

Analyzing Financial Literacy Among Undergraduate Students

and

Current Methods of Increasing Financial Literacy

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## **Abstract**

This study examines the financial literacy levels of students at Middle Tennessee State University and the best tools on campus to increase students' knowledge of basic financial topics and their own student debt. A survey was administered across campus to students in multiple finance classes and to the general population of students. The survey was administered twice, once at the end of the Spring 2019 semester and once at the beginning of the Fall 2019 semester. The first set of data includes a total of 142 completed surveys. Results showed that students had a higher than average financial literacy level, with 55.63% of students being able to correctly answer all the Big Three questions. The results from the second round of collection, in Fall 2019, are less favorable with 41.14% of students correctly answering all the Big Three questions. There were mixed results regarding respondents' understanding of their own student loan debt with some aspects being almost fully understood and others being vastly misunderstood. The most effective instrument on campus to help students improve their literacy was found to be the completion of a finance course. Respondents who said they had completed a Middle Tennessee State University finance class were significantly more likely to answer the Big Three questions correctly and more likely to understand their own student loan debt.

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## **Introduction**

High schoolers face numerous life-altering decisions upon graduation. 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 and what 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 are facing more financial choices at this age than any other generation before them. The financial decisions that are made during college and directly after graduation have effects lasting years and often times decades. Scholars are aware of how important it is for college students to be financially literate and have been rigorously researching the 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 people to be knowledgeable about financial activities emerged. As the West has become more modernized, people have had to adapt and learn new financial practices. It 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).

## **The Big Three**

Professors Olivia Mitchell and Annamaria Lusardi are two prominent researchers in the study of financial literacy in the United States. Mitchell and Lusardi are the



pioneers who developed 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 meant 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 correctly answer 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. It is estimated that 66% of students graduates from a public colleges in the United States have student loans (Quick Facts about Student Debt). Interest and other debt principles affect the majority of college students every day.

## **Methods of Increasing Financial Literacy**

Universities are specifically charged with certain financial education requirements. In 1986 the Federal Government mandated that universities require all college students who were accepting a federal loan to complete exit counseling upon graduation or ceased attendance. The 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 is not the only way students at universities learn about financial topics such as interest and student loans. Middle Tennessee State University, in particular, offers dozens of finance classes. Three of the finance classes most relevant to this thesis are Personal Financial Planning (FIN 2010), Survey of Finance (FIN 3000), and Principles of Corporate Finance (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 Corporate Finance is a required course for all business majors. Even though some of these classes do not specifically address personal finances and/or student debt, these classes do cover general topics that the Big Three

questions present, such as interest and investments. At Middle Tennessee State University, in person and online versions of these classes are offered to students.

In addition to mandated loan counseling and academic courses students may also research loans at any time via online tools such as StudentLoan.gov. On the Middle Tennessee State University website, general loan information is provided 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. Between mandated counseling, academic courses, and personal research students at Middle Tennessee State University have numerous financial education resources available to them. However, little research has been conducted in order to determine the effectiveness of these resources.

### **Thesis Statement**

This thesis project examines financial literacy, specifically as it pertains to student loan related concepts, and the effectiveness of existing methods for increasing literacy levels among Middle Tennessee State University undergraduate students.

### **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?

## Methodology

A survey instrument was created and used for the purpose of this research (Appendix A). The questions were general and multiple choice. Questions on the survey addressed the essential elements of student loans and general financial literacy. The survey took approximately five minutes to complete and did not include any complex calculations.

The questions at the beginning of the survey instrument were aimed at providing insight on the first research question, “What are the financial literacy levels of students?” Students started by answering Lusardi and Mitchell’s Big Three questions. The results from these questions laid a foundation for determining how knowledgeable students were when it came to finances. Additionally, Lusardi and Mitchell’s questions have been used in various studies; therefore, it was possible to make comparisons between this sample and those in other research studies. Furthermore, this survey instrument was also designed to discover how much students knew about their current and future financial situation.

The second research question, “Do undergraduate students at MTSU understand their student loan debt and its effects on their post-college life?” is also answered by the data that was provided by the survey. The later part of the survey was tailored to evaluate students’ understanding of their debt. The questions regarding student debt were general questions about the state of student’s debt and 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?” Not only were these kinds of questions relevant to students with loans, they were

also questions students should be able to answer after completing the online entrance counseling.

In order to evaluate the final research question, “What tools on campus are effective at increasing the financial literacy of MTSU undergraduate students?,” two types of questions were asked. First, students that completed the survey reported what kind of financial education they had found most impactful in their lives. Second, students reported what types of financial education they had completed. Analyzing the data has allowed for the identification of correlations between completion of certain programs and higher financial literacy levels.

The survey was administered to a variety of different students on campus. It was dispersed among students in each of the three aforementioned finance classes. In addition to classes on campus, participants were also recruited through an email to students in the Honors College and others heard about the survey via word of mouth.

