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An Investigation of Personal Financial Literacy Education

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An Investigation of Personal Financial Literacy Education

A thesis submitted in partial satisfaction
of the requirements of the University Honors Program
of Loyola Marymount University

by

James Penner

05/10/2019

Abstract

A lack of financial literacy for many people in the United States is a prominent problem that has largely gone unaddressed, but one that can have devastating results. Currently, 43% of student loan borrowers are not making payments and 33% of American adults have \$0 saved for retirement (Pascarella 2-4). These alarming statistics amid a strong economic environment highlight the negative affects a lack of financial literacy can have. Higher education at LMU is geared towards providing students an education of the whole person to enable them to become better people. This research investigates whether or not LMU prepares students to be financially literate. It seeks to bring attention to the current rates of financial literacy among LMU students across various majors and determine if there is a link between rates of financial literacy improvement and a student's area of study over the four years of education. The results of the study indicate concerning levels of financial illiteracy across all areas and stages of study. Students studying finance exhibited the highest levels of financial literacy in both the beginning and ending years of study. There were significant positive changes across the four years of study in the College of Business Administration, but not for Non-CBA students. While LMU does not currently have a core personal finance component available to all students, this study indicates that the significant discrepancy in financial literacy change might be cause for further investigation into personal finance education for Non-CBA LMU students.

Introduction

Recently, there has been an increased emphasis on personal finance education due to shifts in retirement policy toward personal responsibility and alarmingly low personal savings rates (Peng et al. 266). Thirty-three percent of Americans have not saved a single dollar for retirement and 2/3 of American Adults are unable to pass a basic financial literacy test that involves a rudimentary understanding of personal finance topics like investing, budgeting, debt, retirement, and tax planning (Pascarella 2-4). This is a concerning situation as Charles Schwab, Chairman of the President's Advisory Council on Financial Literacy, categorizes the lack of financial literacy as a contributing factor to the credit crisis of 2008 and postures that it must be addressed due to its integral position in the future of the nation's economy (Crain 2). Not receiving a sound personal finance education often results in incorrect financial decisions, which must be addressed to fix the overarching problem of financial illiteracy (Volpe and Chen 107). The reasonable solution for such an issue is increased awareness of the current lack of financial literacy education and the addition of financial literacy components to one's normal education.

Since the financial crisis of 2008, financial literacy has received a lot of attention and research. The U.S. government created the President's Advisory Council on Financial Literacy to help increase accessibility to financial services and promote the improvement of financial literacy education at all levels of the economy (Cole et al. 415). Financial literacy is typically

used as a means of demonstrating the need for financial education and a measure to help explain financial outcomes (Huston 296). The definition of financial literacy has many different variations depending on the study, but simply put, it is “a measure of the degree to which one understands key financial concepts and the ability to manage personal finances” (LaBorde and Mottner 36). Despite the increased awareness of the prevalent issue of financial illiteracy, financial literacy rates are still alarmingly low. This is demonstrated through statistics in recent articles and ongoing National Financial Capability Tests that show the average score is 67% and only 58% of participants pass (Pascarella 2-4; Stoll).

The low rates of financial literacy have spurred many researchers into investigating the process of personal finance education, determining where the most effective improvements must be made, and bringing attention to the issue. There currently is no standard approach or test to determine financial literacy, so there are many obstacles that lie in determining a person’s financial literacy and attempting to utilize that result as evidence to implement improvements (Huston 297). In order to provide an investigation into financial literacy education at Loyola Marymount University (LMU), a thorough review of existing literature on financial literacy studies and tests as well as personal finance education must be conducted. From this research, a questionnaire that utilizes standardized questions from previous financial literacy tests can be constructed to examine the financial literacy rates of LMU students.

Much of the literature on the topic of financial literacy suggests that education is critical for enabling college students to make better financial decisions. While much of the focus of pre-existing studies has been the effect of personal finance courses on financial literacy, little has been done on the impact of a general college education. The purpose of this research is to provide evidence of the current status of personal financial literacy among college students at LMU age 18-22. It seeks to examine trends of college students’ financial literacy within LMU that may be present along various areas and years of study in hopes of determining whether an LMU education has an effect on its student’s financial literacy over the course of their 4 years of study.

Literature Review

There has been a sizeable amount of research done into the topic of personal finance education, each with specific areas of focus in an attempt at addressing the widespread lack of financial literacy. Financial literacy questionnaires have been a tool for wealth management companies for some time as Certified Financial Planners (CFPs) look to indicate the importance of their role in money management as most people have very little knowledge on the matter. The results of such studies have indicated that participants generally were able to answer less than 60% of the questions correctly on those surveys (Volpe and Chen 108).

