

Increasing Financial Literacy Among Undergraduate Students

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Abstract

This study examines the financial literacy levels of students at Middle Tennessee State University and the effectiveness of tools on campus to increase students' knowledge of basic financial topics and their own student debt. We administer a survey across campus to students in multiple finance classes and to the general student population. Around half of our student respondents answer correctly all of the "Big Three" questions testing financial literacy, a higher proportion answering correctly than the average in several prior studies conducted around the world. We find mixed results regarding our respondents' understanding of their own student loan debt with some aspects being well understood and others being vastly misunderstood. Our results show that the most effective instrument on campus to improve students' financial literacy is the completion of a finance course. Respondents who have completed a Middle Tennessee State University finance course are more likely to answer questions on financial topics correctly and to understand their own student loan debt.

1. Introduction

High school graduates face numerous life-altering decisions. Should they move away from home or stay close? Should they go to college or join the workforce? If they go to college, what school should they attend and in what field of study should they major? One of the most significant decisions these young adults face is whether or not to take on debt. College students in the United States face more complex financial choices than any other generation before them. The financial decisions that are made during college and directly after graduation have effects lasting for decades. Because of the importance of financial literacy for college students, many scholars are researching financial literacy levels of students and how to improve their financial proficiency.

The concept of financial literacy is a relatively new idea. Over the last century, with the creation of credit and a growing stock market, the need for the general population to be knowledgeable about financial services has increased. As the West has become more modernized, people have adapted to learn new financial practices. Modern life is no longer about living self-sufficiently on a farm or bartering with neighbors. Living in today's society requires people to become financially literate or pay the cost. What does it mean to be financially literate? The widely accepted definition academics use is the "ability to process economic information and make informed decisions about financial planning, wealth accumulation, debt, and pensions" (Lusardi and Mitchell, 2014).

Scholars Annamaria Lusardi and Olivia Mitchell are leaders in the field of personal finance. They are the pioneering creators of the "Big Three" financial literacy questions. These three questions are 1) "Suppose you had \$100 in a saving account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?" 2) "Imagine that the interest rate on your saving accounting was 1% per year and

inflation was 2% per year. After 1 year, would you be able to buy more than, exactly the same as, or less than today with the money in this account?”, and 3) “Do you think that the following statement is true or false? ‘Buying a single company stock usually provides a safer return than a stock mutual fund’” (Lusardi and Mitchell, 2014). These questions are designed to be a basic test of fundamental financial concepts. Each question addresses a different essential concept of personal finance: interest, inflation, and risk diversification.

The Big Three questions have been used in dozens of studies across the nation and around the globe. The results of these studies have revealed that only approximately one third of individuals can correctly answer all three questions. In fact, a 2018 survey of 89,200 undergraduate students discovered that only 28% of students could answer correctly the Big Three questions (Anderson et. al, 2018). Implications of these studies are portentous. Interest, inflation, and risk diversification are economic concepts that affect every individual. Furthermore, college students make choices every year regarding how to finance their education. About 66% of graduates of a public college in the United States have student loans (Quick Facts about Student Debt).

Universities are specifically charged with certain financial education requirements. In 1986, the federal government mandated that universities require all college students who are accepting a federal loan to complete exit counseling upon graduation or ceased attendance. The student loan education requirements extended in 2008 when entrance counseling was included in the mandate. Most students fulfill the entrance and exit counseling requirement via the Department of Education’s online tool. The effectiveness of the online counseling tool has been questioned by many researchers. One survey found that 40% of borrowers had no memory of completing the counseling (Whitsett, page 2). Additionally, those who did remember the counseling did not sing its praises. One study performed qualitative research with students who had recently completed

the counseling, and students reported that they found the counseling “tedious, cumbersome, and generally unhelpful” (Fernandez et. al, page 2).

Entrance and exit counseling are not the only way students at universities learn about financial topics such as interest and student loans. Middle Tennessee State University (MTSU), in particular, offers dozens of finance courses. Three finance courses most relevant to this study are Personal Financial Planning (FIN 2010), Survey of Finance (FIN 3000), and Principles of Corporate Finance (FIN 3010). Types of students in these classes vary: Personal Financial Planning is open to all majors; Survey of Finance is only available to non-business majors; and Principles of Corporate Finance is a required course for all business majors. Even though some of these courses do not specifically address personal finance and/or student debt, they all do cover general topics that the Big Three questions present, such as interest and investments. MTSU offers in person and online versions of these courses to students each semester in several sections.

In addition to mandated loan counseling and academic courses, students may also research loans at any time via online tools such as StudentLoan.gov. The Middle Tennessee State University website provides general loan information in addition to links to extra resources, mostly governmental webpages and tools. Student loan debt is a hot topic of the day and numerous news and political articles are written on the subject. With mandated counseling, academic courses, and personal research, MTSU students have numerous financial education resources available to them. However, little prior research has been conducted in order to determine the effectiveness of these resources.

This study examines financial literacy, including student loan related concepts, and the effectiveness of existing methods for increasing literacy levels among Middle Tennessee State University undergraduate students. We answer three main research questions.

- 1) What are the financial literacy levels of undergraduate MTSU students?
- 2) Do undergraduate students at MTSU understand their student loan debt and its effects on their post-college life?
- 3) What tools on campus are effective at increasing the financial literacy of MTSU undergraduate students?

MTSU students have higher financial literacy than found in other prior studies, yet there is much room for improvement. Around 50% of student respondents answer all the Big Three questions correctly. MTSU students' understanding of their student loan debt is mixed. We find that the most effective resource on campus to improve students' financial literacy is the completion of a finance course. Respondents who have completed a finance course at MTSU are more likely to answer questions on financial topics correctly and to understand their own student loan debt.

2. Methodology

We administer the survey provided in Appendix A. The questions are general and multiple choice. Questions on the survey address the essential elements of student loans and general financial literacy. The survey does not include complex calculations and takes only about five minutes to complete. The questions at the beginning of the survey instrument aim to answer the first research question, "What are the financial literacy levels of students?" Student respondents start by answering Lusardi and Mitchell's Big Three questions. The results from these questions lay a foundation for determining how knowledgeable students are about financial matters. Additionally, Lusardi and Mitchell's questions have been used in various studies, which allows comparisons between our sample and those of other research studies. Furthermore, this survey

instrument is also designed to discover how much students know about their current and future financial situation.

The later part of the survey is tailored to evaluate students' understanding of their debt. The questions regarding student debt are general questions about the state of a student's debt and its impacts after college. These questions include "Approximately how much student debt will you have upon graduation," "What is the annual interest rate of your student loan," and "What type of student loan(s) do you have?" These questions students should be able to answer after completing the online entrance counseling. The survey includes additional questions to answer what tools on campus are effective at increasing the financial literacy of MTSU undergraduate students. First, student respondents report what kind of resources about financial knowledge they find most impactful in their lives. Second, student respondents report what types of financial education they have completed. These responses allow for the identification of correlations between completion of certain programs and higher financial literacy levels.

A variety of different students on campus complete our survey. It is conducted in sections of the three finance courses previously named. Participants are also recruited through an email to students in the Honors College and others hear about the survey via word of mouth. We use Qualtrics to administer our online survey. In the Spring of 2019, a total of 175 responses to the survey are received, 142 of which are fully completed and provide usable responses. The second round of responses are from students who have just started classes in the Fall of 2019; the number of respondents totals 163 of which 158 are usable. After completing the distribution of surveys, we analyze the data using Microsoft Excel. The two samples of responses are analyzed separately. We refer to the surveys collected at the end of the Spring 2019 semester as Sample #1 and at the beginning of the Fall 2019 semester as Sample #2.

3. Results

3.1 What are the financial literacy levels of undergraduate MTSU students?

In Sample #1 as a whole, 55.63% of students answer all the Big Three questions correctly, which is higher than the average from other prior studies that were reviewed. Results from Sample #2 are also above average, but not by as much. The percentage of students in Sample #2 that could correctly answer all the Big Three questions is 41.14%. Possible reasons for the difference in performance between these two samples and the difference between these samples and other studies are evaluated further in section four of this study.