The survey was distributed online via Qualtrics, which allowed for easy dispersal among classes. In the Spring of 2019, a total 175 responses to the survey were received, 142 of which fully completed and usable responses. The second round of responses were from students who had just started classes in the Fall of 2019 the number of respondents totaled 163, 158 of which were usable. After surveys were administered and collected, the information was reviewed and analyzed in an Excel workbook. The two sets of data were kept and analyzed separately. The Spring 2019 data will be referred to as Sample #1 and Fall 2019 data as Sample #2.

## Results

### 1) What are the financial literacy levels of undergraduate MTSU students?

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

Table 1 depicts the breakdown of each question and the percentage of students who got it right 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 had four possible options as answers “More than \$102,” “Exactly \$102,” “Less than \$102,” and “Don’t know.” The correct answer was “More than \$102.” In both Sample #1 and Sample #2 this question was the one most students answered correctly. 95.07% of students in Sample #1 and 87.97% of students in Sample #2 correctly answered 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...” Once again, there were four possible responses to this question “More than today,” “Exactly the same as today,” “Less than today,” and “Don’t know.” The correct answer was “Less than today.” Responses to the second question were not as favorable as the first, 76.76% of students in Sample #1 and 70.89% of those in Sample #2

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

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

*Table 1*

In addition to a general analysis of the whole data sets, there was analysis done on students by grade, major, and grade point average. There were similar trends found in Sample #1 and Sample #2. For example, students in lower classifications were less likely to correctly answer all the Big Three questions than those in higher classifications. In Sample #1 most of the responses came from seniors with 57 total usable responses from that grade level. The other classification levels were 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.” Sample #2 had different proportions for its demographics with 48 freshmen making up most of the population followed by 44 juniors, 29 seniors, and only 24 sophomores. The charts below (Figures 1 and 2) outline the percentage of students in each grade level that answered all the Big Three questions correctly. Each graph has a line through the bars that indicates the average percentage of students who rightly answered all the Big Three questions in the

respective sample. Additionally, the graphs show statistically calculated confidence intervals for each reported percentage.