Financial literacy is a term that is used an extensive amount throughout literature pertaining to personal finance, but many researchers have slightly different interpretations of it. There may be some technicalities between definitions depending on the researcher, but it can be broken down to its core to be a measure of understanding of financial concepts that affects one's ability to make decisions that best manage personal finances (Cude 272). The direct

influence of increased financial literacy can be difficult to trace due to the complexity and the interconnected nature of all the factors that go into financial wellbeing. In a study by Cole et al., surveys were carried out in Indonesia to try and determine a link between wealth, household characteristics, and financial literacy. While no causal relationship was established, the results indicated that greater financial literacy positively correlated to greater use of bank savings accounts, formal credit, and insurance (421). A causal link between economic behavior and financial literacy is challenging, but there is evidence from experimental approaches and key variables that suggest financial literacy does play a role in influencing financial decisions. The causality lies in the transition from knowledge to behavior, thus only allowing studies to list the probable benefits of higher financial knowledge to be savvier saving and investment decisions, better debt management, more retirement planning, higher participation in the stock market, and greater wealth accumulation (Lusardi and Mitchell, "The Economic Importance of Financial Literacy" 34).

Since increased financial literacy can have very positive financial benefits, the main question that many researchers try and address becomes what is the most effective way to increase financial literacy rates. The formal education system is a logical place to provide the means for improving financial literacy in a widespread and effective manner due to the significant amount of people that willingly participate in the process of learning new knowledge and skills. There have been strides made at improving personal finance education in 17 states through their requirement for high school students to take a personal finance course. Creating legislation to provide personal finance education was likely targeted at the high school level given that children are typically required to attend school through the age of 16 under most Compulsory Education Laws. This step at increasing personal finance education aims at addressing the alarmingly low high school student scores on financial literacy studies like the one conducted by the Jump\$tart Coalition. In the 2008 survey that was conducted on 6,856 12th grade students, the average score on the financial literacy test was 48.3% (Mandell 8).

The increase in personal finance education is a positive step, but the effectiveness of high school personal finance courses is of some concern. Multiple studies have found that the incorporation of personal finance topics into the high-school curriculum had little to no positive effect (Peng et al. 266, 282; Mandell and Schmid Klein 15). Individuals exposed to those high school courses were no more financially literate than those who had no exposure after a few years and did not exhibit better financial behavior (Mandell 21). The cause of this was not determined and may be due to some high school classes only lasting for a few weeks. However, key findings from the study demonstrated that college personal finance courses offered greater literacy improvements than high school courses (Peng et al. 282). The reason behind the greater improvements in a college setting may lie in the implications of another study by LaBorde et al. in 2013. This study found that "the closer the 'need to know' is perceived, the more the students actually realize the relevance of the knowledge acquisition and the greater the actual knowledge becomes" (LaBorde et al. 17). Most current legislature and personal financial education programs aim at helping high school students due to the higher percentage of people attending that stage of education than college. However, there is evidence that indicates that there should be an increased focus on college-age financial education as well given the increased effectiveness of personal finance education at that stage.

The current personal finance education system in place at colleges and high schools could be more effective at preparing students for the important financial changes and responsibilities that all adults are exposed to given that studies show Americans have inadequate knowledge of personal finances (Volpe and Chen 107). 43% of student loan borrowers are not making payments and almost ½ of the 22 million Americans with federal student loans are either behind on payments or have received permission to postpone payments due to economic hardship (Pascarella 3). College students take on large amounts of debt with student loans and often rack up significant credit card debt with poor spending habits, but often know little about the interest that comes along with those outstanding payments (LaBorde and Mottner 37). College-aged people are in a position in which they often need to make financial decisions that can have long term effects and could greatly benefit from increased personal finance knowledge that would enable them to make better financial decisions.

Volpe and Chen conducted a study that consisted of a questionnaire with basic financial literacy test questions that was sent out to 1800 students from 14 college campuses to examine the current environment of personal finance education. The findings from the study suggested that college student's knowledge of personal finance is inadequate. It was determined that this is likely due to the lack of a formal personal finance course even for students enrolled in business majors. The other likely factor was the lack of experience younger people (aged 18-22) had with important personal finance topics like mortgages, investments, etc. (Volpe and Chen 112). While these two proposed hypotheses seem to be logical reasons for the poor responses, they should not be acceptable as they both can be remedied so that younger people can be more prepared for the important financial decisions that they will inevitably have to make or are currently in.

A study by Crain in 2013 investigated the institutional side of the problem through an examination of 435 universities' undergraduate curriculums to determine whether personal financial literacy courses are allowed to fulfill a general education requirement. The study found that a majority of universities did have a class that fit the basic standards (Crain 4), but only 37 of those universities offered it as an elective to fulfill a requirement for the general education area. This indicates that while many schools may offer it as a class, the majority of students are not taking it. A personal finance course at the collegiate level seems like a commonly suggested solution to raise financial literacy rates, but this study from Crain clearly indicates that simply offering the course is not sufficient (Crain 14). There must be a solution that is accessible and known to the entire student population, not just those in the specific department that offers the personal finance course. Otherwise, the problem continues and the majority of American Adults are still left with financial literacy rates that are extremely concerning and continue making uninformed financial decisions.

