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Evaluating the Financial Literacy of High School Students

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ABSTRACT

In recent years, the lack of financial knowledge among American high school and college students has caused numerous institutions to add financial education requirements to school curriculum. Despite these changes, many states in the country, including California, still do not mandate personal finance education. This study evaluated the financial literacy levels of high school students at Calabasas High School, a school in California. All participants (N = 58) completed a quantitative survey aligned with previous studies in the literature yet adapted to the specific school environment. The survey highlighted fundamental aspects of financial knowledge such as budgeting, saving, and investing, along with an assessment based on California's state standards in economics. Survey responses were analyzed with descriptive and comparative statistics comparing variables such as grade, gender, and ethnicity. The results revealed a gender gap in both perception and knowledge. Additionally, there were no significant knowledge differences among students of varying grade levels. These findings imply that a lack of financial education can negatively impact financial literacy levels. Future research on the topic should continue to explore high school financial education and its impact on students' financial knowledge.

Introduction

Financial literacy is defined as the "ability to use knowledge and manage financial resources for a good financial well-being throughout the whole life" (Bertea & Zait, 2014). In the United States, the lack of financial literacy among teenagers is a severe problem, with the average American high school student scoring 60% on the National Financial Educators Council quiz (Van Rooij et. al, 2011). Low financial literacy rates have a catastrophic effect on one's future, impacting the ability to properly invest in the stock market, plan for retirement, and manage debt, among other things. The cause of these poor scores have often been attributed to a lack of education in high school or college.

As of 2024, only 50% of states require students to take a personal finance course in high school (Harter, 2024). This number has increased sharply in the last few years, with 17 out of these 25 states adding requirements in the 2020s (Harter, 2024). The researcher attends CHS in California, one of the many states without any personal finance requirements. The lack of mandatory financial education in such states led to the following research question: how much knowledge do CHS students have related to financial literacy?

To address this question, familiarity with key financial concepts is necessary. The first key term that appears frequently throughout this paper is budgeting, which is defined as "the process of calculating how much money you must earn or save during a particular period of time, and of planning how you will spend it" (Cambridge Dictionary). This leads into the second key term, savings. Savings is defined as "money that you keep, usually in a bank account, instead of spending it" (Cambridge Dictionary). The third and final key term, investing, is defined as "buying something that you think will go up in value, for example shares or property, in order to make a profit" (Cambridge Dictionary).

Literature Review

This study attempted to analyze the financial literacy levels of CHS students, prompted by the lack of financial education in the state. To achieve this aim, the literature on this topic was categorized into two groups: studies evaluating the financial literacy of students who have undergone mandatory financial education, and those examining students who have not been exposed to any form of financial education.

European Studies

Financial literacy research among teenagers is primarily conducted in European nations, where financial education is often mandated in school curricula. In 2012, Melanie Luhrmann and colleagues aimed to gauge the impact of financial education on high school students in Germany. Their study surveyed 1,500 students split into two cohorts: a control group and a treatment group exposed to a personal finance course (Luhrmann et. al, 2012). The findings revealed a notable surge in both financial interest and knowledge among the treatment group. Students exposed to financial education were found to perform better in a hypothetical savings task.

The research of Olympia Bover, Laura Hospido, and Ernesto Villanueva in Spain support these conclusions. Through a questionnaire distributed to 3,000 Spanish high school students, the researchers found that students who took a personal finance course designed by the Spanish Central Bank performed 16% better on a financial literacy quiz (Bover et. al, 2018). This difference in knowledge was deemed to be applicable to real-world scenarios, with higher scoring students also performing better on a savings activity conducted three months after the completion of the quiz (Bover et. al, 2018).

Finally, research among Italian high school students by Angelo Romagnoli and Maurizio Trifildis further strengthens both studies' findings. Through a content analysis of the test scores of 23,000 students participating in the Bank of Italy's experimental financial program, the researchers found that financial knowledge had increased among these students (Romagnoli & Trifilidis, 2013). They also found that this increase in financial knowledge was retained over time, meaning that the finance program was effective long-term.

American Studies

While most financial literacy studies occur in European countries, there are a few that take place in the United States, where mandated financial education is not as widespread. A study conducted by Radha Bhattacharya and Andrew Gill aimed to determine the impact of an optional economics course on financial literacy levels. By surveying 1,128 Southern California high school students, they found that this course did not have significant impacts on financial knowledge (Bhattacharya & Gill, 2020). They speculated that a personal finance course was necessary to see improvements in financial literacy.

Michael P. Cameron and colleagues tied all of these studies together by comparing the financial literacy levels of high school students in America, New Zealand, and Japan. Using a survey designed by the National Council on Economic Education, the researchers found that the mean score in the United States was 44.8%, the mean score in New Zealand was 45.3%, and the mean score in Japan was 56.7% (Cameron et. al, 2013). They concluded that the absence of mandated financial education in America may be the reason for this low score.