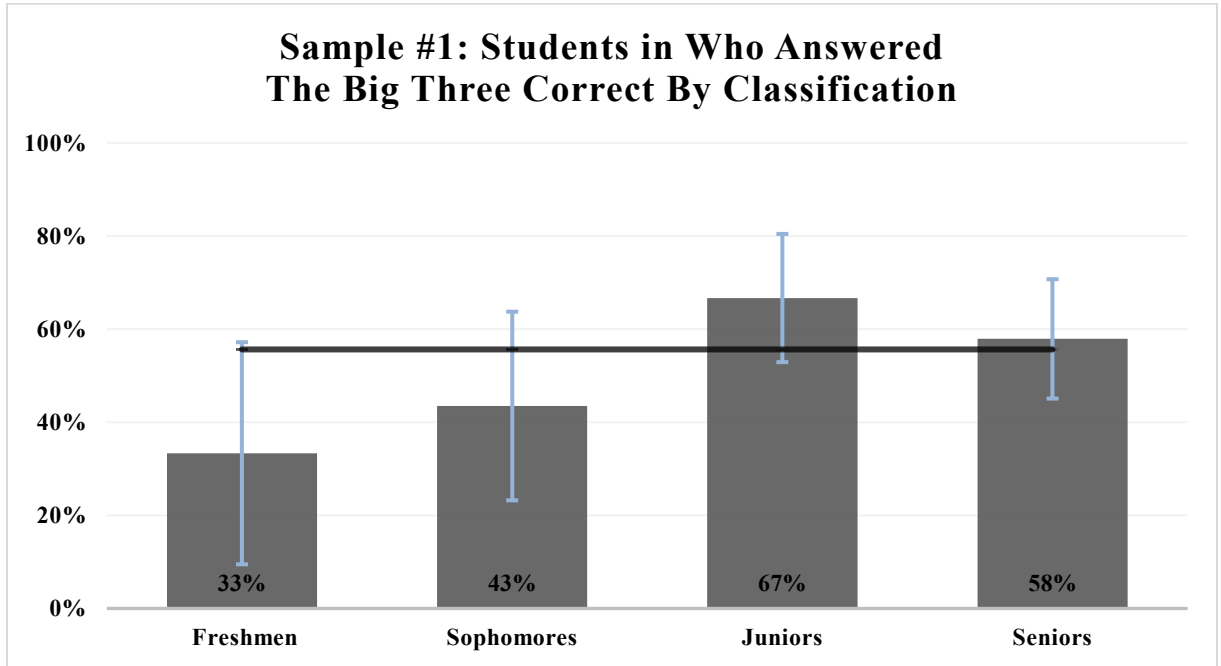


Figure 1

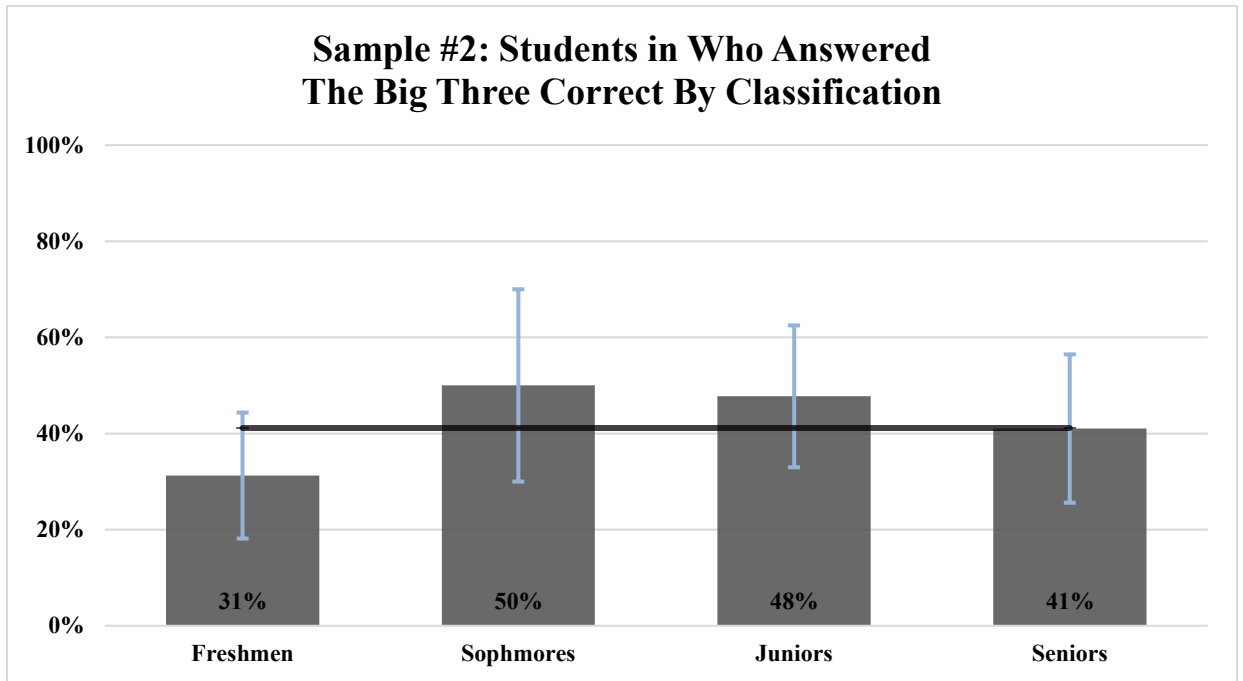


Figure 2



In both samples the freshman performed 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 was varied. In Sample #1 they performed second worst with 43% getting the Big Three correct; however, in Sample #2 they performed the best with 50% providing the right answer for all the Big Three. Because the sample size for the sophomores was relatively small in both samples and the confidence intervals large, anomalies like this are to be expected. Juniors consistently performed well above average, with 67% of students answering the Big Three correct in Sample #1 and 48% in Sample #2. Seniors' financial literacy was 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 were 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](http://mtsu.edu/programs). Usable data was obtained from students in each of the colleges; however, there were a very low number of respondents who were in the College of Education and in the University College. Therefore, those colleges were excluded from this analysis. The other five colleges produced enough students to evaluate. In Sample #1 there were 76 respondents from the Business College, 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 proved to have a similar

breakdown with 59 coming from the Business College, 39 from the College of Basic and Applied Science, 25 from the Liberal Arts College, 11 from the College of Behavioral and Health Sciences, and 12 from Media and Entertainment. The reason that there was an overwhelming number of business students was because the survey was administered in so many finance classes, which are classes that are required for business majors.

Additionally, because the students in Honors College were emailed the survey there were a significant 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 were the most likely to answer all the Big Three correctly. Figures 3 and 4 depict how each of the colleges performed.