The importance of making sure a course is easily acceptable and actually taken by students is emphasized by research indicating that personal finance educational courses are effective in raising literacy. LaBorde and Mottner conducted a study in 2016 with pre and post-tests around a classroom-taught personal finance course to further demonstrate the effectiveness of education on this topic. Before the course, subjects earned an average score

of 58%. But, on the post-test participants answered 72.3% correctly on average, with the most improved section being debt management (43).

Prior research has provided evidence that the current state of personal finance education is subpar and is not helping fix the widespread problem at hand of low financial literacy rates. The gathered research indicates that one solution is a college course administered to all students. This solution may run into limitations of accessibility for all students given the difficulties that lie in adding courses into general education curriculums. This study seeks to examine the current personal financial literacy rates at a private, four-year college across the four different years of study and various majors to determine the effect a college education has on financial literacy.

Hypothesis

Previous research poses that the widespread problem of financial illiteracy is also prevalent within college campuses and that a possible solution might be a personal finance course in a classroom setting (Peng et al. 282). The current research conducted under the topic of financial literacy education is concentrated on raising awareness about the epidemic of financial illiteracy and determining the most effective means of increasing financial literacy in a broad fashion. There are numerous studies that examine how financial literacy is impacted by certain courses or different types of finance specific curriculum (LaBorde and Mottner 36). While these focuses are quite important in the grand scheme of raising financial literacy rates, limited research has been conducted regarding the effects a general college education has on financial literacy. This study seeks to uncover the degree of financial literacy that LMU students possess in order to determine whether or not LMU students become more financially literate over the course of their education. To conduct the investigation of the financial literacy of LMU students, a questionnaire was constructed to include questions about each student's year of study and area of study as well as a brief financial literacy test.

The scores of all students (regardless of area of study) based on their year of study as a mark for their degree of completion of the education LMU offers will provide a picture of the overall financial literacy of LMU students and the general effect of LMU's education. The comparison of the scores between the three different classifications of the area and years of study will determine whether certain course curriculums that incorporate finance classes result in higher financial literacy improvement compared to those that do not. Each of the comparisons between the various groups will also demonstrate a disparity between different programs if one exists through differing rates of improvement across each of the years of study.

Many studies and literature on the subject indicate that financial literacy is at a very low level among college students (LaBorde et al. 17). In one financial literacy study on college students, the pre-test scores for a personal finance course resulted in an overall failing average of 61.17% (Martinez 298). In a similarly constructed study, college students again earned a failing grade on a financial literacy test with an average of 58% correct (LaBorde and Mottner 42-43). The consistent evidence of college students failing financial literacy tests demonstrates the alarming prevalence of financial illiteracy within college students. Without the existence of a required course on personal finance, the likelihood of a dramatic increase in financial literacy

scores to a passable level across the board is very low, pointing to low financial literacy scores for all LMU students (LaBorde and Mottner 37-38; Martinez 291-292).

H1: LMU students are not financially literate

Prior research conducted by Mandell through the reputable Jump\$tart Coalition demonstrated that high school seniors had a 48.3% average score on a financial literacy test (8). The breakdown of this average details that high school students planning on attending a four-year college had higher average scores. Those with no post-high school plans averaged only 34.0%, but the high school seniors who planned on attending a junior college averaged 44.6% and those going to a four-year college averaged 50.9% (Mandell 6-9). This indicates that there is a low likelihood of first year LMU students already possessing sufficient levels of financial literacy at the beginning of their college education. While LMU first year students' scores are not expected to be sufficient, they are likely to be much higher than the majority of young American adults of the same age who are not attending a private, four-year university like LMU.

The analysis of college student's financial literacy through the Jump\$tart Coalition study provides a great indication as to the possible effects of college on financial literacy through the administration of the same financial literacy test to both high school and college students. The results of the study show that the average score of college students who participated in the same questionnaire that was discussed in the previous paragraph with high school students was 62.2% (Mandell 8-9). The almost 15% increase supports the correlation between a college education and higher rates of financial literacy and puts the average above the failing mark of 60% for that specific test. What is even more important to note is that the financial literacy rates increased with each additional year of college education. The seniors averaged a score of 64.8% showing that there was an increase over the course of a college education.