Gap

The lack of consistent financial education requirements among American high schools has led to a gap in the research relating to these students' financial literacy levels. In a study conducted by Sydney Han, it was found that financial education curricula among American high school students needs to improve (Han, 2022). Towards the end of her

paper, Han recommended future researchers to focus on high school students to determine the relationship between financial education (or its absence) and financial knowledge. Additionally, Bhattacharya and Gill's aforementioned study identified the impact of financial education on American students' attitudes towards finances as a gap (Bhattacharya & Gill, 2020). These studies allow the following paper to contribute to the literature by evaluating the impact of CHS's lack of financial education requirements on 1) students' attitudes towards finances and 2) financial knowledge.

Foundational Sources

Finally, there were a couple of key sources that helped guide the path of this research study. The first foundational source was a study titled "Financial Literacy Among High School Students: Evidence from India" conducted by researchers J.D. Jayaraman and Saigeetha Jambunathan. This study used a quantitative survey of 608 9th-12th grade Indian high school students (Jayaraman & Jambunathan, 2018). The researchers found that the lack of personal finance standards in Indian high schools causes students to perform worse on financial quizzes than European students exposed to mandatory financial education. While the researcher did not have access to as large of a sample size, other portions of the study, such as the method and high school setting, were modeled after Jayaraman and Jambunathan's research.

The second foundational source that inspired this study was research conducted by Leila Falahati and Laily Hj Paim. The researchers surveyed 2,340 college students through random stratified sampling (Falahati & Paim, 2011). To analyze the data, a t-test was used to compare different gender subpopulations. Overall, the study found that male students were more knowledgeable than their female counterparts in regards to financial matters, with significant differences existing on the credit and risk management portions of the survey. This study played a key role in guiding the researcher, with a t-test used as the primary data analysis method.

Methods

The primary objectives of this research paper were to analyze the absence of financial education and its impact on 1) perceptions of financial skills and 2) financial knowledge. To achieve these objectives, the study's method was modeled after the research of foundational sources Jayaraman & Jambunathan (2018) and Falahati & Paim (2011).

Population

Data was collected from CHS, a large high-performing public high school in Southern California. CHS is a high-income school, with only 23.4% of students being socioeconomically disadvantaged. It is also a co-ed school with students from 9th-12th grade. With approximately 1,800 students, the school's ethnic makeup is as follows: 73.4% White, 11.3% Hispanic, 5.6% Asian, 3.1% African American, 5% two or more races, and 1.6% other. The study's participants, on the other hand, were 67.2% White, 6.9% Hispanic, 15.5% Asian, 3.4% African American, 5.1% two or more races, and 1.9% other. 63.8% of respondents were male, 34.5% were female, and 1.7% preferred not to state their gender. 9th graders made up 5.2% of the respondents, 10th graders made up 25.9%, 11th graders made up 48.3%, and 12th graders made up 20.7%.

Instruments

A quantitative survey was used to collect data, aligning with previous studies in the literature such as Luhrmann et al. (2012) and Bover et al. (2018). The survey consisted of six sections: demographics, self-assessment, budgeting, saving, investing, and a quiz. Likert scale questions were created on a five-point scale for the self-assessment, budgeting, saving, and investing sections, following the format used in foundational sources Jayaraman & Jambunathan (2018)

and Falahati & Paim (2011). Quiz questions, however, align with the researcher's expert communication in the field of Economics. In their 12th grade Economics course, informed by the CA State Standards, the expert communication shared a Kahoot quiz with the researcher.

Table 1. Full list of survey questions

Demographics		
What grade are you in?	9th, 10th, 11th, 12th	Self-defined
What gender do you identify with?	Male, Female, Prefer not to say	Self-defined
What is your ethnicity?	Black/African-American/African/Afro-Latino, Central Asian, East/Southeast Asian, Hispanic/Latino, Middle Eastern (Southwest Asian/North African), Native American, Pacific Islander/Polynesian, South Asian (including the Indian sub-continent, White/Caucasian, Prefer not to say	Self-defined
Self-Assessment		
It is important for students to learn about financial skills in high school	Likert Scale: 1 (Strongly Disagree), 2, 3, 4, 5 (Strongly Agree)	Jayaraman & Jambunathan (2018)
I am more financially literate than the average high school student	Likert Scale: 1 (Strongly Disagree), 2, 3, 4, 5 (Strongly Agree)	Jayaraman & Jambunathan (2018)
Budgeting		
Budgeting helps in reducing financial stress	Likert Scale: 1 (Strongly Disagree), 2, 3, 4, 5 (Strongly Agree)	Falahati & Paim (2011)
I feel comfortable creating and managing a budget for personal expenses	Likert Scale: 1 (Strongly Disagree), 2, 3, 4, 5 (Strongly Agree)	Falahati & Paim (2011)
Saving		
It is important to designate money in a savings account	Likert Scale: 1 (Strongly Disagree), 2, 3, 4, 5 (Strongly Agree)	Falahati & Paim (2011)
I feel confident about managing and saving money in the future	Likert Scale: 1 (Strongly Disagree), 2, 3, 4, 5 (Strongly Agree)	Falahati & Paim (2011)