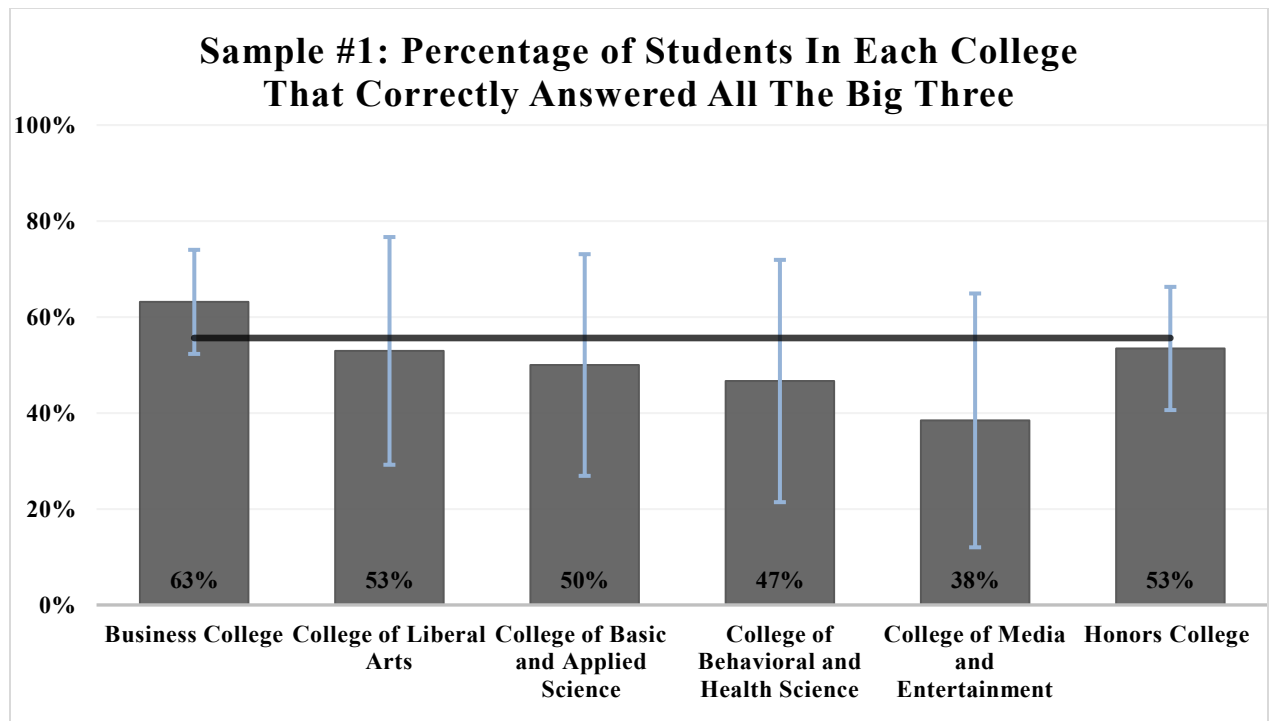


Figure 3

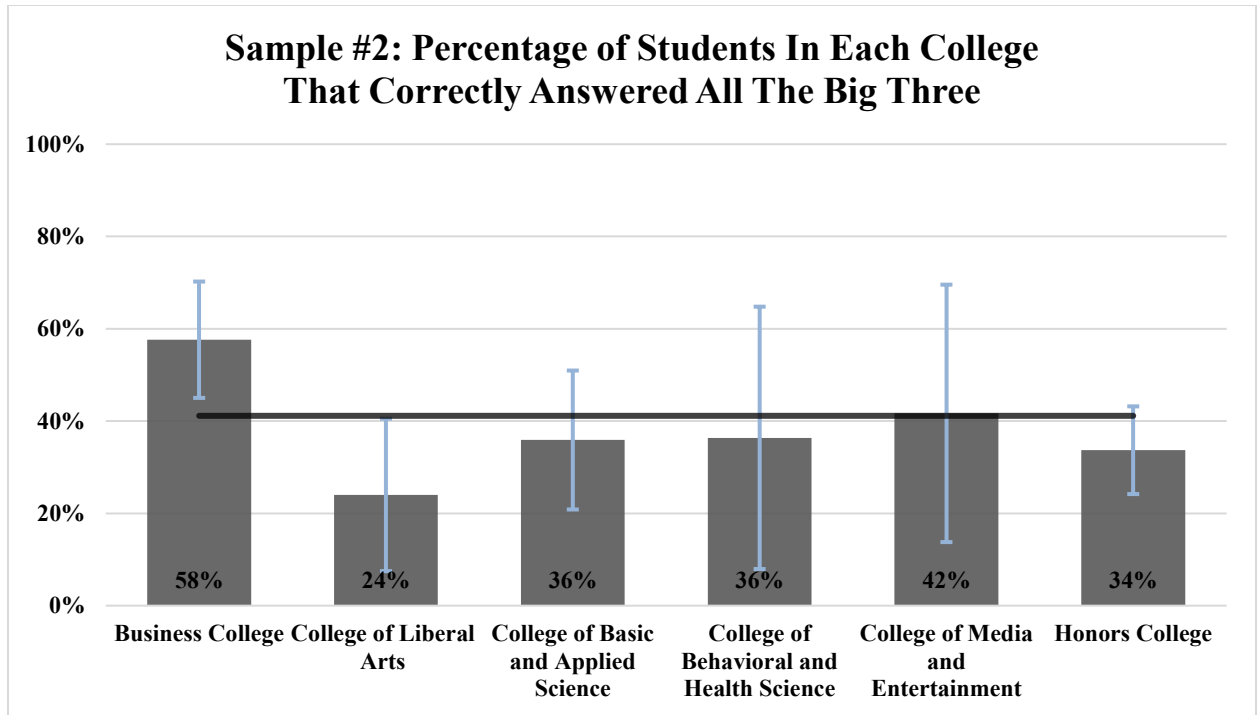


Figure 4

Grade point average (GPA) is the third way the data was evaluated. Figures 5 and 6 illustrate the results of this analysis. Respondents had five options when it came to self-reporting 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 the samples most respondents fell in the first category of students, those with 3.5-4.0 GPA. Furthermore, in both samples the number of students who reported having less than a 2.0 GPA was too small to analyze; therefore, that group is left out of analysis regarding GPA. The results were somewhat surprising because the people with best GPAs, 3.5-4.0, did not perform well. In fact, in the first sample they performed the worst with only 48% of them being able to answer the Big Three questions correctly. The mid-range GPAs, 3.0-3.5 and 2.5-3.0, performed 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 answered the Big Three correctly. Finally, of the students with 2.0-2.5 GPAs, 50% in Sample #1 and 18% in Sample #2 rightly

answered all the Big Three questions. In other studies it has been shown that GPA correlates directly with how accurately students answer the Big Three (Anderson et. Al, page 18). In the discussion section the reason for this deviation is further evaluated.