The positive correlation between increasing years of college education and higher rates of financial literacy is further supported in other studies as well. In one such study, test scores prior to a personal finance course show that the older the respondent, the more knowledge they had in each of the various main concepts typical of financial literacy tests (LaBorde and Mottner 43). The correlation may be influenced by the increasing exposure to financial dealings that is typically associated with increased independence as people transition into independent adulthood. An overlap of knowledge important to financial literacy and lessons taught in other higher-level courses may be present. The demonstrated increase in financial literacy through the course of a college education in multiple studies supports the hypothesis that LMU students' financial literacy improves over the course of their education (LaBorde et al. 17). It is important to make the distinction that while it is anticipated that older students will likely score higher, this does not mean their scores are expected to indicate a sufficient level of financial literacy.

H2: There is a general improvement in financial literacy over the duration of an LMU college education

The curriculum for most majors at LMU does not include courses on finance or other topics that might have a direct impact on financial literacy, with the exception of majors within the College of Business Administration (CBA). LMU does offer a personal finance course through the economics department called ECON 3660 Personal Finance. However, there is

only one section of this course available to students and LMU does not have a personal finance required component. The lack of a required personal finance component by LMU for all students results in limited to no exposure to financial topics by students outside of CBA. All business students are required to take an introduction to corporate finance course and finance students take additional courses beyond that. So, the breakdown of the participants of the study for the purpose of examining the effects of LMU's college education on financial literacy will consist of the four different years of study and three different classifications of the area of study (CBA, Non-CBA, and Finance).

The assumption that business majors will possess higher levels of financial literacy can be a tempting one to make, but some research suggests that there will be little to no improvement for students in CBA compared to non-CBA students as significant increases weren't witnessed in a similar study (Volpe and Chen 112). However, most other studies suggest that while even business students display failing scores on financial literacy questionnaires, they are typically better than students in other majors (Martinez 292). In a previous study done around the effectiveness of a dual business finance and personal finance course within a business school at another four-year university, students with a business-related major scored about 16.5% better than students in non-business majors on the pre-test and about 9.3% better on the post-test (Martinez 298). The effectiveness of college personal finance courses has been supported through multiple studies (LaBorde and Mottner 35; Ehrlich and Guilbault 262; Martinez 298-299). While the CBA core curriculum does not have a personal finance course, it does require an introductory level corporate finance class that all other majors and schools within LMU do not. Given that some of the concepts integral to the main six topics of financial literacy are incorporated in the introductory level corporate finance class, significant improvement may be seen as LMU CBA students progress through their curriculum while those without exposure to similar classes do not.

H3: When compared across their LMU education, CBA students will be more likely to exhibit higher financial literacy than non-CBA students

Methodology

This research aims to evaluate the effect of learning that took place in a specific academic environment - LMU college education. Therefore, I measure the change in knowledge over the course of said environment. There are many methods that have been used previously in testing financial education effectiveness (e.g., follow-up surveys, pre- and post-test surveys, only post-test surveys, observations, and focus group interviews). Pre- and post-testing surveys are the most common method of testing financial education effectiveness (LaBorde and Mottner 39). Given the popularity of pre- and post-testing surveys amongst the literature reviewed and its effectiveness at measuring change, it is the logical choice of method to conduct the examination of LMU students' financial literacy.

This method encounters some difficulty due to the four years that it takes the average LMU student to complete the standard course of study. The timeline available for research does not allow for a true pre- and post-testing survey that tests financial literacy of the same

subjects from their entrance into LMU to graduation. While that scenario would be ideal, the logical solution was to create a cross-sectional data set for students at LMU in 2019. Acquiring scores from enough participants at each stage will provide an average that is representative of the group and can be used in the evaluation of LMU students' financial literacy.

The survey administered in this study consists of a total of 18 multiple choice questions. The questionnaire consists of three demographic questions, 12 questions that comprise a basic financial literacy test, and three questions gauging interest in financial literacy education. Studies examining personal finance knowledge that were reviewed during research typically incorporated questionnaires with more personal finance test questions than this. One study by Volpe and Chen in 2018 utilized a 52 question survey with 36 multiple choice questions testing knowledge of personal finance (109). Another study testing college-level personal finance knowledge included 30 "knowledge" questions (LaBorde and Mottner 40). Having around 30 questions to assess personal finance knowledge would have been ideal, but survey doing that can range from three to 45 total items. Due to concerns of a limited response rate if the number of questions was high due to the unlikelihood of college students voluntarily spending more than 10 minutes on a survey without any incentives. With the survey being distributed via email, the low response rate was already going to be a factor (LaBorde et al. 6). So, keeping the survey brief to include only 12 personal finance knowledge assessment questions was important.