Investing		
Investing is only for wealthy individuals	Likert Scale: 1 (Strongly Disagree), 2, 3, 4, 5 (Strongly Agree)	Jayaraman & Jambunathan (2018)
I am comfortable with the idea of taking risks in my investments	Likert Scale: 1 (Strongly Disagree), 2, 3, 4, 5 (Strongly Agree)	Jayaraman & Jambunathan (2018)
Quiz		
Credit is trust that someone will pay back a loan	True, False	CA Economics Standards
Which of the following are possible dangers of credit?	Inability to pay has negative consequences, Easy to "buy no, pay later," Credit card terms can be difficult to understand, All of these are possible dangers	CA Economics Standards
A credit card report is a collection of a borrower's credit history	True, False	CA Economics Standards
Which of the following represents an excellent FICO credit score?	450, 650, 100, 800	CA Economics Standards
A major difference between a loan and a grant is grants MUST be paid back	True, False	CA Economics Standards
The U.S. government pays interest on subsidized student loans while students are in college	True, False	CA Economics Standards
Standard student loan repayment plans are paid over a 10 year span	True, False	CA Economics Standards
Which of the following is true about loan deferment?	Deferment is a postponement of loan payments, Deferment is a request for stop payments for 12 months	CA Economics Standards

Implementation

Stratified random sampling was utilized to identify participants for the study, aligning with the foundational source of Falahati & Paim (2011). To create a statistically relevant sample, the researcher emailed out the Google Form survey to all English teachers at CHS. English teachers were chosen because English is a four-year requirement at the school, meaning that all students must be enrolled in an English class. This gave the researcher the most effective way of

accessing all students. The English teachers then posted the survey on their respective Google Classrooms, allowing students to access the survey anytime off their own devices. Data was collected over a two-week period, resulting in a total of 58 responses (N = 58). Before filling out the survey, all participants (and their parents if under 18) were required to fill out an Informed Consent Form (Appendix A).

Results

This section highlights and explains the findings of students' attitudes and knowledge related to financial literacy. For each of the eight Likert scale questions, the researcher created a bar chart via Google Sheets to visually show the data. Due to word count constraints, only one chart from each section will be displayed and analyzed. For each section of the survey, a t-test calculator from Social Science Statistics was used to compare the results of different grade, gender, and ethnicity subpopulations, aligning with Falahati & Paim (2011). To get two similar sized groups for each t-test, grade was separated into upperclassmen (11th/12th graders) and lowerclassmen (9th/10th graders), gender was separated into male and female, and ethnicity was separated into White and Nonwhite. Gender and ethnicity were evaluated for independent means as these factors should not have an impact on a student's financial literacy. On the other hand, grade was evaluated for dependent means as upperclassmen should technically have more knowledge than lowerclassmen since they are older and have been exposed to more material.