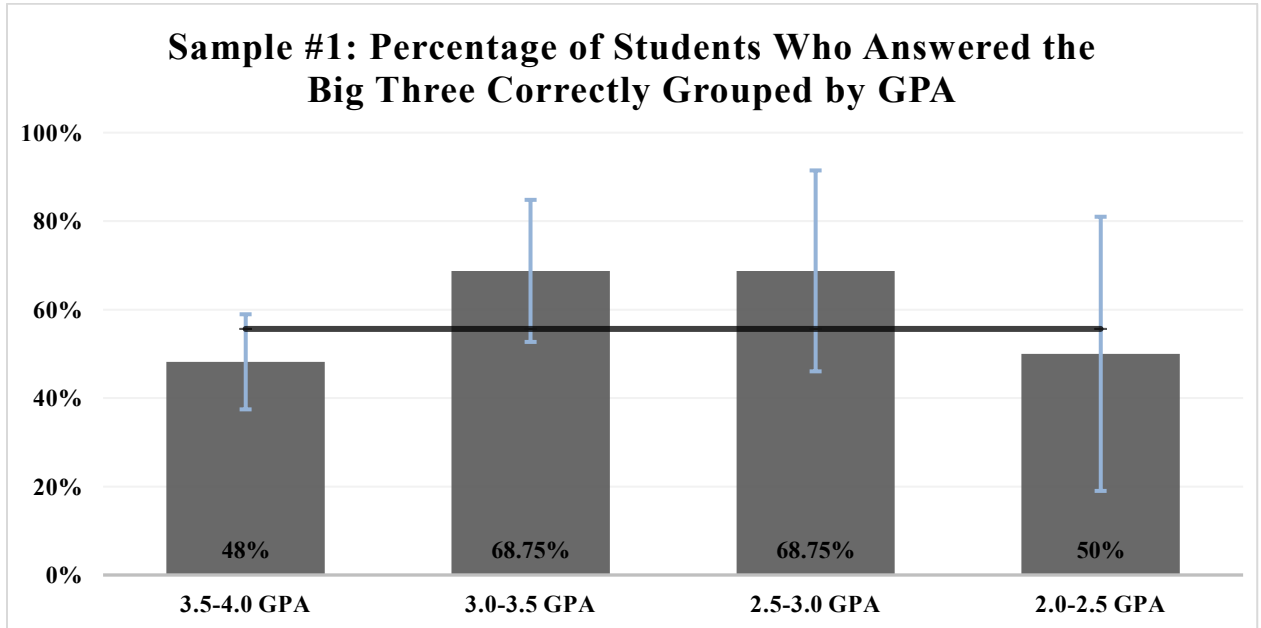


Figure 5

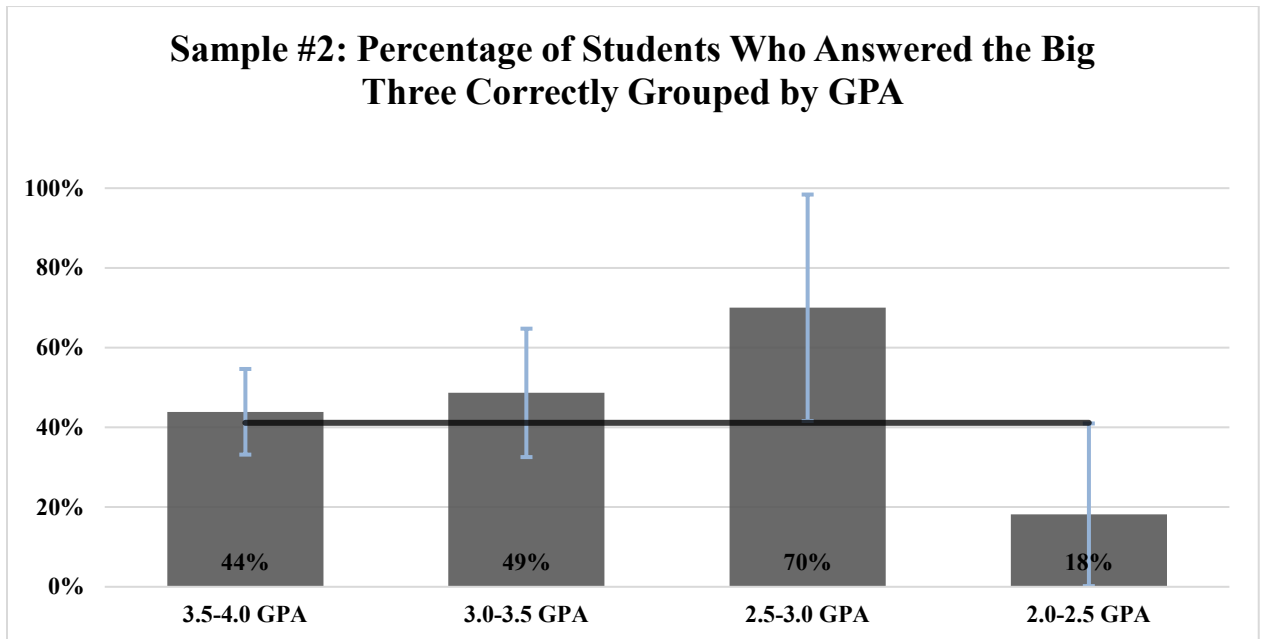


Figure 6

## **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). Results showed 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 had some student debt, 47.7% said they had no student debt, and 12.7% did not know whether or not they had student debt. Of the students who reported having debt, 96 people reported an approximate guess as to their debt. One of the results seemed abnormally high and may have been misreported; therefore, it was excluded from calculating the average. Results showed the average debt of a Middle Tennessee State University student to be \$24,575. The median debt of all the students who reported a guess was \$20,000.

All the students who answered that they did have student debt were prompted to answer an additional series of questions. Among these questions included multiple questions aimed at determining how well students understood their financial situation. Students were asked to self-report their best guesses as to how much debt they would be in upon graduation, what their interest rate is on their loan(s), how many years they will be paying off their loans, and what their monthly payment will be when they begin to pay off the loans. 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 were thrown out for this debt analysis. In Sample #1 and Sample #2 there were 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 did not have access to the students' school records and only had their self-reported answers. Nevertheless, in response to many of the questions students reported that they did not have a guess. It is possible that there were more students than just those who reported not having a guess that also did not know but answered the question with a random guess. Thus, the following results are a very conservative representation of how well students understand their debt.

Most students had 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 reported not having a guess to the amount of debt they will have upon graduation and 18.97% of students did not have a guess for how many years they would pay off their debt. Sample #2 had 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 did not understand monthly payments or interest rates nearly as well. In both Sample #1 and #2 over 60% of students stated that they did not know what their interest rate was. Furthermore, 34.48% and 41.38% of students' in Samples #1 and #2, respectively, had no guess as to what their monthly payment will be upon graduation.

