Finance and Investing.”)).

As a society, Gen-Z is put at a disservice for their financial future due to this lack of financial education. Not knowing how to properly invest, manage, or save money can easily lead to a spiral of debt and poor credit. Information gathered from a 2022 Intuit Finance survey concluded that 67% of Gen-Z feel like they will never have the things they want in life because of their financial situation ((“Gen Z Would Rather Talk about Anything but Their Finances.” *Business Wire*, 31 Jan. 2023,)). Not only does having inadequate financial education limit Gen-Z’s financial opportunities, but it also limits their happiness and overall fulfillment in life.

Even though Gen-Z has access to financial information at their fingertips, there is still a massive disparity between how teens should be in their financial education and where they currently are. With more information on the internet than ever, teens should be in control of their financial habits and responsibilities. However, made clear from the research above, that is not the case. Additionally, according to Greenlight, nearly half (48%) of teens learn about financial literacy from social media despite it being highly untrustworthy. 38% turn to YouTube, 33% to TikTok, and 25% to Instagram for the sparse financial literacy education that they are getting. While social media is a relatable and easily accessible way to mass-share information with Gen-Z, untruthful and ultimately futile financial advice does not aid the disparities that already exist regarding teenage financial literacy ((Greenlight Financial Technology, Inc. “Survey Finds Gen Z Lacks Knowledge and Confidence in Personal Finance and Investing.”).

Literature Review

Many studies have shown that interdisciplinary teaching can assist in heightening the quality of learning for the students involved. A study conducted by two professors in 2012, Abigail Ruane of the University of South Carolina, and Patrick James of the Hunter School, discussed the relevance of using pop culture paradigms to help aid in real-world issues. Their analysis of the issue deduced that using concepts from movies, like The Lord of the Rings, can be applied to what they referred to as “the Middle-Earth”, which is the liminal space between real life and the fantasy worlds of movies. Those concepts can then be evaluated using rationalist, historical, constructivist, and critical methods to result in normative implications and causal conclusions (X causes Y) (Ruane and James).

Ruane and James argue that characters from within The Lord of the Rings exhibit relationships and ideals that can be applied to the real world. For example, The character Elrond, who is an elf in the film, exhibits an outlook on the future that is focused on liberalism and Marxism. Elrond’s principles and tendencies can be used to apply International Relations theories, like liberalism and Marxism to real-world scenarios. Ruane and James place these relations into World Wars. They argue that there are overarching systems that are shared across different disciplines and mediums, from world wars to elves, and that these systems/relations can influence on an individual level.

Ruane and James then go on to discuss how each character in The Lord of the Rings is adjacent to a real life international relationship or justice issue. Using the characters from within the film, Ruane and James were able to deduce that these characters can be used to explain international relationships and justice issues, like female oppression, through the people of the “Middle-earth” — elves, dwarves, and hobbits.

This approach of finding a middle ground between the real world and fantasy to teach and explain real world phenomena is adjacent to the methodology of this study. Using Ruane and James’ idea that beings from “Middle-earth”, in this case, pop culture figures and ideas, this study is able to display how their methodology can be used in a classroom setting.

The goal of this study was to change pop culture and concepts that are popular on social media into assets that teach investing in a truthful and reputable way. This study was conducted in accordance with the Council for Economic Education’s National Standards for Financial Literacy investing unit.

This article is organized into 2 sections, Materials and Methods and Results and Discussion. Materials and Methods will be divided into two sections, participants and description. The Results and Discussion section consists of discussion and limitations along with data synthesized into histograms. These sections will discuss the set-up of the study, how it was conducted, the results produced and their relevance to the issue and the broader scope of financial literacy within Gen-Z.

Overall, the results gathered from this study showcase a new method of teaching investing in a way that is interesting, engaging, and memorable for the students involved. It is of utmost importance that students retain this information and utilize it in their own lives to further their financial stability.

Materials and Methods

Participants

The sample included 50 participants who were taking a Financial Literacy course at their local high school. 24 out of the 50 were freshmen; 13 were sophomores, 10 were juniors, and 3 were seniors. This presentation served as the introduction to the investing unit in their course. Prior to the presentation, these students had no formal investing knowledge. Slovin’s Formula was used to calculate the appropriate sample size.

Slovin’s Formula

$$n = \frac{N}{(1 + Ne^2)}$$

Margin of Error Formula

$$e = Z \times \sqrt{\frac{p(p-1)}{n}}$$

The proposed margin of error, e, of 0.1175748341 was found by calculating the p, 12/50 people passed the pre-assessment and a Z-score of 1.96 due to a 95% confidence. After inputting 50 as population size N and n in both equations, and inputting the margin of error, the sample size is 30.148378254. This can be rounded to 30 total participants in the sample size.