Table 1 provides the breakdown of the percentage of students who answer each question correctly in each sample. The first of the Big Three questions is “Suppose you had \$100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account?” Respondents have four possible options to choose “More than \$102,” “Exactly \$102,” “Less than \$102,” and “Don’t know.” The correct answer is “More than \$102.” In both Sample #1 and Sample #2, this question is the one most students answer correctly. 95.07% of students in Sample #1 and 87.97% of students in Sample #2 correctly answer the first question. The second question is, “Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, with the money in the account, you would be able to buy...” Again, there are four possible responses to this question “More than today,” “Exactly the same as today,” “Less than today,” and “Don’t know.” The correct answer is “Less than today.” Responses to the second question are not as favorable as the first, 76.76% of students in Sample #1 and 70.89% of those in Sample #2 answer it correctly. The third question is, “Do you think the following statement is true or false? Buying a single company stock usually provides a safer return than a stock mutual fund.” Possible responses to the third question are “True,” “False,” and “Don’t

know.” The correct answer is “False.” Despite being a true/false question, the third question has the worst correct response rate with only 66.90% in Sample #1 and 57.59% in Sample #2 answering it correctly.

	Question #1	Question #2	Question #3	All Three
Sample #1	95.07%	76.76%	66.90%	55.63%
Sample #2	87.97%	70.89%	57.59%	41.14%

Table 1

In addition to a general analysis of the whole data set, we analyze students by classification, major, and grade point average. There are similar trends found in Sample #1 and Sample #2. For example, students in lower classifications are less likely to answer correctly all the Big Three questions than those in higher classifications. In Sample #1 most of the responses come from seniors with 57 total usable responses from that grade level. The other classification levels are as follows: 45 usable responses from juniors, 23 useable responses from sophomores, 15 useable responses from freshmen, and 2 useable responses that checked their grade level as “Other,” which may include non-degree seeking students. Sample #2 has different proportions for its demographics with 48 freshmen making up most of the population followed by 44 juniors, 29 seniors, and only 24 sophomores. Figures 1 and 2 show the percentage of students in each grade level that answer all the Big Three questions correctly. Each graph has a line through the bars that indicates the average percentage of students who answered correctly all the Big Three questions in the respective sample. Additionally, the graphs show statistically calculated confidence intervals for each reported percentage.

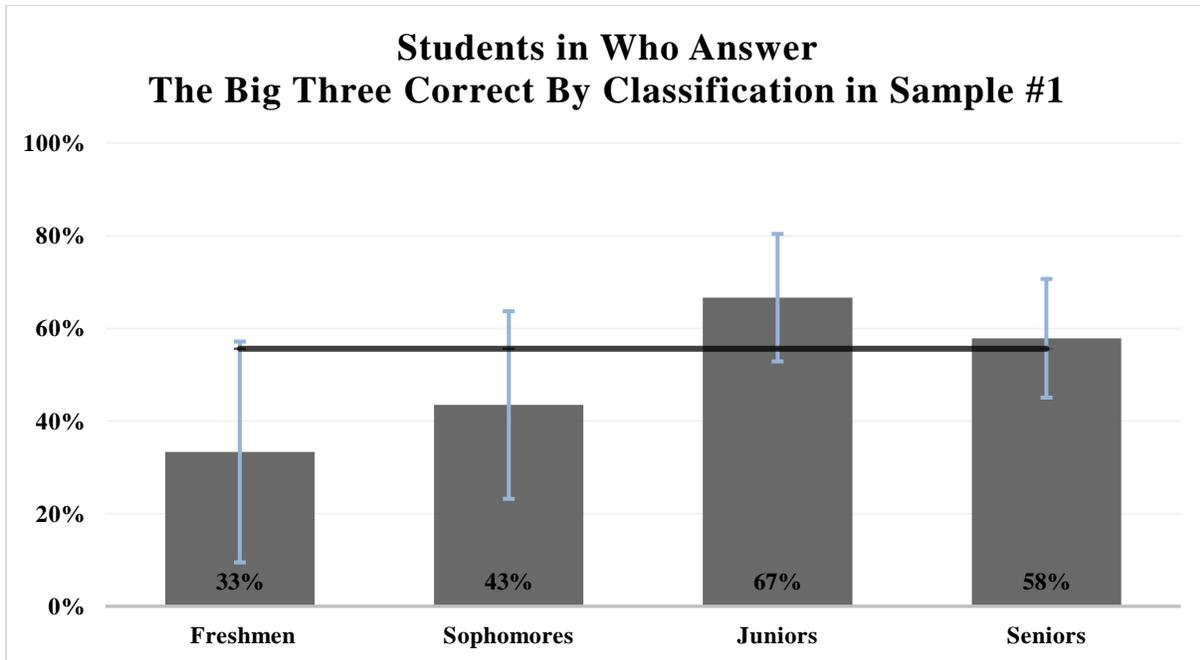


Figure 1

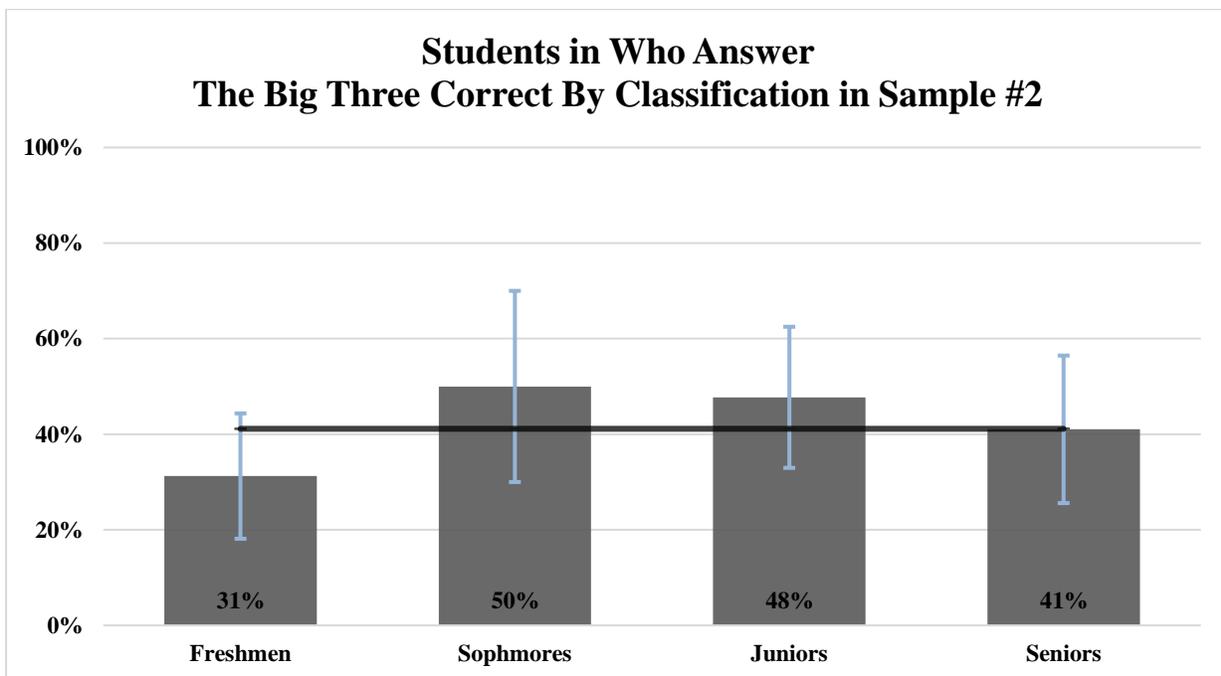


Figure 2

In both samples the freshmen perform the worst on the Big Three questions with only 33% in Sample #1 and 31% in Sample #2 getting all three questions correct. The ability of the sophomores is varied. In Sample #1 they perform second worst with 43% getting the Big Three correct; however, in Sample #2 they perform the best with 50% providing the right answer for all

the Big Three. Because the sample size for the sophomores is relatively small in both samples and the confidence intervals large, variations like this are to be expected. Juniors consistently perform well above average with 67% of students answering the Big Three correctly in Sample #1 and 48% in Sample #2. Seniors' financial literacy is near the average in both samples with 58% in Sample #1 and 41% in Sample #2 answering the Big Three perfectly.