Findings: Self-Assessment

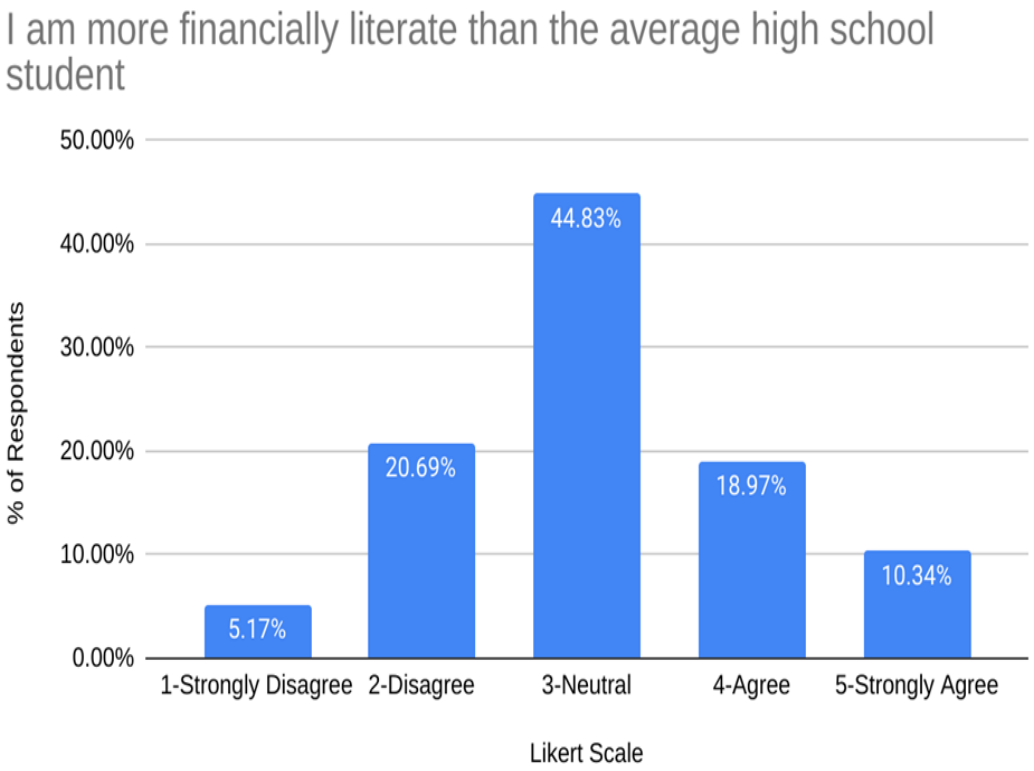

Figure 1. A bar chart of responses displaying CHS students' self-assessment of personal financial literacy compared to other high school students.

Responses to this self-assessment question of financial literacy fell in a typical bell curve with 3 (neutral) as the peak. Around 25% of students thought their financial literacy levels were below average (strongly disagree/disagree), while roughly 30% of students thought that their financial literacy levels were above average (strongly agree/agree).

To compare the self-assessments of different subpopulations, t-tests were run using the Social Science Calculators. The researcher found no statistically significant differences between grades and ethnicities, but there were differences between genders (as seen in the table below).

Table 2. T-tests for the self-assessment question above, *indicates results are significant, $p < 0.05$

I am more financially literate than the average high school student	T-Value	P-Value
Gender	2.61117	.006423*
Grade	0.960161	0.17522
Ethnicity	0.51994	0.302615

For all t-tests involving the gender subpopulations, the researcher was only able to analyze 57 out of 58 responses as one respondent preferred not to state their gender. For the following question, the male mean (N = 37) was 3.32 and the female mean (N = 20) was 2.65. This was deemed to be a significant difference with a p-value of .006, which is less than .05.

Findings: Budgeting

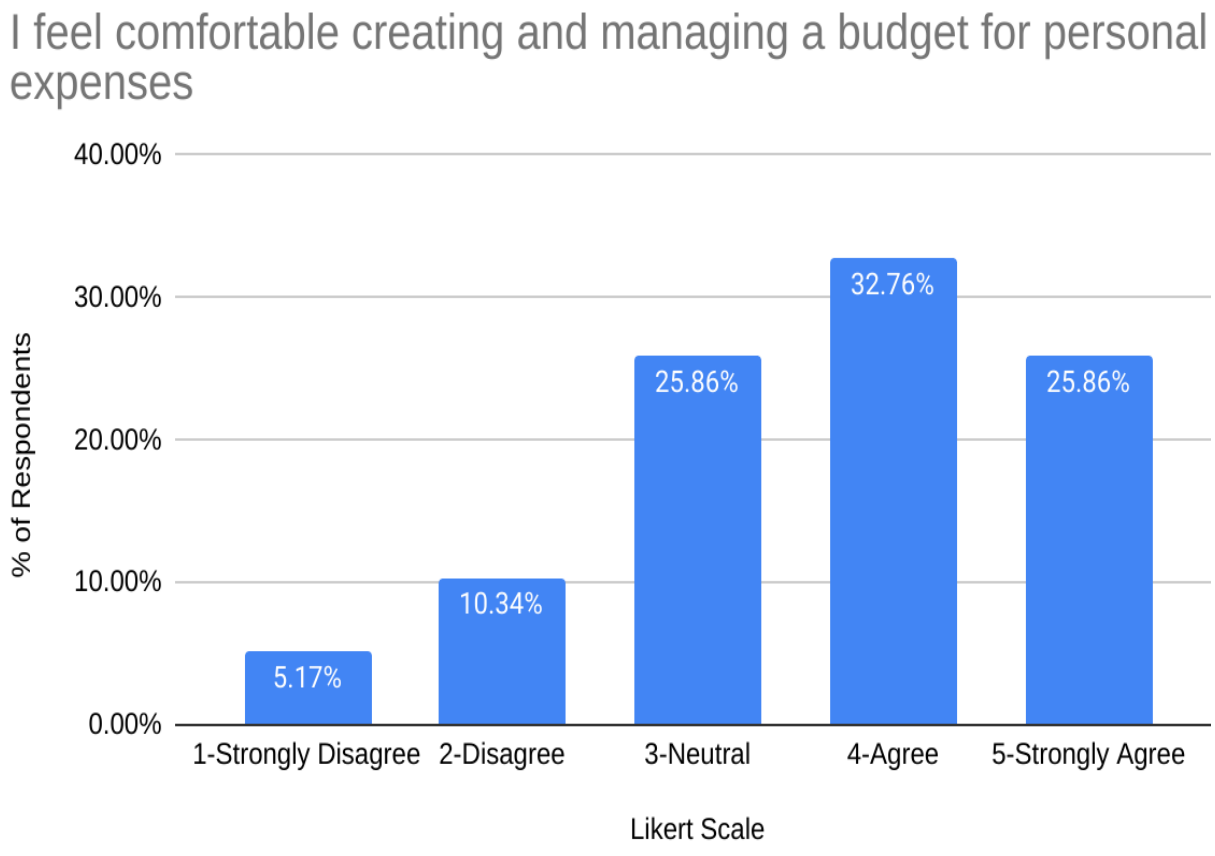

Figure 2. A bar chart of responses displaying CHS students' comfortability in creating and managing a budget for personal expenditures

Similarly to the self-assessment question, responses for the budgeting question also fell in a bell curve. The difference here was that the peak was 4 (agree) instead of 3 (neutral). Roughly 15% of students did not feel confident creating a budget (strongly disagree/disagree), while around 58% of students were confident in their budgeting skills (strongly agree/agree).