Design and Procedure

All participants completed a pre-assessment of 4 questions based on basic investing terms. In the assessment, participants were asked to complete a preliminary survey question on their knowledge of investing on a scale of 1 to 5 — 1 being the weakest and 5 being the strongest. Participants were scored out of 4, earning one point for each of the four questions answered correctly. For background information, participants were asked for their grade level and a code name to maintain privacy. The assessment consisted of the following questions:

What is a stock?
What is a blue-chip stock?
What is the S&P 500?
What is an IPO?

Participants then engaged in a presentation that included various analogies that trivialized investing and stock market concepts. The analogies were directly related to the questions asked in the pre-assessment. The following analogies were made in the presentation:

- Stocks: Stocks are similar to a music artist in the music industry. They are a small part of a larger picture, they produce music, which fuels the music industry and generates revenue. When the artist is doing well and releasing good music, they gain more followers and make a profit on their music. Stocks work similarly– when the company is offering a stock (a small part of their company, like an artist in the music industry), investors can purchase the stock. If the stock does well and "releases good music", the investors turn a profit on the stock.
- Stock Market: The stock market is like the music industry. Countless artists are all putting out music at all times. Some artists do better than others in the industry, and some artists fail altogether. The stock market works the same way; the stock market is the group of 'artists' (stocks) and their listeners (investors) who all want their number of song streams/listeners (stock price) to go up.

- S&P500 and Portfolio Diversification: The S&P 500 (Standard and Poor's 500) is like a billboard playlist of the top 500 artists in the music industry. Listening (investing in) to this playlist is listening (investing) in the top 500 artists (stocks) in the industry (stock market). By listening to this playlist, you are diversifying your music taste (stock portfolio). Having a well-rounded and diverse music taste (portfolio) is crucial because you never know if an artist (stock) will stop releasing music (price will drop drastically).
- Blue Chip stocks: Blue Chip stocks are similar to reliable and popular artists. For example, Taylor Swift who is a famous pop singer, or Morgan Wallen, a famous country singer. Both of these artists have dedicated fanbases. Whenever they release new music, they are almost guaranteed to be a hit. These artists are reliable and maintain their success regardless of the state of politics or the music industry. Blue chip stocks are also reliable companies (artists) that maintain steady growth and consistently report high earnings (high streams/listeners).
- IPOs (Initial Public Offerings): IPOs are like artists who are just starting in the music industry. They have produced music before but never released it publicly. Now, their music can be shared and listened to by the public. New artists are volatile and aren't guaranteed to succeed in the music business. However, this implied risk also means that certain artists have a big shot at making it big in the industry. IPOs are stocks that behave similarly to new artists. They are very volatile, but if they release good music (report good earnings), they have a chance at becoming a very profitable stock– just like artists who are starting in the music industry.

After engaging in the presentation, students took part in the same assessment they did before the presentation. The post-assessment consisted of the same questions that the pre-assessment did, scored identically out of 4 where the participants earned one point for each correct answer. The results comparison of the pre- and post- assessments are shown in the next section.

Results and Discussion

On the pre-assessment, the participants scored relatively low. Only 3 participants scored a 3, 14 participants scored a 2, 11 participants scored a 1, and 2 participants scored a 0. The histogram below exhibits the score distribution of participants on the pre-assessment. The histogram is divided in decimal increments for ease of comprehension. This suggests the basis of the hypothesis, and provides a solid foundation for growth and improvement on the post-assessment, given that the new presentation medium is effective.

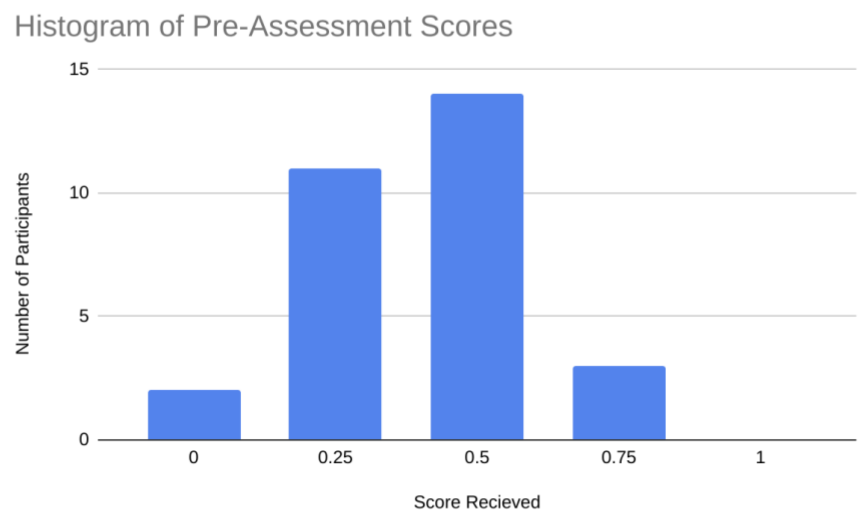

FIGURE 1. Graph: DiStasio, Isabella, “Histogram of Pre- Score”, 2023.