In order to analyze student performance by major, the students are separated into groups based on their college. Middle Tennessee State University has seven colleges: College of Basic and Applied Sciences, College of Behavioral and Health Sciences, Jennings A. Jones College of Business, College of Education, College of Liberal Arts, College of Media and Entertainment, and the University College. A full list of what majors are in each college can be obtained at mtsu.edu/programs. Usable data is obtained from students in each of the colleges; however, there are a very low number of respondents who are in the College of Education and in the University College. Therefore, those colleges are excluded from this analysis. The samples include enough students to evaluate the other five colleges. In Sample #1 there are 76 respondents from the Jones College of Business, 18 from the College of Basic and Applied Science, 17 from the College of Liberal Arts, 15 students from the College of Behavioral and Health Sciences, and 13 from the College of Media and Entertainment. Sample #2 has a similar breakdown with 59 from the Jones College of Business, 39 from the College of Basic and Applied Science, 25 from the College of Liberal Arts, 11 from the College of Behavioral and Health Sciences, and 12 from the College of Media and Entertainment. The reason that there is a large number of business students is that the survey is administered in multiple finance classes, which are commonly taken by business students. Additionally, because the students in the Honors College are emailed the survey, there is a large number of Honors students who responded, 58 in Sample #1 and 95 in Sample #2. As to

be expected, in both the samples business students are the most likely to answer all the Big Three correctly. Figures 3 and 4 depict how each of the colleges performs.

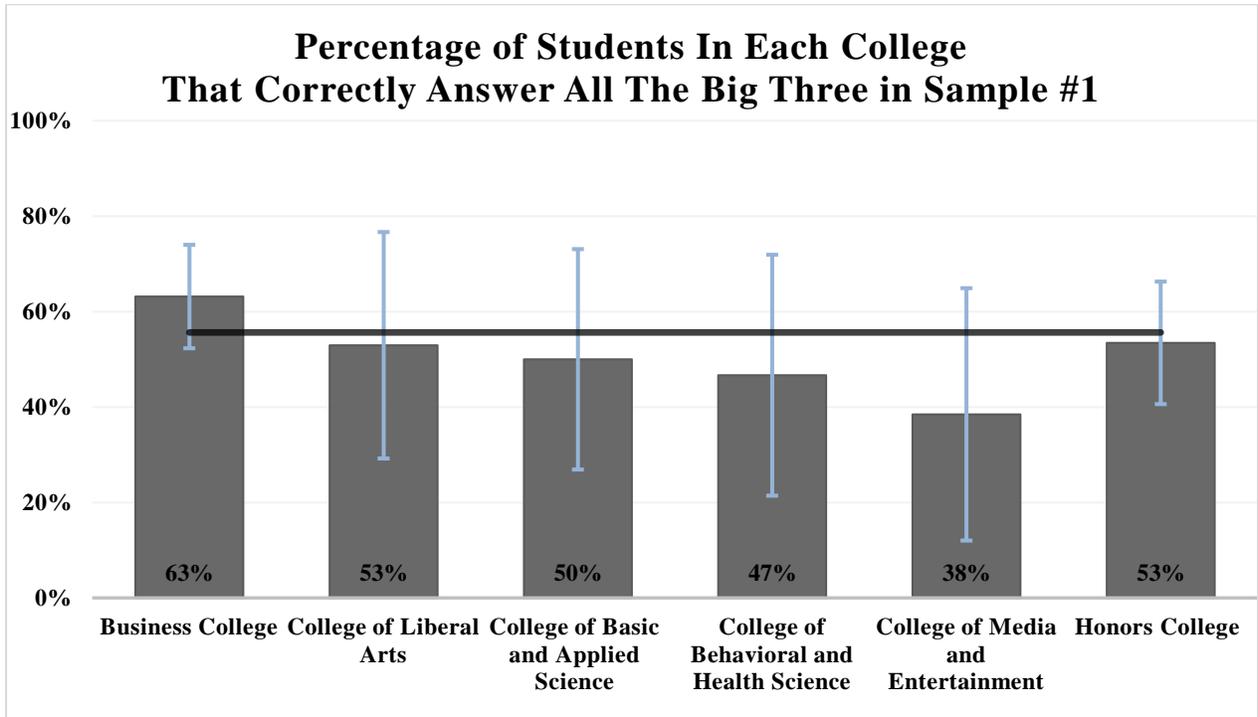


Figure 3

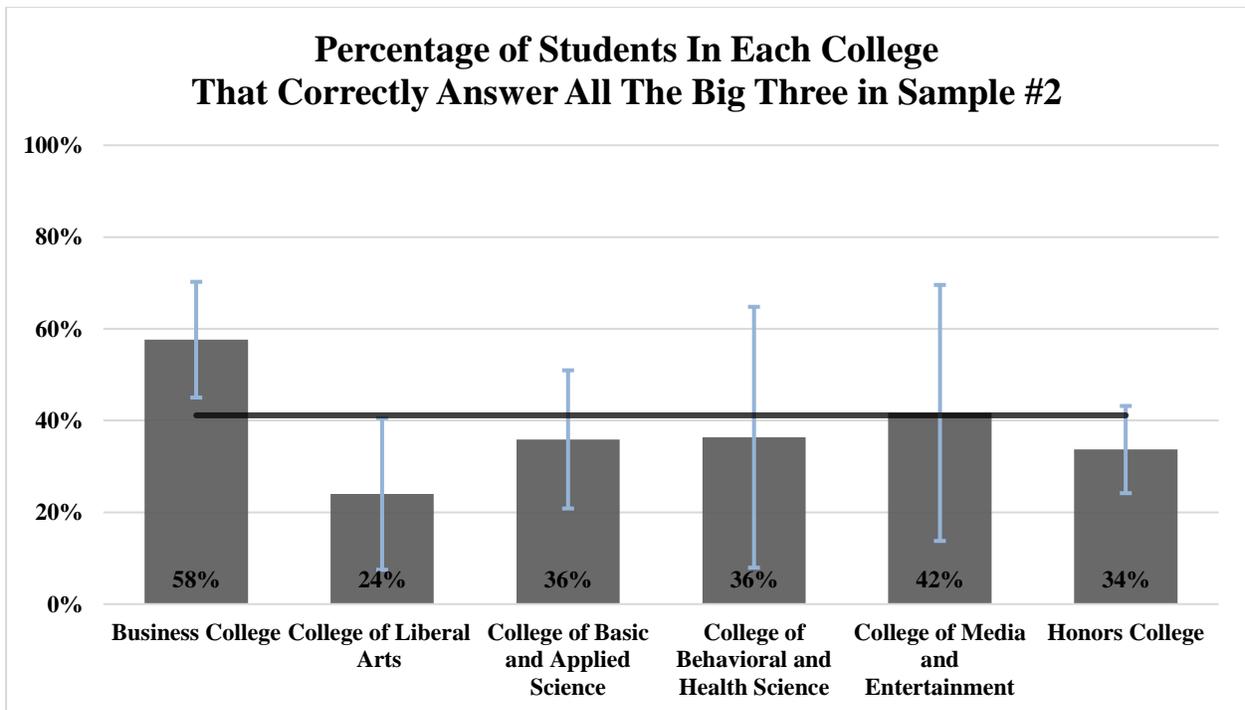


Figure 4

We analyze the results by grade point average (GPA). Figures 5 and 6 illustrate the results of this analysis. Respondents have five categories to self-report their GPA, “4.0-3.5,” “3.5-3.0,” “2.5-3.0,” “2.5-2.0,” and “Less than 2.0.” In both samples most respondents fall in the first category of students, those with 3.5-4.0 GPA. Furthermore, in both samples the number of students who report having less than a 2.0 GPA is too small to analyze; therefore, that group is excluded from this analysis regarding GPA. The results are somewhat surprising because the students who report the best GPA range, 3.5-4.0, do not perform well on the financial literacy questions. In fact, in the first sample they perform the worst with only 48% answering the Big Three questions correctly. The mid-range GPAs, 3.0-3.5 and 2.5-3.0, perform best, with 68.75% of these students answering all the Big Three questions correctly in Sample #1. In Sample #2, 70% the students with a 2.5-3.0 GPA and 49% of students with 3.0-3.5 GPAs answer the Big Three correctly. Finally, of the students with 2.0-2.5 GPAs, 50% in Sample #1 and 18% in Sample #2 rightly answer all the Big Three questions. Other prior studies show that GPA correlates directly with how accurately students answer the Big Three (Anderson et. al, page 18). The reason for this deviation is further evaluated in section four.