Table 3. T-tests for the budgeting question above, *indicates results are significant, $p < 0.05$

I feel comfortable creating and managing a budget for personal expenses	T-Value	P-Value
Gender	2.33253	.012535*
Grade	0.427546	0.33717
Ethnicity	0.11485	0.454496

The same process as before (t-test with Social Science Calculators) was used when comparing responses by subpopulation. The researcher found no significant differences between grades and ethnicities, but there was a statistically significant difference between genders. The male mean (N = 37) was 3.84 and the female mean (N = 20) was 3.25. This was deemed to be a significant difference with a p-value of .01.

Findings: Saving

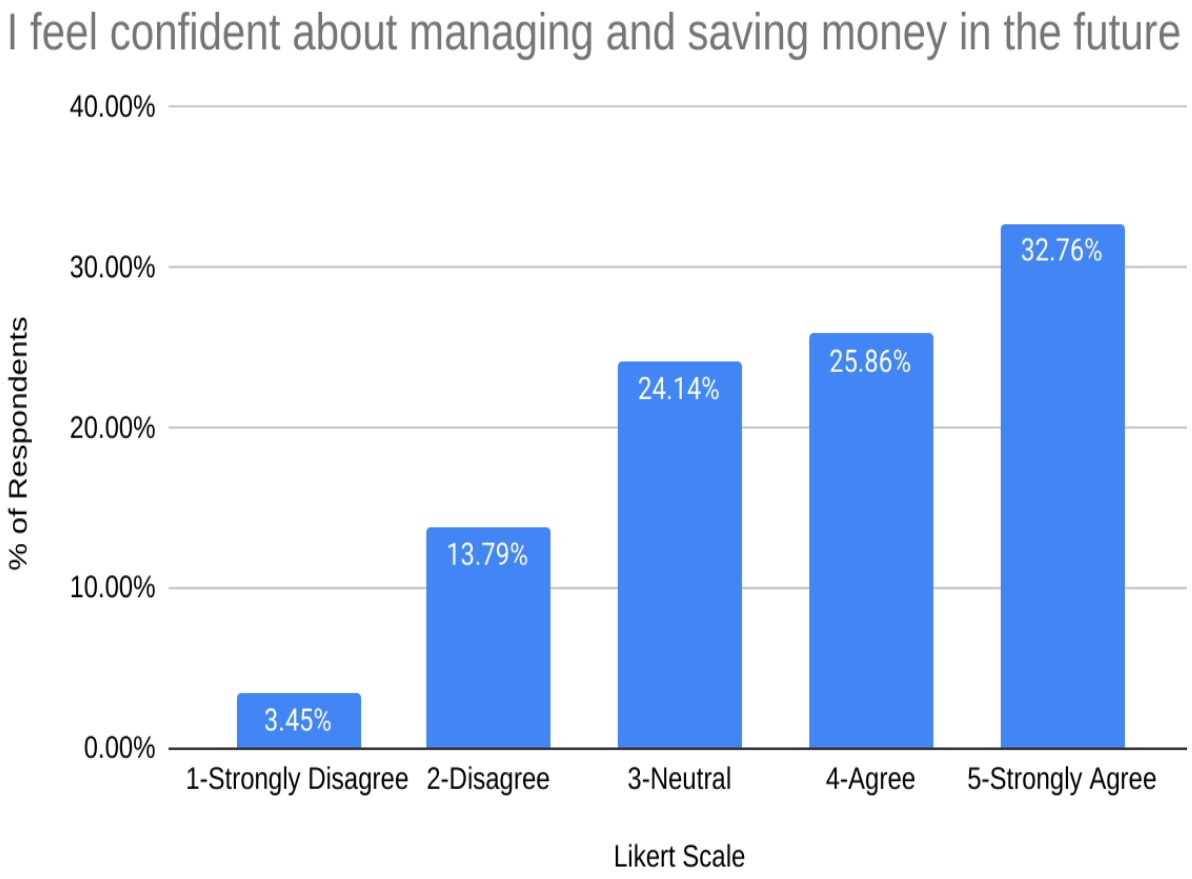

Figure 3. A bar chart of responses displaying CHS students' confidence in money management

Out of all the financial concepts, CHS students felt most confident in managing and saving money. The most common responses were 5 (strongly agree) with 32.76%, followed by 4 (agree) with 25.86%. Only 17% of students were not confident in their ability to manage money (strongly disagree/disagree).