There is currently no standard approach to measure financial literacy (Huston 310). The construction of the "knowledge" based questions stemmed from similar studies and the Financial Industry Regulatory Authority (FINRA). For the test to be effective, it is important that there are questions assessing each of the main financial literacy topics. Those topics include money management, debt management, taxes, insurance, investments, and retirement (LaBorde and Mottner 38). FINRA conducted a survey of financial capability in the United States in 2016 and have a financial literacy quiz available on their website that is 6 questions long and tests some of most of those main topics listed above. Due to the position of the FINRA and its effectiveness at covering key topics in only six questions, the first half of the knowledge-based questions in the survey come directly from the FINRA survey (FINRA). Lusardi and Mitchell use many of the same questions that the FINRA survey and this study incorporate, further justifying the use of those questions as valid questions testing personal finance knowledge due to their prestige as leading researchers on the subject ("The Economic Importance of Financial Literacy" 10; Knoll and Houts 384). The remaining questions were constructed to cover as many of the main topics as possible from another similar study (Heinberg et al. 29-34). Given the subjects that the questions from those surveys tested and the limited number of available questions that could be included in the survey, the topic of insurance was not covered in this questionnaire. While it would have been ideal to include, like other short surveys it was determined that sufficiently testing the other topics was more crucial to the investigation covered in this survey. The important financial concepts of the time value of money and compound interest were incorporated into multiple questions as well to test students grasp of basic finance concepts that are crucial to financial literacy.

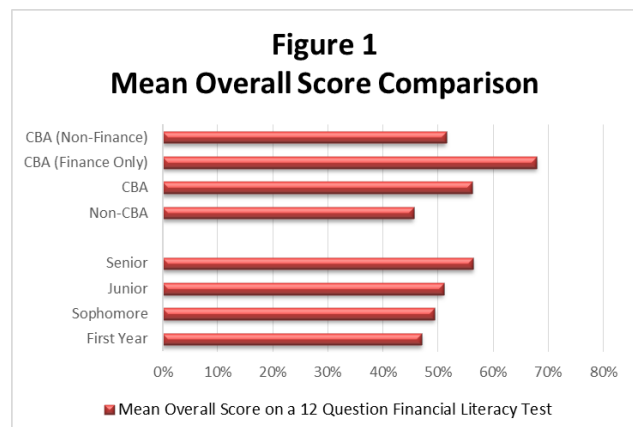
Data and Analysis

The questionnaire was sent out through a link in an email to first year seminar and introductory business classes as well as upper division classes of different areas of study. Some participants further shared the link via posts on various organization's Facebook groups. The response rate was expected to be extremely low given a similar study sent out by a link via email yielded a 9.23% response rate (LaBorde 2013, 6). Given that there were 138 responses over a four to five week time period with extensive outreach, a response rate below 10% most likely occurred. Further impacting the data set are the 39 unfinished submissions, one subject who was under 18 years old, and one subject who declined from signing the waiver that were unable to be used. This method of administering the questionnaire had to be chosen despite the low response rate due to adherence to LMU IRB specifications.

Many of the previous studies of financial literacy did not provide an indicator of whether a respondent was financially literate based off of a specific metric (Huston 304). Given that the questionnaire was constructed from multiple sources, typical passing rates of financial literacy tests was used to determine the metric by which to analyze the scores. The Jump\$tart survey said that a student fails with a score below 60%, but is financially literate if they score 75% or more (Mandell 12). Mandell does not detail how to interpret or categorize a student's score that falls between 60 and 74% though. FINRA, one of the sources for questions in this financial literacy test, determined a passing rate is 75% (Stoll). Since multiple sources state that 75% is a passing score, a score of 75% or more will indicate financial literacy in regards to the financial literacy test embedded in this questionnaire.

The average of each group within this study was below the passing score of 75%, indicating that many students at LMU are financially illiterate. The mean overall score on the financial literacy questionnaire for the entire sample of LMU students was 50.86% (see table 1). This average is right in line with the Jump\$tart Survey that has been running for multiple years and tested thousands of participants as it found the average score to be 50.9% (Mandell 6-9). Table 1 presents a breakdown of the overall scores of the participants in the study broken up by the demographics of the stage and area of study seen in the first two columns. The average scores of each group are further broken down by major financial literacy topics and concepts that were tested in the financial literacy portion of the questionnaire. Every group that was constructed by stage and/or area of study demonstrated subpar financial literacy scores as there was not a single mean score for the entire financial literacy test that was above the 75% passing mark. The evidence of failing financial literacy scores across the groups is consistent with the first hypothesis (H1) - LMU students are not financially literate.

The mean overall score breakdown by the four stages of study demonstrates that there is a positive increase in financial literacy test scores each year of study in general for LMU students. The average score broken up by stage of study was 47.02% for first years,



49.36% for sophomores, 50.93% for juniors, and seniors had the highest with 56.31%. Figure 1 depicts this almost linear, steady increase across the years. This is consistent with previous research regarding slight increases over the 4 years of a college education (LaBorde et al. 17). Table 2 represents the comparison tests that were run on the data groups to determine if there was a significant change between the two groups tested (see column 2). The three different groups detailed in category column show that there is a positive increase, ranging from 7.58% to 9.29%, from students in the early stages compared to those in that latter stages of an LMU education (see table 2). The p-values for the three comparisons depicted in the last column of Table 2 show that each of the comparisons are not statistically significant though as they are above 0.05. While the positive change seen in the averages supports the second hypothesis (H2), the data does not show a significant change, so it cannot be concluded that there is definitely a difference between the average scores of early and late stage LMU students.