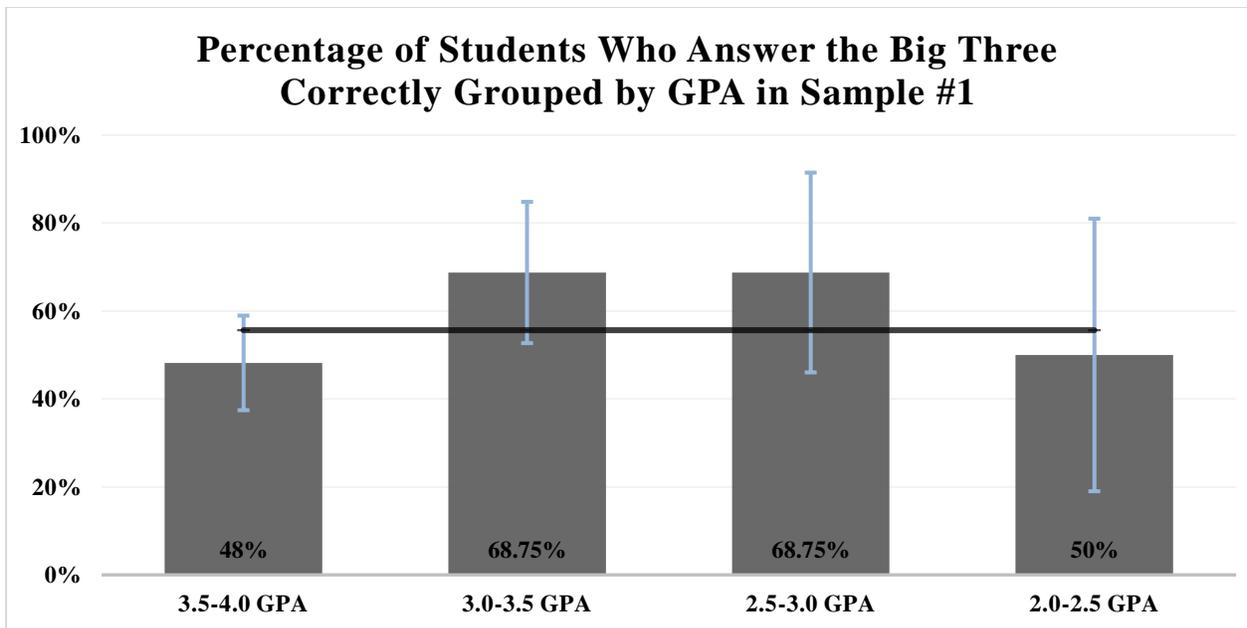


Figure 5

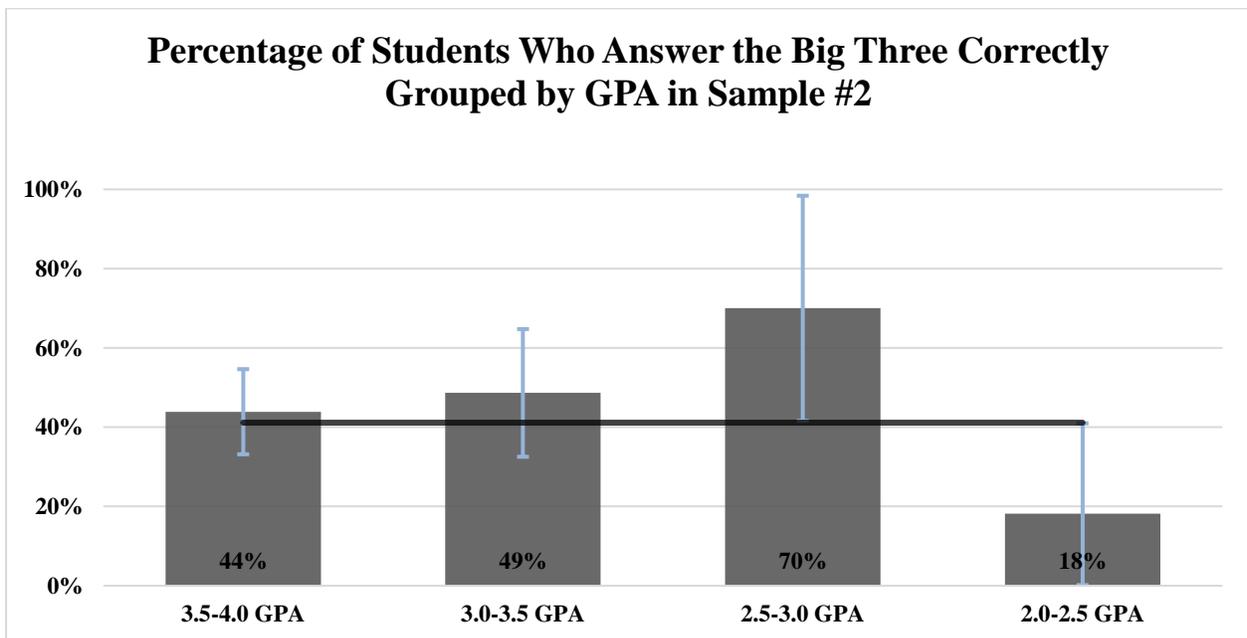


Figure 6

3.2 Do undergraduate students at MTSU understand their student loan debt and its effects on their post-college life?

According to the Institute for College Access & Success, in 2012 an estimated 66% of students graduating from a public college in the United States had student loans (Quick Facts about Student Debt). Our results show that Middle Tennessee State University students fall below the

national average with a Sample #1 and Sample #2 combined average of 39.7% of respondents reporting that they have some student debt. 47.7% say they have no student debt, and 12.7% do not know whether or not they have student debt. Of the students who report having debt, 96 report an approximate guess as to their debt. One of the responses is an outlier that likely has been made in error; therefore, it is excluded from calculating the average. Our results show the average debt of our respondents with debt is \$24,575. The median debt of our respondents with debt is \$20,000.

All the students who answer that they do have student debt are prompted to answer additional questions aimed at determining how well students understand their financial situation. Students are asked to self-report their best guesses as to how much debt they would have upon graduation, what their interest rate is on their loan(s), how many years they will be paying off their loan(s), and what their monthly payment will be when they begin to pay off the loan(s). Most of the students fully completed the next set of questions but three respondents left so many blanks in their responses to questions regarding their debt that those responses are thrown out for this debt analysis. In both Sample #1 and Sample #2, there are 58 usable responses, a total of 116 between the two, for the analysis regarding student debt. This study does not compare students' answers to their actual situation because researchers do not have access to the students' school records and only have their self-reported answers. Nevertheless, in response to many of the questions, students report that they do not have a guess. It is possible that there are more students than just those who reported not having a guess that also do not know but answered the question with a random guess. Thus, the following results are a high-end estimate of how well MTSU students understand their debt.

Most student respondents have guesses regarding how much debt they would have after graduation and how many years they would be paying off said debt. In Sample #1 only 13.79% of

students report not having a guess about the amount of debt they will have upon graduation, and 18.97% of students do not have a guess for how many years they will pay off their debt. Sample #2 has similar numbers, with 13.79% of respondents not having a guess of their debt amount and 29.31% of respondents having no guess in regards to how many years it will take to pay off their debt. However, students do not understand monthly payments or interest rates nearly as well. In both Sample #1 and #2 over 60% of students reveal that they do not know what their interest rate is. Furthermore, 34.48% and 41.38% of students' in Samples #1 and #2, respectively, have no guess as to what their monthly payment will be upon graduation.