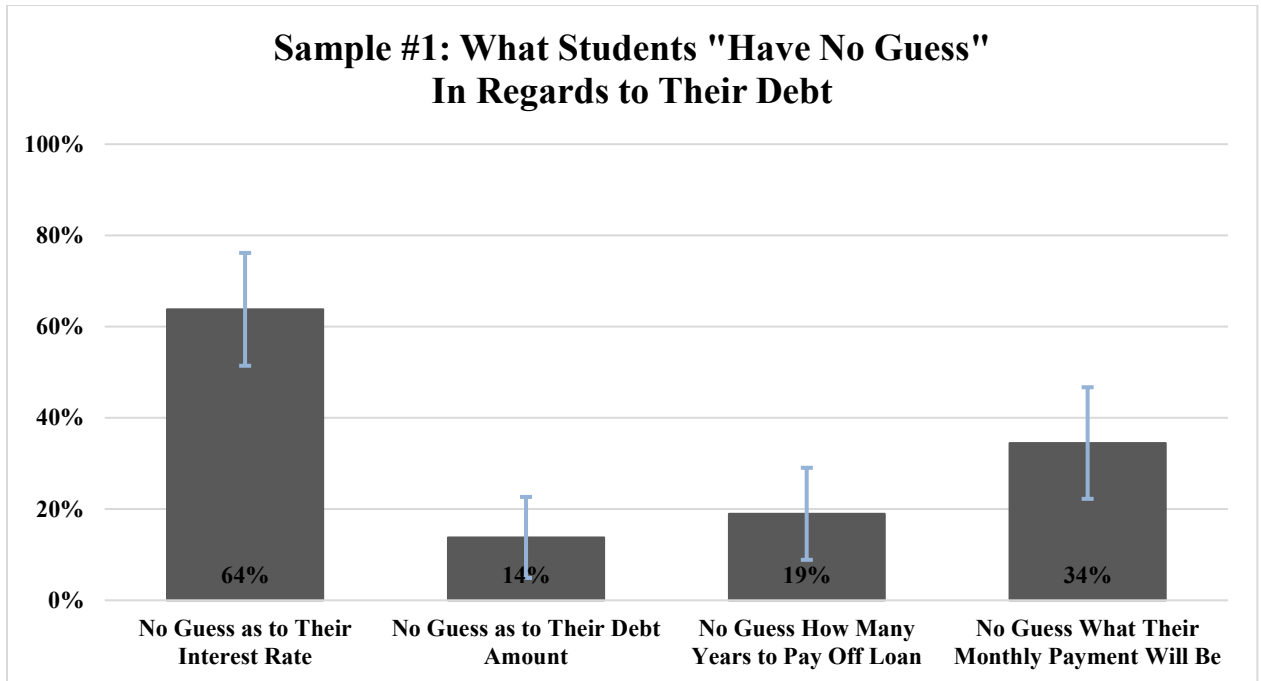


Figure 7

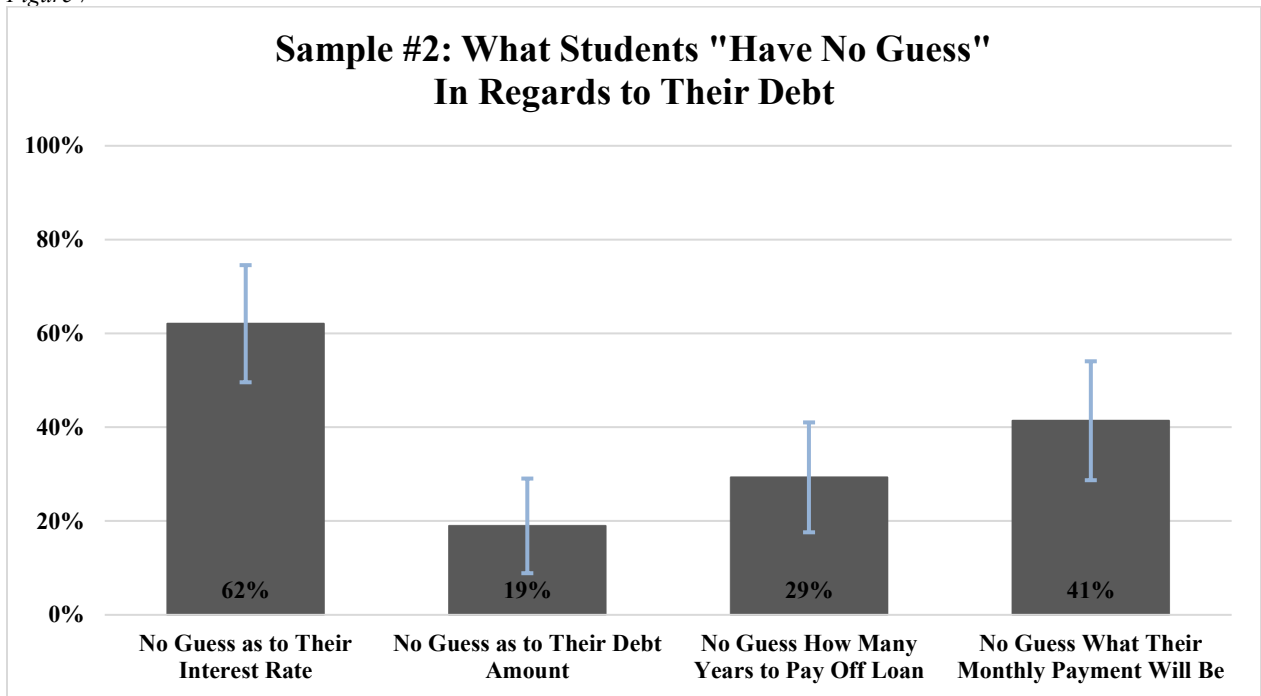


Figure 8

These results are disconcerting because they are directly related to students' after college life. Student loan interest often times takes effect immediately, or directly upon graduation, and it increases the loan amount over time. For example, the average student loan amount was \$24,575 and the current interest rate for direct subsidized and

unsubsidized loans is 4.53%. With those numbers, students' loans accumulate \$1,113 in interest each year, which is almost \$100 a month. This ties directly to the importance of students knowing their monthly payment, since monthly payments only pay off part of the principal amount and are directly paying off interest. Therefore, a student who graduates with \$24,575 in debt could pay \$90 a month and never pay off any of his or her principal loan because they would only be paying interest. Not only are monthly payments correlated to interest rates they are also important in and of themselves because they play such a pivotal role in students' post graduate life. Most students need to begin paying off their student loans six months after graduation, which means students post-graduation monthly earnings needs to cover living expenses and student loan repayment. Yet, when students who had debt were asked to guess what they estimated their salary to be after graduation 22.41% of students in Sample #1 and 31.03% of students in Sample #2 had no guess as to how much money they would be making. That means over one fourth of students surveyed did not have any understanding of their post-graduation finances.