The breakdown by area of study depicted in Table 1 shows that CBA students possess higher average financial literacy test scores. CBA students on average scored 10.65% and Finance majors scored 22.37% higher than non-CBA students (see table 2). Amongst CBA students, Finance majors scored 16.43% higher than other CBA students. It is important to note that there is no significant change realized between first year students of different areas of study. However, first year Finance students scored 16.52% higher than non-CBA first year students with an almost significant p-value of 0.057 (see table 2). So, the average overall scores for each group are in line with the research that supported the third hypothesis (H3).

Important to note is that first year Finance students scored 23% higher than CBA (Non-Finance) first year students and about 17% higher than Non-CBA first year students. The likely cause of this was self-selection of first year students into their major of choice and those that choose finance likely already know something about it. Further research could be done to flush out the details behind this higher starting financial literacy score. Given the higher starting score, the positive change in financial literacy over the course of study for a finance major was not drastic.

The specific change in financial literacy test scores segmented by area of study witnessed through an LMU education demonstrate three key points. The first important takeaway is that CBA students show a drastic improvement in financial literacy scores as there is a 21.59% significant improvement from first year CBA students to senior CBA students. This increase is not only due to the inclusion of finance majors in that group as the highest significant increase was actually seen in CBA (Non-Finance) students (25.98%) over the course of their four-year education (see table 2). The second is that there was no change witnessed for non-CBA students as the negative change over the course of their LMU education was not significant. Non-CBA students demonstrated the lowest financial literacy (45.49% correct) and Finance students in CBA demonstrated the highest levels of financial literacy (67.86% correct). Senior level Finance majors exhibited the very best financial literacy scores of all groups with an average of 72.22%. As each of those numbers demonstrate there is a drastic difference in financial literacy rates and improvement depending on a student's area of study. LMU students not in the College of Business Administration demonstrate financial literacy rates that are significantly lower and lack the education necessary to improve their financial literacy. Lastly, finance students did not show significant improvement and never reached an average score

above the passing rate, which was likely due to the small sample size. This all confirms the 3rd hypothesis as the significant positive change in CBA is contrasted by no change with non-CBA students - *When compared across their LMU education, CBA students will be more likely to exhibit higher financial literacy than non-CBA students.*

Table 1

Financial Literacy Test Scores by Area and Stage of Study

Entire Sample	Category	Frequency	Mean Overall Score	Money Management		Debt Management		Investing	Retirement	Taxes	Compound Interest	Time Value of Money
				Money Management	Debt Management							
Stage of Study	First Year	42	47.02%	55.95%	58.33%	38.10%	39.29%	23.81%	60.71%	65.48%		
	Sophomore	13	49.36%	61.54%	57.69%	35.90%	34.62%	34.62%	71.15%	57.69%		
	Junior	9	50.93%	66.67%	44.44%	44.44%	33.33%	44.44%	58.33%	55.56%		
Area of Study	Senior	33	56.31%	57.58%	66.67%	52.53%	54.55%	46.97%	64.39%	65.15%		
	Non-CBA	48	45.49%	55.73%	59.38%	29.86%	36.46%	30.21%	61.46%	61.46%		
	CBA	49	56.12%	60.71%	60.20%	56.46%	50.00%	39.80%	64.80%	65.31%		
Non-CBA	CBA (Finance Only)	14	67.86%	71.43%	67.86%	71.43%	64.29%	57.14%	76.79%	75.00%		
	CBA (Non-Finance)	35	51.43%	56.43%	57.14%	50.48%	44.29%	32.86%	60.00%	61.43%		
	First Year	19	47.37%	57.89%	60.53%	33.33%	44.74%	23.68%	64.47%	71.05%		
CBA	Sophomore	10	45.83%	60.00%	60.00%	26.67%	30.00%	30.00%	72.50%	55.00%		
	Junior	6	55.56%	66.67%	58.33%	38.89%	41.67%	58.33%	66.67%	66.67%		
	Senior	13	37.82%	44.23%	57.69%	23.08%	26.92%	26.92%	46.15%	50.00%		
Finance	First Year	23	46.74%	54.35%	56.52%	42.03%	34.78%	23.91%	57.61%	60.87%		
	Sophomore	3	61.11%	66.67%	50.00%	66.67%	50.00%	50.00%	66.67%	66.67%		
	Junior	3	41.67%	66.67%	16.67%	55.56%	16.67%	16.67%	41.67%	33.33%		
CBA (Non-Finance)	Senior	20	68.33%	66.25%	72.50%	71.67%	72.50%	60.00%	76.25%	75.00%		
	First Year	6	63.89%	66.67%	58.33%	72.22%	58.33%	50.00%	66.67%	75.00%		
	Sophomore	2	66.67%	75.00%	50.00%	66.67%	75.00%	50.00%	87.50%	100.00%		
Senior	Junior	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	Senior	6	72.22%	75.00%	83.33%	72.22%	66.67%	66.67%	83.33%	66.67%		
	First Year	17	40.69%	50.00%	55.88%	31.37%	26.47%	14.71%	54.41%	55.88%		
CBA (Non-Finance)	Sophomore	1	50.00%	50.00%	50.00%	66.67%	0.00%	50.00%	25.00%	0.00%		
	Junior	3	41.67%	66.67%	16.67%	55.56%	16.67%	16.67%	41.67%	33.33%		
	Senior	14	66.67%	62.50%	67.86%	71.43%	75.00%	57.14%	73.21%	78.57%		