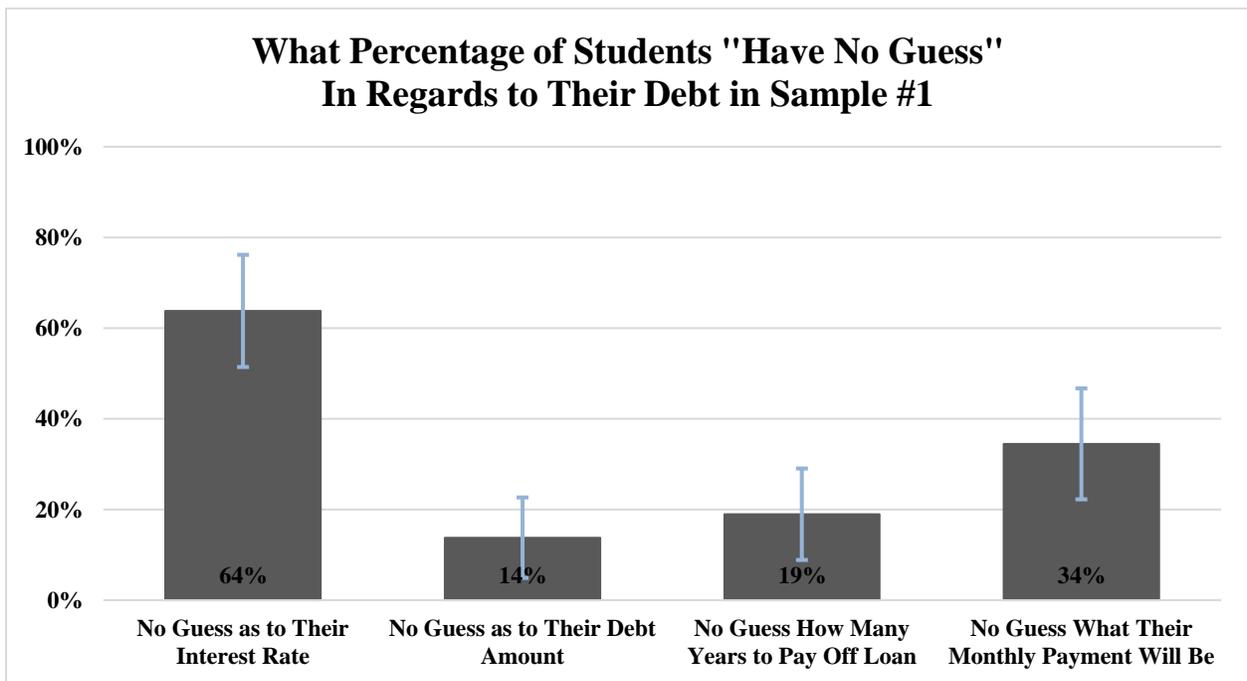


Figure 7

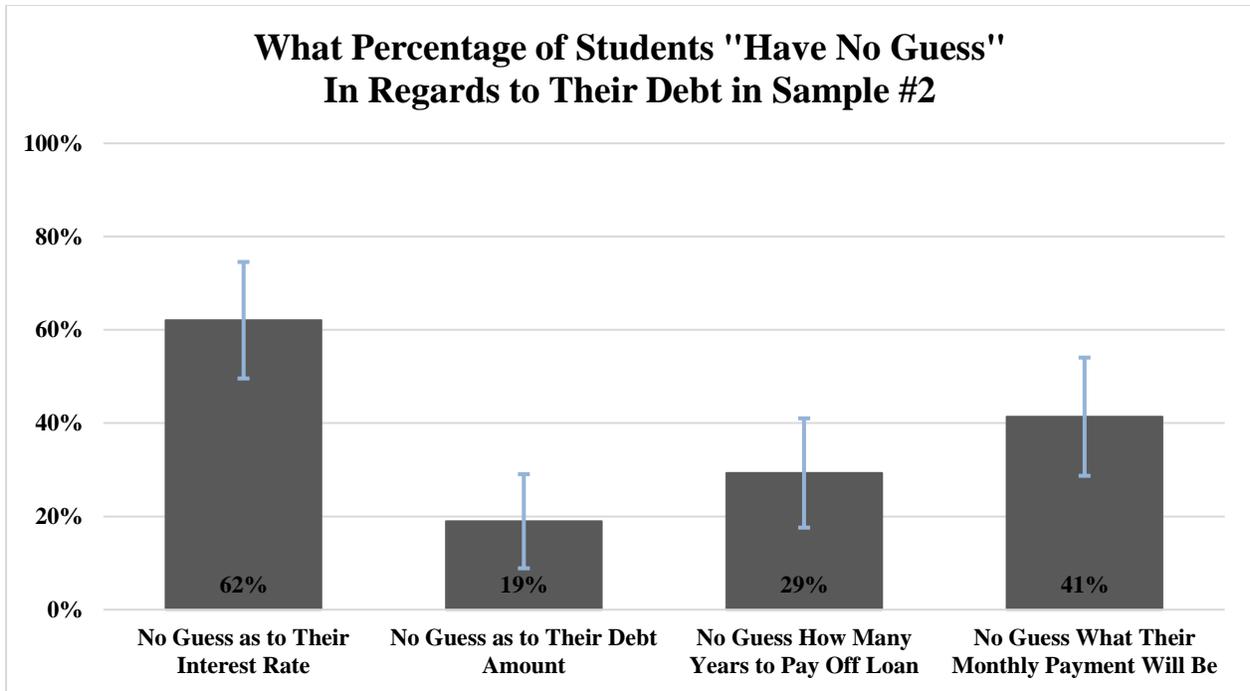


Figure 8

These results are disconcerting because they are directly related to students' financial constraints after college. The average student loan amount reported is \$24,575, and the interest rate for direct subsidized and unsubsidized federal student loans at this time of this analysis is 4.53%. With these terms an average student's loans require monthly payments of more than \$250 over 10 years. Most students must begin paying off their student loans six months after graduation, which means students post-graduation monthly earnings must cover living expenses and student loan repayment. Yet, when students who have debt are asked to guess what they estimate their salary to be after graduation, 22.41% of students in Sample #1 and 31.03% of students in Sample #2 have no guess as to how much money they would be making. That finding means that over one-fourth of students surveyed do not have an understanding of their post-graduation financial circumstances.

3.3 What tools on campus are effective at increasing the financial literacy of MTSU undergraduate students?

Student respondents are asked a few questions regarding what sorts of financial services that have used. If the student has student debt, they are asked whether or not they remember completing entrance counseling. The next question is whether students has completed any other financial counseling. Additionally, students are asked if they have completed or are currently enrolled in any finance classes at Middle Tennessee State University and if so, which class(es).

A federal mandate requires that students must complete entrance counseling before taking out any federal student loans. The typical student fulfills this requirement by completing the entrance counseling online. Yet, prior studies have found that many students have no recollection of the counseling (Whitsett, page 2). The results of our analysis are similarly grim. The combined percentage of students from Sample #1 and Sample #2 that have no recollection of the entrance counseling is 43%. However, those who do remember taking the counseling perform above average in understanding their debt and correctly answering the Big Three. The format of online entrance counseling contains useful information, but it is easy to skim through quickly and is administered in an overwhelming format, all of which makes the experience easy to forget. Nevertheless, students who take the time to read the material carefully and retain it should perform higher than those who do not.

All the students surveyed are asked to report whether they have used any of the following services: “MTSU financial aid services,” “High school personal finance class,” “MTSU written or online financial aid material,” “an ‘Other’ service,” “an ‘Other’ personal finance class,” or “none of the listed services.” Respondents could check multiple services and many students report using a wide variety of the options. Figure 9 and 10 show the percentage of students in Sample #1 and Sample #2 who get all the Big Three questions correct grouped by whether they check having used specific a service. Many students use a combination of multiple services, and each possible

combination is difficult to account for separately. The charts display the results of students who check a specific service as at least one of the services they have used.