The histogram below shows the participants’ scores on the post-presentation assessment. The scores of 0 and 1 were nonexistent for the post-assessment, exhibiting significant growth from the pre-assessment. 100% of participants scored higher on the post-assessment than the pre-assessment. The hypothesis that if a more engaging way of educating teens about investing, i.e.: through pop culture and modern media, they will score higher on a post-assessment than a pre-assessment was proven correct by this data.

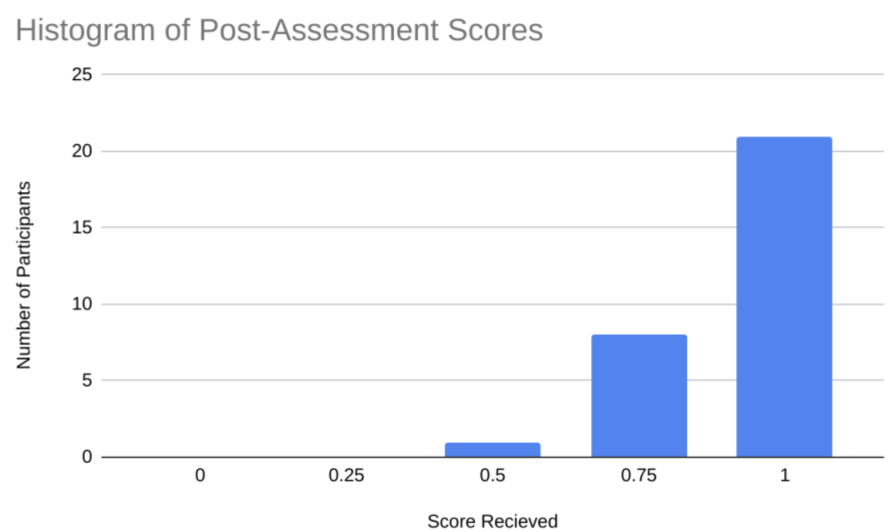

FIGURE 2. Graph: DiStasio, Isabella, “Histogram of Post- Score”, 2023.

Discussion

The numbers presented in the data above support the hypothesis originally stated. The presentation proved effective at teaching students in an engaging way that also raised their scores. Based on the self-given rating that the participants gave on the pre-assessment, a rating of 3 is relatively high compared to the pre-assessment scores. This suggests that teens may be overestimating their financial knowledge. Perhaps, this is due to the use of social media as an educational finance tool. Teens seeing this media believe that they are learning the correct information, but in reality, when posed with real questions about important investing terms, they are lost.

This data strengthens the causes for further financial education for teens and Gen-Z. In a short presentation, the participants were engaged and actively learning in a way that a traditional financial literacy curriculum or social media cannot provide. To make these changes, policies and further action towards implementing invaluable financial education opportunities should be taken by public schools. Having a concrete curriculum that focuses on teaching students in the way they want to be taught, and in a way that is effective and pervasive. This medium of education, according to the generalized results, proves to be effective in increasing test scores. Schools changing their financial literacy curriculum in alignment with the state standards to pivot to a more relatable approach to teaching financial literacy will perpetuate the investment knowledge that teens will gain from these new teaching methods.

Limitations

A prominent limitation that limited this study was the sample size. Samples needed to be bigger to capture the different scores and the percent increase in scores for each participant. The relationship between the pre- and post-survey is clear in the data, but a more exhaustive look at these numbers would formulate a stronger study. Another limitation to take into account is the size of the pre/post assessment. Having an assessment with more questions would give a more in-depth analysis of the given participant's pre- and post- presentation knowledge of investing and investment strategies. A potential problem that future experiments could cover is the gender disparity in financial education. To further the understanding of this issue, the researcher could test which gender typically scores higher and has a more willingness to learn about financial literacy. The results of this test are highly generalized, and the conclusions made are broad in their nature. However, this data directly from high school students provides a valuable basis that identifies a point-source for the lack of financial literacy knowledge among teens. These findings along with the method used to produce them realize a new way in which to facilitate financial literacy learning in a way that is engaging and memorable for teenagers. Facilitating learning in this way, provided the generalized results from this study, could have a wide-spread impact on the way teens learn about their financial options. This study also failed to recognize a control group. Since the study was conducted in a mandatory financial literacy class that all of the participants needed to graduate, there was no tangible way to establish a control group, as all the participants needed to learn this portion of the curriculum — it was just the medium of which differed from their normal instruction. Although there is a positive correlation between teaching investing using the pop culture medium to high school students, the study cannot isolate the omitted variable bias, which would need to be explored in further research. Having a control group in future studies would allot for a stronger and more concrete analysis of the effects that teaching in this way has. Further specifications can be added onto the study to produce more in-depth and specialized results and more specific conclusions. Additional studies could also utilize a more comprehensive pre- and post- assessment to get an exhaustive view of the participant's investment knowledge.

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