Table 2

2 Sample t-Tests Run by Stage and Age of Study

Category		Frequency	Mean Overall Score	Variance	Change	P-Value
Stage of Study	First Year	42	47.02%	0.047365	9.29%	0.09993
	Senior	33	56.31%	0.070326		
	First Year & Sophomore	55	47.58%	0.042611	7.58%	0.104498
	Junior & Senior	42	55.16%	0.061976		
	First Year & Sophomore	55	47.58%	0.042611	8.74%	0.088145
	Senior	33	56.31%	0.070326		
Area of Study	Non-CBA	48	45.49%	0.040472	10.64%	0.020656
	CBA	49	56.12%	0.058384		
	CBA (Non-Finance)	35	51.43%	0.061881	16.43%	0.029994
	CBA (Finance Only)	14	67.86%	0.032967		
	Non-CBA	48	45.49%	0.040472	22.37%	0.000418
	CBA (Finance Only)	14	67.86%	0.032967		
	Non-CBA	48	45.49%	0.040472	5.94%	0.232807
CBA (Non-Finance)	35	51.43%	0.061881			
First Year	Non-CBA	19	47.37%	0.023960	-0.63%	0.927051
	CBA	23	46.74%	0.068648		
	Non-CBA	19	47.37%	0.023960	16.52%	0.057881
	CBA (Finance Only)	6	63.89%	0.057407		
	CBA (Non-Finance)	17	40.69%	0.061530	23.20%	0.060273
	CBA (Finance Only)	6	63.89%	0.057407		
	Non-CBA	19	47.37%	0.023960	-6.68%	0.333587
CBA (Non-Finance)	17	40.69%	0.061530			
Non-CBA	First Year	19	47.37%	0.023960	-9.55%	0.219557
	Senior	13	37.82%	0.075944		
	First Year & Sophomore	29	46.84%	0.025503	-3.42%	0.570441
	Junior & Senior	19	43.42%	0.065262		
CBA	First Year	23	46.74%	0.068648	21.59%	0.003406
	Senior	20	68.33%	0.031871		
	First Year & Sophomore	26	48.40%	0.063344	16.46%	0.015691
	Junior & Senior	23	64.86%	0.040377		
Finance	First Year	6	63.89%	0.057407	8.33%	0.490907
	Senior	6	72.22%	0.024074		
	First Year & Sophomore	8	64.58%	0.041171	7.64%	0.458158
	Junior & Senior	6	72.22%	0.024074		
CBA (Non-Finance)	First Year	17	40.69%	0.061530	25.98%	0.003219
	Senior	14	66.67%	0.036325		
	First Year & Sophomore	18	41.20%	0.058392	21.05%	0.010101
	Junior & Senior	17	62.25%	0.045241		

P-Values compared to 0.05 standard. The null hypothesis is rejected when $p < .05$ and not rejected when $p > .05$.

Conclusion

While the financial literacy of LMU students seems to be in line with larger studies and slightly higher than the overall national averages, it has the potential to be much higher. The overall lack of passing financial literacy scores for LMU students leaves room for increased personal finance education programs. This study indicates that the average financial literacy score for each group of students in each stage of study was below the passing rate, demonstrating widespread financial illiteracy of LMU students. The significant positive change in financial literacy of CBA students indicates that the inclusion of basic financial principles found in the core business classes has a positive effect on financial literacy. This study lays out the influence of general LMU courses of education, but does not determine what specific topics or classes have the greatest influence on increased financial literacy. Further research should be done to determine the most impactful lessons and possible ways of translating the positive financial literacy education seen in CBA to LMU students of other majors who currently exhibit the lowest average levels of financial literacy as well as no change in financial literacy over the course of their college education.