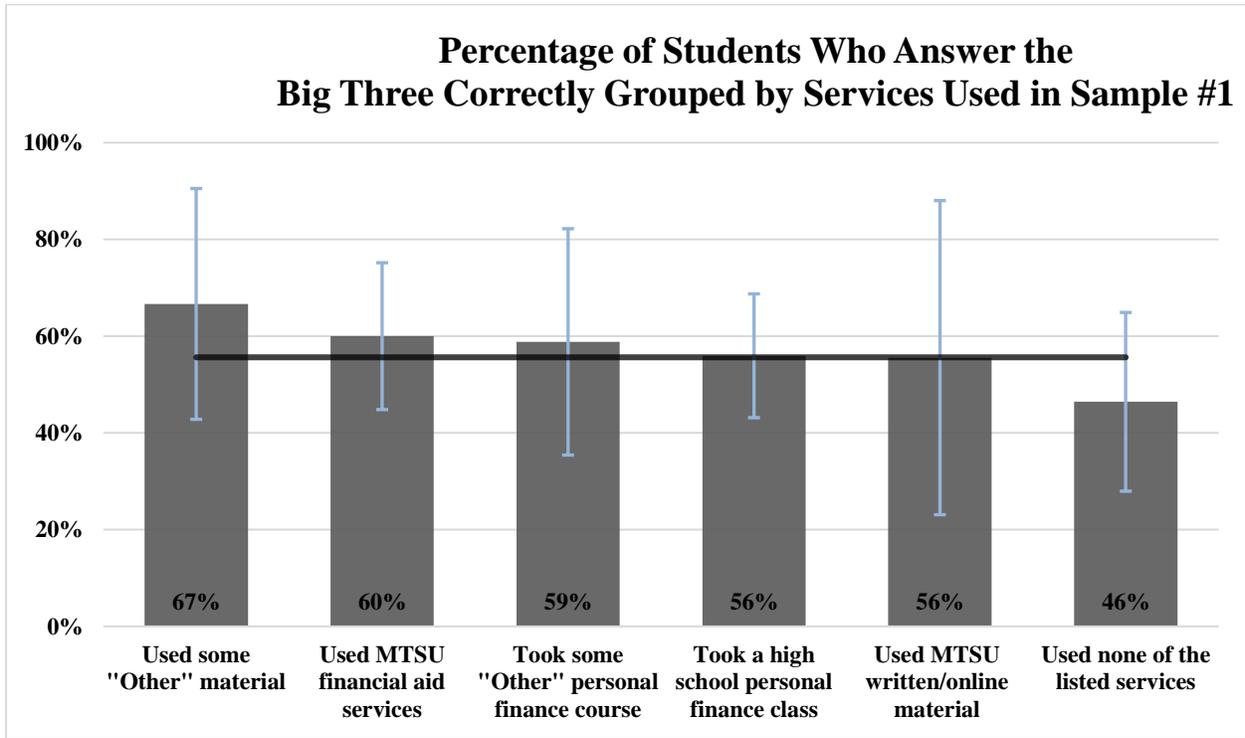


Figure 9

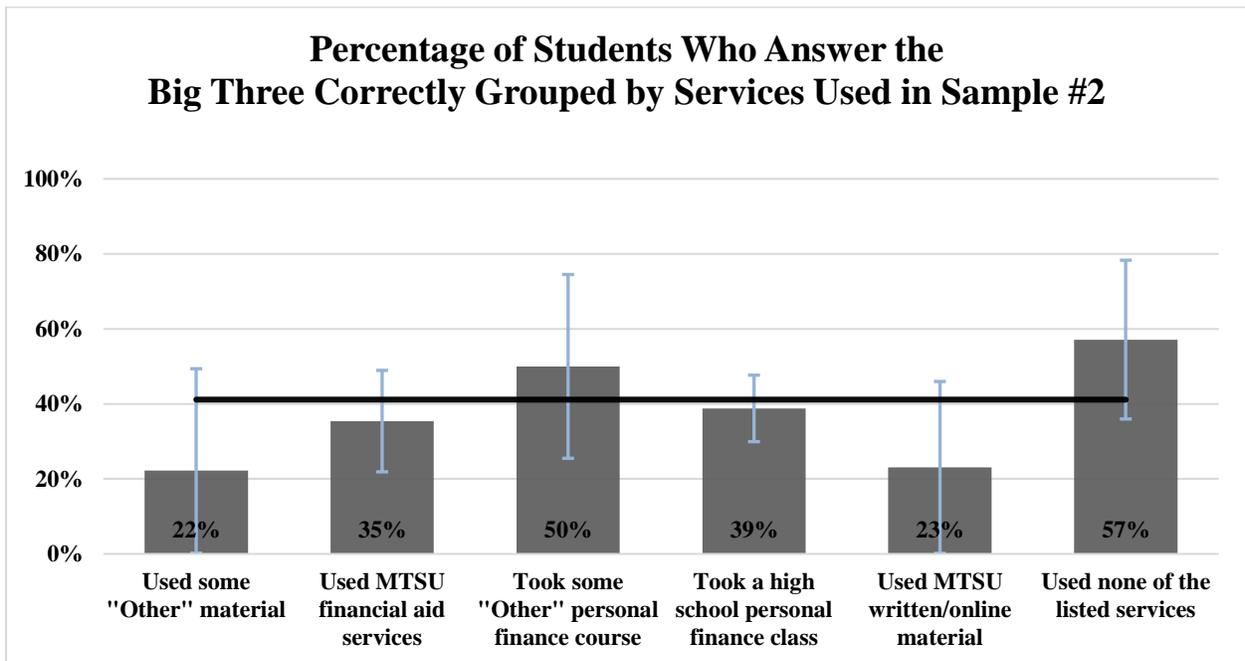


Figure 10

Results from this analysis are very scattered and have small sample sizes, making the confidence intervals large. Sample #1 has a higher percentage of respondents across the board who answer the Big Three questions correctly, but the trends, indicating which services are most beneficial to students, do not have much in common. Many students in both samples indicate they have completed a high school personal finance class, which is a requirement in Tennessee high schools. The students who check taking a high school personal finance class, a total of 174 individuals from both samples, and the students who check having never taken a high school personal finance class, a total of 105 individuals from both samples, are evaluated separately to conclude which set is more likely to answer the Big Three Questions correctly. We conduct a statistical significance test at the 90% confidence level and find that students who have taken a high school personal finance class do not score significantly better than those who have not. In fact, both samples reveal almost identical performance between those who have taken a high school personal finance class and those who have not, as displayed in Table 2 below. These results coincide with similar prior findings that high school personal finance classes play little role in financial literacy (Jump\$tart Coalition for Personal Financial Literacy, 2008).

	No High School Personal Finance	High School Personal Finance
Sample #1	55.17%	55.95%
Sample #2	38.79%	38.10%

Table 2

The most fruitful tool to improve financial literacy of MTSU students is completing an MTSU finance course. The students surveyed have taken a variety of finance classes. For simplicity, they have been broken down into categories: personal finance related classes and other finance classes, which are focused on corporate and business finance. In Sample #1 there are 43 students who report that they have been enrolled or are currently enrolled in a non-personal finance class and are not taking a personal finance class. 41 students have been enrolled or are currently enrolled in

a personal finance class. Many of these students are also taking other finance classes. 58 students have never, at any point, been enrolled in a college finance class of any type. In Sample #2, which is conducted at the very beginning of the semester, a small number of students are currently enrolled in only non-personal finance classes; therefore, they are grouped in with the students that are in the beginning of a personal finance class. The numbers from Sample #2 are as follows, 62 respondents are currently taking a finance class. 94 are not enrolled and have never taken a finance class, and 26 students have previously taken a finance class. Figures 11 and 12 display the results of students' performance on the Big Three questions based on what classes they have completed in Sample #1 and/or are currently taking in Sample #2.