Table 4. T-tests for the saving question above, *indicates results are significant, $p < 0.05$

I feel confident about managing and saving money in the future	T-Value	P-Value
Gender	2.7998	.003996*
Grade	0.131107	0.44861
Ethnicity	0.67238	0.252105

As with the two previous sections, there were no significant differences between grades and ethnicities, but there was a statistically significant difference between genders. For this question, the male mean (N = 37) was 3.97 and the female mean (N = 20) was 3.20. This was categorized as a significant difference with a p-value of .004.

Findings: Investing

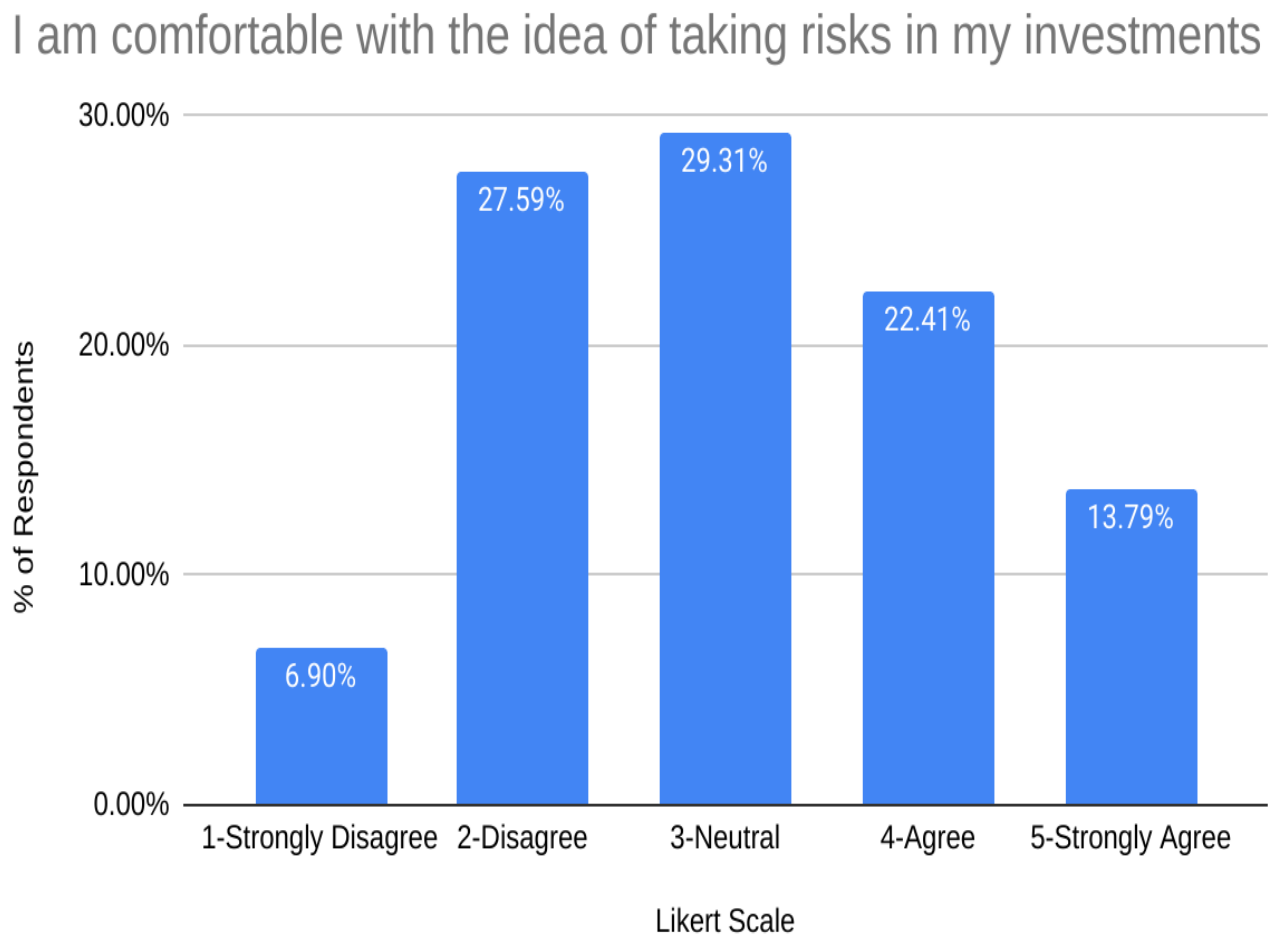

Figure 4. A bar chart of responses displaying CHS students' comfort in taking investment risks

Student responses to this investing question had more variation in comparison to the other questions. The most common responses were 3 (neutral) at 29.31% and 2 (disagree) at 27.59%. Despite many people answering 2 (disagree), only 6.9% of respondents fully expressed their disapproval with 1 (strongly disagree).