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Appendix A

Final Thesis Questionnaire

Background:

1. What is your academic standing?
 - a. First Year
 - b. Sophomore
 - c. Junior
 - d. Senior
2. Which school or college within Loyola Marymount University do you belong?
 - a. Bellarmine College of Liberal Arts
 - b. College of Business Administration
 - c. College of Communication and Fine Arts
 - d. School of Education
 - e. School of Film and Television
 - f. Seaver College of Science and Engineering
3. If you belong to the College of Business Administration, what is your declared major?
 - a. Accounting
 - b. Applied Information Management Systems (AIMS)
 - c. Entrepreneurship
 - d. Finance
 - e. Management
 - f. Marketing
 - g. I do not belong to the College of Business Administration

Basic Financial Literacy Test (FINRA):

1. Suppose you have \$100 in a savings account earning 2 percent interest a year. After five years, how much do you have?
 - a. More than \$102
 - b. Exactly \$102
 - c. Less than \$102
 - d. Don't Know
2. Imagine that the interest rate on your savings account is 1 percent a year and inflation is 2 percent a year. After one year, would the money in the account buy more than it does today, exactly the same or less than today?
 - a. More
 - b. Same
 - c. Less
 - d. Don't Know
3. If interest rates rise, what will typically happen to bond prices? Rise, fall stay the same, or is there no relationship?
 - a. Rise

- b. Fall
 - c. Stay the Same
 - d. No Relationship
 - e. Don't Know
4. True or false: A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage but the total interest over the life of the loan will be less.
- a. True
 - b. False
 - c. Don't Know
5. True or false: Buying a single company's stock usually provides a safer return than a stock mutual fund.
- a. True
 - b. False
 - c. Don't Know
6. Suppose you owe \$1,000 on a loan and the interest rate you are charged is 20% per year compounded annually. If you didn't pay anything off, at this interest rate, how many years would it take for the amount you owe to double?
- a. Less than 2 years
 - b. 2 to 4 years
 - c. 5 to 9 years
 - d. 10 or more years
 - e. Don't Know

Additional Financial Literacy Questions:

1. What account typically pays the MOST interest?
- a. Certificate of Deposit (CD)
 - b. Savings account
 - c. Checking account
 - d. Money Market Account
 - e. Don't Know
2. Which of the following investment vehicles tend to have the highest growth over a long investment period (10+ years)?
- a. U.S. Treasury Bonds
 - b. Stocks and Mutual Funds
 - c. A savings account
 - d. A money market account
 - e. Don't Know
3. Suppose you had 100 US dollars in a savings account and the bank adds 10 percent per year to the account. How much money would you have in the account after five years if you did not remove any money from the account
- a. More than 150 dollars
 - b. Exactly 150 dollars
 - c. Less than 150 dollars

- d. Don't Know
4. When you invest in an employer's savings plan such as a 401(k), your contributions are taxed:
 - a. Either before you invest them or when you withdraw them during retirement, but not both times
 - b. before you invest them and when you withdraw them during retirement
 - c. Once a year on or before April 15
 - d. When you reach age 65
 - e. Don't Know
 5. Your take home pay for your job is less than the total amount that you earn. Which of the following best describes what is taken out of your total pay?
 - a. Federal income tax, property tax, Medicare and social security contributions
 - b. Social security and Medicare contributions
 - c. Federal income tax, social security and Medicare contributions
 - d. Federal income tax, sales tax, and social security contribution
 - e. Federal income tax, social security and Medicare contributions, state and local taxes
 - f. Don't Know
 6. Consider the following scenario: Jack and Jill are twins. At the age of 20, Jack started contributing \$20 a month to a savings account. After 20 years, at the age of 40, he stopped adding to his savings, but he left the money in the account. Jill didn't start to save until she was 40. Then, she saved \$20 a month until she retired 20 years later at age 60. Suppose both Jack and Jill earned 6% interest per year on their savings. When they both retired at age 60, who had more money?
 - a. Jack
 - b. Jill
 - c. They had the same amount
 - d. Don't Know

Desire for further education in financial literacy:

1. Are you interested in increasing your financial knowledge?
 - a. Very interested
 - b. Somewhat interested
 - c. Not sure
 - d. Somewhat uninterested
 - e. Very uninterested
2. Would you take a personal finance course as an elective if offered?
 - a. Yes
 - b. No
3. Would you take a self-paced online learning course on financial market concepts?
 - a. Yes
 - b. No

Answer Key for Thesis Questionnaire

Background:

1. Subjective
2. Subjective
3. Subjective

Basic Financial Literacy Test (FINRA):

1. A
2. C
3. B
4. A
5. B
6. B

Additional Financial Literacy Questions:

1. A
2. B
3. A
4. A
5. E
6. A

Desire for further education in financial literacy:

1. Subjective
2. Subjective
3. Subjective