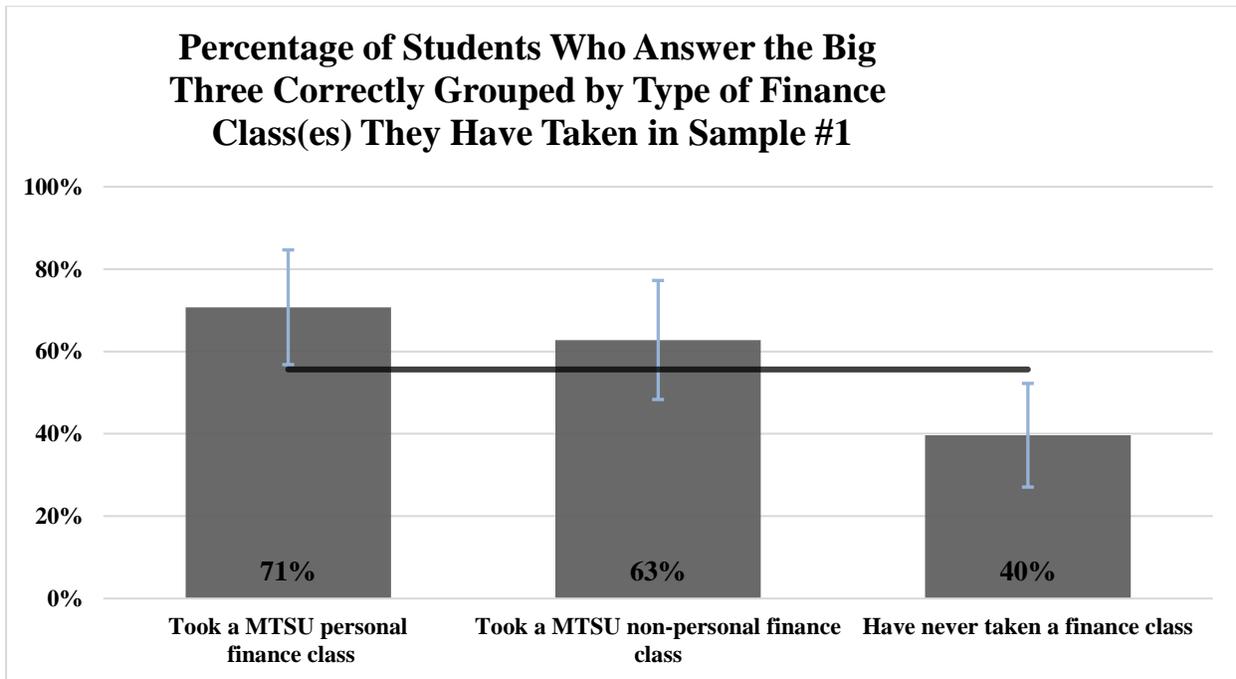


Figure 11

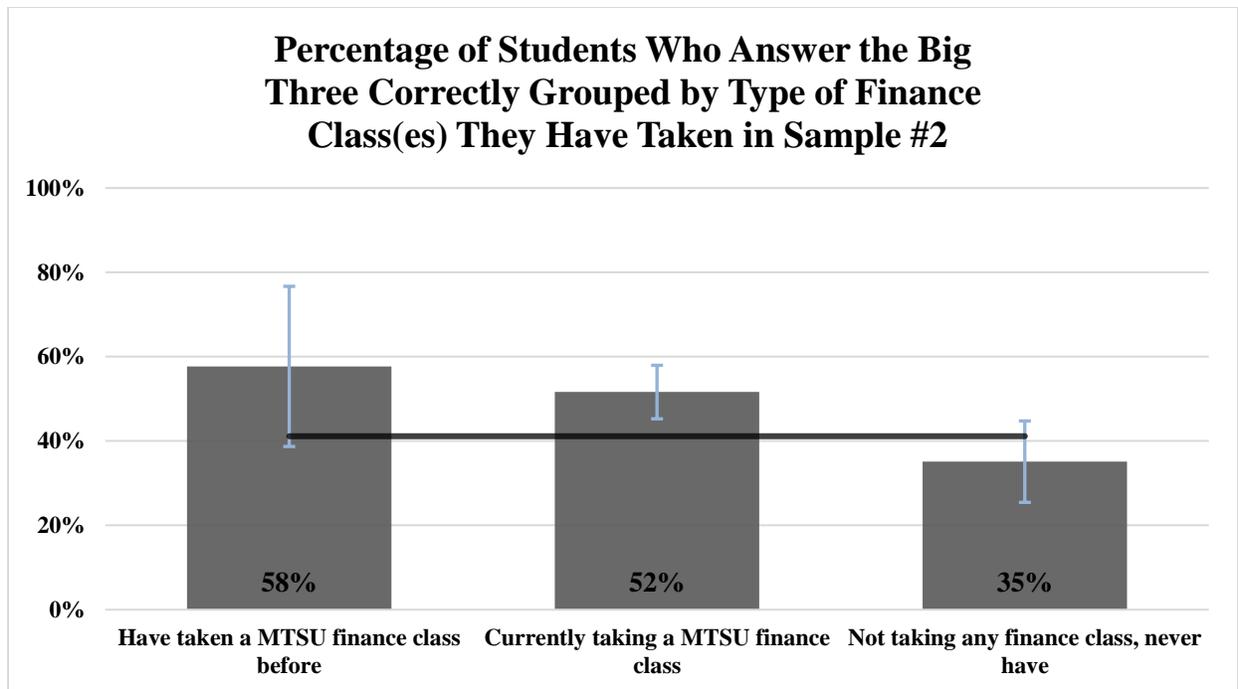


Figure 12

In both the samples, students who have completed a finance class, specially a personal finance course, perform above average on the Big Three questions. The results imply that college personal finance classes are effective at increasing financial literacy. To further validate this finding, we run statistical significance tests between the results from students who have completed a personal finance or other finance class at MTSU and those who have never taken a college finance class. From both samples, we conclude with a 99% confidence level that respondents who complete any type of college finance class are significantly more likely to answer the Big Three questions correctly than respondents who have not completed any college finance class.

Figure 12 indicates that students currently enrolled in a college personal finance class perform above average, which invites the question, “Are students positively influenced by finance classes, or is it just the type of students in finance classes that perform well on financial literacy test?” First, 39% of the students currently enrolled in a finance class have previously taken a finance class in the past. Second, 77% of the students that are currently enrolled in a finance class

are business students. Those two factors are indicators that the respondents from the sample would perform above average. Furthermore, a statistical significance test is run to compare the percentage of students in a personal finance class who answer the Big Three questions correct in Sample #1, after they have completed most of the course, and Sample #2, as they are beginning the course. Using a 95% confidence level, the results from Sample #1 were statistically significantly higher than those from Sample #2. That statistical test adds to the evidence that it is not just the type of students but the actual completion of a Middle Tennessee State University personal finance class that significantly increases students' financial literacy.

4. Discussion

The results of this research have a clear theme running through the data: students who took a Middle Tennessee State University finance course were more likely to be financially literate. The first place this theme is evident is in the fact that business students performed the best on the Big Three questions. This trend is not unique to MTSU (Anderson et. al, page 18). Furthermore, among non-business majors having completed a finance class greatly increases students' performance on the Big Three questions. The place this is the most evident is in Sample #1 because this sample has a considerable number of non-business students who are finishing a semester of a personal finance class. There are a total 66 students in Sample #1 who are non-business majors, and within that group 18 of those students took a college personal finance class. The other 48 of them are not enrolled in a personal finance class. Of the non-business students who have taken a Middle Tennessee State University personal finance class, 83.33% answer the Big Three completely correct. However, in the sample of non-business students who have never taken a personal finance course, the performance was far poorer with only 33.33% of students being able to correctly

answer all the Big Three questions. Once again in a test of statistical significance, we find with 99% confidence that the non-business students who have completed a college personal finance course are significantly more likely to answer the Big Three correctly than the non-business students who have not had a personal finance course.

In analysis of the first main research question, a curious result appears in Sample #1: students with the best GPAs perform the worst on the Big Three questions. Additional analysis reveals multiple factors that explain this curious result. First, in the sample of students with a 3.5-4.0 GPAs, there are significantly fewer business students with 54% in the whole sample and only 41% in this subset. Additionally, the students in this top bracket of GPAs include many more freshmen and sophomores. Finally, for reasons unknown most students with 3.5-4.0 GPAs have not taken a finance course. In the original sample only 40.14% have not taken a finance course, but in this 3.5-4.0 GPA sample of students, 56.63% have not taken a finance course. These additional results suggest that the typical standard of higher school performance is not directly correlated to financial literacy but rather that financial literacy is a learned skill.

As stated previously MTSU students score far above average on the Big Three questions. 55.63% of students in Sample #1 and 41.14% of students in Sample #2 answer all the Big Three correctly. The positive correlation between college finance course completion and financial literacy is one of the main reasons the average in Sample #1 is so high. In Sample #1 of the total of 142 respondents to this survey, 59.86% have completed an MTSU finance class. The second sample, in which the average is almost 15 percentage points lower, only 16.46% of students have completed a finance class. Furthermore, in both Sample #1 and Sample #2 the majority of students are business majors. Therefore, the average literacy levels in these samples are higher than national averages. Recall that for Sample #1 the survey was dispersed during the last weeks of the semester.

Many of the students who completed the survey had freshly completed their aforementioned finance class. Perhaps the information learned in these classes may completely fade away over the long term similar to the information learned in high school personal finance. However, unlike in high school personal finance, the information students learn in a college personal finance course more closely connects to their financial decisions they face outside the classroom in that stage of life. Memory of a college personal finance class may fade, but it will likely be retained longer than high school personal finance classes do because it is more applicable to students' lives in college than in high school. Future research should test the long-term retention of the material learned in a college finance class.

Many students are lacking critical knowledge about their student loans. We test if completing a college personal finance course is correlated to students' level of knowledge of their own student debt. General college finance classes are excluded from this analysis because typically business finance classes do not teach students about their personal financial situation. Furthermore, we use only data from Sample #1 because Sample #2's data is gathered at the beginning of the semester and only four students in Sample #2 reported completing a personal finance class. In response to two of the four questions, students' who had taken a personal finance class were statistically significantly more likely to have knowledge about their debt. These results are shown in Table 3. In all cases the students who did not take a finance class are more likely to report that they had "no guess" in response to questions about their debt. However, only in the responses to the questions about years until loan payoff and monthly payment amount are the results statistically significant, with a 90% and a 99% confidence level respectively. A larger future study is needed to understand what other methods increase students' knowledge of their debt. A challenge for

future research will continue to be limited access to confidential student debt records; surveys can only rely on self-reported information, which is difficult to verify.