Table 5. T-tests for the investing question above, *indicates results are significant, $p < 0.05$

I am comfortable with the idea of taking risks in my investments	T-Value	P-Value
Gender	0.77392	0.221884
Grade	1.617215	0.06212
Ethnicity	0.11374	0.454932

In contrast to the other three sections, the investing section did not find significant results for any of the three subpopulations. The grade subpopulation was closest with a p-value of 0.06, but this is slightly higher than the significance benchmark of 0.05.

Findings: Quiz

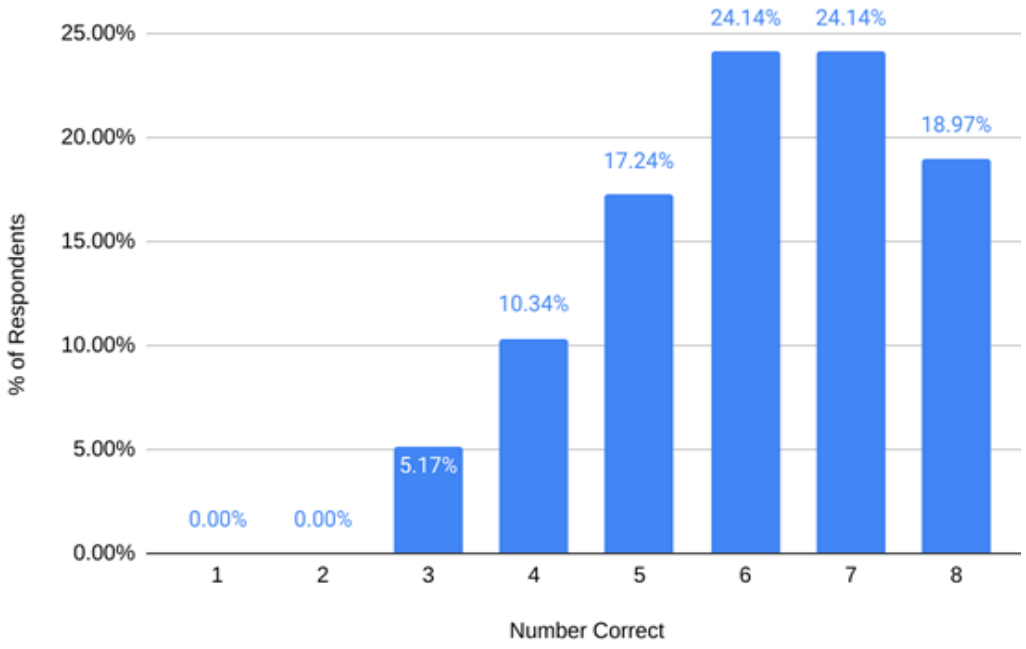

Figure 5. A bar chart of respondent quiz scores with the number of questions correct on the x-axis and the percent of respondents on the y-axis

The most common scores on the quiz were six out of eight (75%) and seven out of eight (87.5%), each received by 24.14% of participants. The lowest score was three out of eight (37.5%), with no students getting only zero, one, or two questions correct. The highest score was a perfect eight out of eight (100%), which was received by 18.97% of respondents.

Table 6. T-tests for the quiz scores, *indicates results are significant, $p < 0.05$

Quiz Results	T-Value	P-Value
Gender	1.92943	.030584*
Grade	0.22527	0.411559
Ethnicity	0.09097	0.463929

Similarly to Likert scale questions in the categories of self-assessment, budgeting, and saving, the quiz revealed significant differences between the gender subpopulations but not the grade and ethnicity subpopulations. On the quiz, the male mean (N = 37) was 6.46 and the female mean (N = 20) was 5.35. With a p-value of .03, this was deemed to be a statistically significant difference. To tie all of the questions together for the final aspect of data analysis, the researcher conducted a quiz and Likert scale correlational test. This was done by using the XLMiner Toolpak extension on Google Sheets.

Table 7. Correlation between quiz scores and Likert scale responses, *indicates results are significant, $p < 0.05$

Quiz + Likert Correlation	R-Value	P-Value
Q2 & Quiz	0.3788	.003366*
Q3 & Quiz	0.3191	.014627*
Q4 & Quiz	0.3517	.006784*
Q6 & Quiz	0.3167	.01543*

After mining the data, the researcher found 4 questions that displayed a slight positive correlation with the quiz. A slight positive correlation is defined as one with an r-value between 0.3 and 0.6. After finding the R-values, the researcher used the Pearson Correlation Coefficient Calculator on the Social Science Statistics website to determine significance. All four questions returned p-values < 0.05, showing significance. This means that students who answered higher on the Likert scale for these questions did better on the quiz, and students who answered lower did worse. Questions 2, 4, and 6 were previous questions mentioned in the self-assessment, budgeting, and saving sections. These questions all had significant differences between the gender subpopulations, which may have been the reason for the correlation with the quiz score. Likert scale question 3, which states "Budgeting helps in reducing financial stress," did not show significance between any of the subpopulations, however.