	"No Guess" on Interest Rate	"No Guess" on Debt Amount	"No Guess" on How Many Years to Payoff Loan	"No Guess" on Monthly Payment
Have Taken a Personal Finance Class	65%	15%	15%	20%
Never Taken Any Type of Finance Class	83.3%	22.2%	40.0%	73.3%
Z-Statistic from Significance Test	1.33	0.57	1.78	3.88

Table 3

5. Conclusion

The three main research questions that this study answers are: “What are the financial literacy levels of undergraduate MTSU students?”; “Do undergraduate students at MTSU understand their student loan debt and its effects on their post-college life?”; and “What tools on campus are effective at increasing the financial literacy of MTSU undergraduate students?” Our results show that the financial literacy levels of students at Middle Tennessee State University are higher than average with 55.63% in Sample #1 and 41.14% in Sample #2 answering all the Big Three questions correctly. Two likely reasons for this high average are the high number of students in the samples who are either business majors and/or have taken a finance class. We strongly conclude that completing a finance course raises students’ financial literacy. Student respondents who have completed a personal finance course are more likely to understand how much debt they would have upon graduation and how long it may take to pay off the debt. However, most students are unaware of their interest rates or expected monthly payments. Student loan entrance counseling

does not appear to have an effect on students' loan knowledge or financial literacy likely because only 57% of students with debt remember taking the counseling, despite the fact that it is mandated for all students who use federal student loans.

With the national student debt crisis growing, implementing efficacious policies to improve students' knowledge of personal finances and their student debt is imperative. Additional research is needed on the topic of how to inform students most effectively about important financial topics such as debt, interest, inflation, and investing. This study adds support to the growing body of literature finding that college finance classes are powerful resources to improve financial literacy and decision making (Hathaway et. al, 2008. Martinez, 2016. Fox et. al, 2005).

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Appendix A - Survey Instrument

Primary Investigator: Montgomery Barreto

PI Department & College: Accounting, Jones College of Business

Faculty Advisor: Keith Gamble

Protocol Title: Analyzing Financial Literacy Among Undergraduate Students and Current Methods of Increasing Financial Literacy

Protocol ID: 19-1218 Approval Date: 4/9/19 Expiration Date: N/A

Information and Disclosure Section

1. **Purpose:** This research project is designed to help us evaluate student's knowledge on personal finance topics and compare different methods on campus aimed at improving student's personal finance knowledge.
2. **Description:** Completion of a survey.
3. **Duration:** The whole activity should take about 5-10 minutes. The participants must at least take 0 minutes.

Here are your rights as a participant:

Your participation in this research is voluntary.

You may skip any item that you don't want to answer, and you may stop the survey at any time.

If you leave an item blank by either not clicking or entering a response, you may be warned that you missed one, just in case it was an accident. But you can continue the study without entering a response if you didn't want to answer any questions.

Some items may require a response to accurately present the survey.

4. **Risks & Discomforts:** There are minimal risks to participating in this survey. No sensitive data will be collected. No personally identifiable data will be collected.

5. **Benefits:** Researchers will have better data regarding MTSU student's personal finance knowledge and the best methods for improving student's knowledge on personal finance. Some students, in participating classes, may obtain extra credit for completing this survey. Withdrawal is permitted at anytime.

6. **Identifiable Information:** You will NOT be asked to provide identifiable personal information.

7. **Compensation:** None

8. **Confidentiality:** All efforts, within reason, will be made to keep the personal information private, but total privacy cannot be promised. Your information may be shared with MTSU or

the government, such as the Middle Tennessee State University Institutional Review Board, Federal Government Office for Human Research Protections, if you or someone else is in danger or if we are required to do so by law.

9. Contact Information. If you should have any questions about this research study or possibly injury, please feel free to contact Montgomery Barreto by telephone 865-203-3809 or by email mrb9c@mtmail.mtsu.edu OR my faculty advisor Keith Gamble at 615-494-8613 or Keith.Gamble@mtsu.edu. You can also contact the MTSU Office of Compliance via telephone 615-494-8918 or by email to compliance@mtsu.edu. This contact information will be presented again at the end of the survey.

Participant Response Section (Please select all that apply.)

- I have read this informed consent document pertaining to the above identified research
- The research procedures to be conducted are clear to me
- I confirm that I am 18 years or older
- I am aware of the potential Risks of the Study

By clicking below, I affirm that I freely and voluntarily choose to participate in this study. I understand I can withdraw from this study at any time without facing any consequences.

- No, I do not consent
- Yes, I consent

1. How did you hear about this survey?

2. Please select your academic classification.

- Freshman
- Sophomore
- Junior
- Senior
- Other

3. Please provide your major. _____

4. Are you an MTSU honors student?

5. Please select your approximate GPA range.

- Less than 2.0
- 2.0 - 2.5
- 2.5 - 3.0
- 3.0 - 3.5
- 3.5 - 4.0
- Don't know

6. Suppose you had \$100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?

- More than \$102
- Exactly \$102
- Less than \$102
- Don't know

7. Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, with the money in this account, would you be able to buy...

- More than today
- Exactly the same as today
- Less than today
- Don't know

8. Do you think the following statement is true or false? Buying a single company stock usually provides a safer return than a stock mutual fund.

- True
- False
- Don't know

9. Who usually completes your FAFSA each year?

- I complete it.
- A parent or guardian completes it.
- I complete it with a parent or guardian.
- Other
- Don't know

10. Does someone claim you as a dependent on their taxes or do you claim yourself?

- I am claimed as a dependent.
- I claim myself.
- Don't know

11. What is the approximate entry level salary for careers in your major? (You may also enter "I have no guess.") _____

12. Have you taken or are currently taking any of the following college courses?

- Principles of Corporate Finance (FIN 3010)
- Principles of Corporate Finance (FIN 3010) online
- Personal Financial Planning (FIN 2010)
- Personal Financial Planning (FIN 2010) online
- Survey of Finance (FIN 3000)
- Survey of Finance (FIN 3000) online
- Personal Finance (FCSE 1400)

- Personal Finance (FCSE 1400) online
- None of the above

13. Have you used or completed any other financial services (Check all that apply)

- High school personal finance class
- Other personal finance course(s)
- MTSU financial aid services
- Written or online material provided by MTSU
- Other
- None of the above

14. What, if any, has had a positive influence on your spending, saving, investing, or borrowing habits? (Check all that apply.)

- College business or finance course
- High school personal finance course
- Financial aid services
- Written or online financial education material provided by MTSU
- Family or upbringing
- Own personal research

15. Will you have student debt upon graduation?

- Yes
- No
- Don't know

16. How confident are you in your knowledge of student loans and how they work?

- Very confident
- Confident
- Somewhat confident
- Not at all confident

17. Approximately how much student debt do you expect to have at graduation? (You may also enter "I have no guess.") _____

18. What is the annual interest rate on your student loan? (You may also enter "I have no guess.")

19. What type of student loan(s) do you have? (Check all that apply.)

- Federal Subsidized Loan
- Federal Unsubsidized Loan
- Federal PLUS Loan
- Private loan
- Other loan

- Don't know

20. Do you borrow the maximum amount you could borrow each semester?

- Yes
- No
- Only in some semesters
- Don't know

21. How many years after graduation do you anticipate to be paying off your student debt? (You may also enter "I have no guess.") _____

22. When you begin paying off your student debt, what do you expect your average monthly payment to be? (You may also enter "I have no guess.") _____

Every individual who receives a federal financial loan is required to complete entrance counseling, which is usually administered online. If you will have any student debt upon graduation please answer the following questions.

23. Do you remember taking entrance counseling?

- Yes
- No or unsure

24. When did you take the entrance counseling? (You may also enter "I have no guess.")

25. Did you complete the counseling yourself or did another individual complete the requirements? (Choose all that apply.)

- I completed it myself.
- My parent or guardian completed it.
- Other
- Don't know

26. Did completing the counseling cause you to make adjustments to your borrowing for school?

- Yes
- No
- Don't know

27. Outside of the financial aid entrance or exit exam have you done your own research or reading on student loan information?

- Yes
- No
- Don't know

28. Approximately how much time have you spend researching student loan information? (You may also enter "I have no guess.") _____