Analysis

Overall, this study found statistically significant differences in both perceptions and actual financial knowledge among gender subpopulations but not between grade or ethnicity subpopulations. These findings have mixed alignment with the literature, with the gender results supported and the grade results not supported. Ethnicity results were hard to compare to the literature due to insufficient information.

In terms of the grade subpopulation findings, this paper's results did not align with past studies. Previous research, such as Jayaraman & Jambunathan (2018) and Han (2022), supports the idea that high school upperclassmen have more financial knowledge than lowerclassmen. This paper's findings, however, directly contradict these studies as there were no statistically significant differences between the grade subpopulations. This may be due to the fact that there is no personal finance course at CHS, making it challenging for students to learn about financial practices through the school as they get older.

Findings among the gender subpopulations mostly aligned with the literature. Previous researchers, such as Luhrmann et al. (2012), Romagnoli & Trifilidis (2013), and Bhattarcharya & Gill (2018), all found gender differences in regards to financial knowledge. In Luhrmann et al. (2012) and Romagnoli & Trifilidis (2013), males were found to have more financial knowledge than females, aligning with this study's results. In Bhattacharya & Gill (2018), however, females were found to be more financially literate than males. The main reason for this discrepancy was the study's location. Bhattacharya and Gill's study was based in India, which contributed to these results as Indian women are more financially independent due to cultural practices (Bhattacharya & Gill, 2018). CHS is located in the United States, a country with significant gender differences in terms of financial literacy, according to Lusardi & Mitchell (2011). Therefore, this paper's results align with previous research in the United States as gender differences were also found.

Finally, there was not sufficient information to determine the alignment of the ethnicity subpopulation findings. Previous studies, such as Lusardi & Mitchell (2011), have found lower levels of financial literacy among Hispanics and African-Americans. In this paper, however, the researcher was only able to compare students from different ethnicities as White and Nonwhite as t-tests require only two groups. While the results did not reveal any statistically

significant findings for ethnicity subpopulations, the researcher did not have enough respondents from either Hispanic or African-American students to compare them individually with other races, making it difficult to compare the ethnicity findings with other studies in the literature.

Limitations

A major limitation of this study was the uneven demographics. Due to this issue, the researcher struggled to analyze and compare certain subpopulations to the existing literature, as exemplified by the ethnicity subpopulation findings. Another limitation of the study was the small sample size of 58 respondents (N = 58). Other sources in the literature such as Luhrmann et al. (2012), Bover et al. (2018), and Bhattacharya & Gill (2020) all had sample populations of over 1,000 students. This allowed them to analyze financial knowledge of each individual grade level and smaller populations such as racial minorities. The last key limitation of this study was the use of a t-test as a data analysis method. While this aligned with Falahati & Paim (2011), it allowed the researcher to only compare two variables at a time. This meant that the study could not compare financial literacy levels across all grade levels or ethnicities. Using a different statistical tool such as ANOVA or a Chi Squared Test would have allowed the researcher to compare more than two groups at a time but was not considered due to the aforementioned small sample size. When combined together, these three key limitations (uneven demographics, small sample size, and t-test as data analysis method) harmed the researcher's ability to analyze the financial knowledge of smaller subpopulations and compare them to the literature.

Implications

Overall, this study highlights the importance of financial education in schools. In a school without any personal finance course requirements, only 58% of students were confident in their ability to create a budget and manage money (Figures 2 and 3), two crucial pillars of financial literacy. This worrying trend may exist in other schools throughout the country without mandated financial education. One way of addressing this issue is policy change from state governments. In 2024, California State Representative Kevin McCarty proposed Assembly Bill 2927, which requires California students to complete one semester of a financial literacy class starting in the 2026 school year (Harter, 2024). Legislative bills similar to these have been rampant over the past few years, signaling a shift in awareness towards the importance of financial education. With these new policies, students should be more familiar with key financial concepts mentioned throughout this paper such as budgeting, saving, and investing.

In addition to these legislative changes, more emphasis should be placed on the financial education of female students. My study found disparities between male and female students in both the Likert-scale perception questions and the financial literacy quiz, aligning with other studies in the literature such as Luhrman et al. (2012), Romagnoli & Trifilidis (2013), and Bhattacharya & Gill (2020). Placing a greater emphasis on female financial education through school and community programs could help remedy this.

Future Research

In the future, more research should be conducted on this paramount topic of financial literacy among the youth. As more and more states start to require personal finance courses as part of their school curriculum, researchers can directly compare the financial literacy of students in these states against students in states without mandatory financial education. Further research can also be conducted on aspects this paper leaves unresolved, such as comparisons between different ethnic groups. With a larger sample size and more balanced demographics, researchers can determine if there is an ethnic divide in regards to financial knowledge. Finally, future studies can evaluate the effect of new

policies on the financial literacy and well-being of adults to figure out the real-world impact of high school financial education.

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