### **3) What tools on campus are effective at increasing the financial literacy of MTSU undergraduate students?**

Students were asked a few questions regarding what sorts of financial services that had used. If the student had student debt, they were asked whether or not they remembered completing entrance counseling. The next question was whether students had completed any other sort of financial service. Most importantly, students were asked if they had completed or were currently enrolled in any finance classes at Middle Tennessee State University and if so, which class(es).



It is federally mandated that students complete entrance counseling before taking out any student loans. The typical student fulfills this requirement by completing it online. Yet, former studies have shown that many students have no recollection of the counseling (Whitsett, page 2). The findings of this study were similarly grim. The combined percentage of students from Sample #1 and Sample #2 that had no recollection of the entrance counseling was 43%. However, those who did remember taking the counseling performed above average when it came to 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 and is administered in an overwhelming format all of which make it easy to forget. Nevertheless, it logically follows that students who took the time to read the material and retained it would perform higher than those who did not.

All the students surveyed were asked to report whether they had 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 reported using a wide variety of the options. Figure 9 and 10 show the percentage of students in Sample #1 and Sample #2 who got all the Big Three questions correct grouped by whether they checked having used specific a service. Many students used a combination of multiple services, and each possible combination would be hard to account for. The charts display the results of students who checked a specific service as at least one of the services they used.

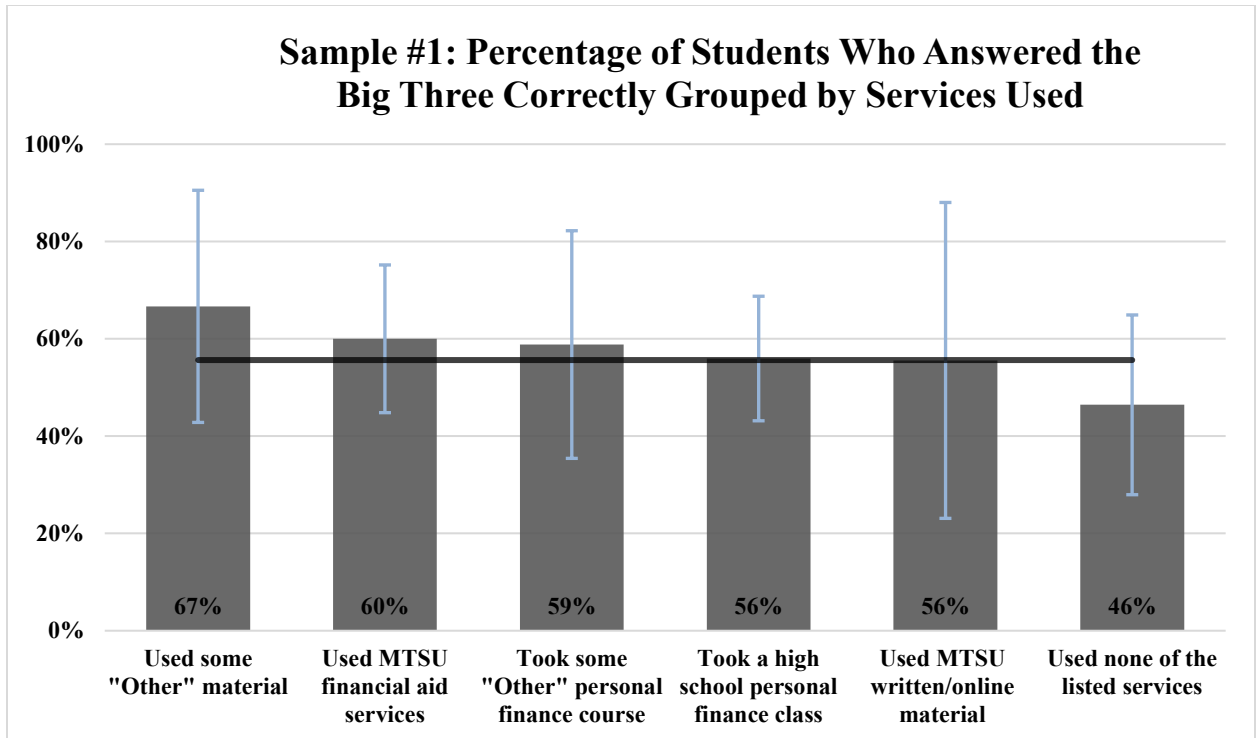


Figure 9

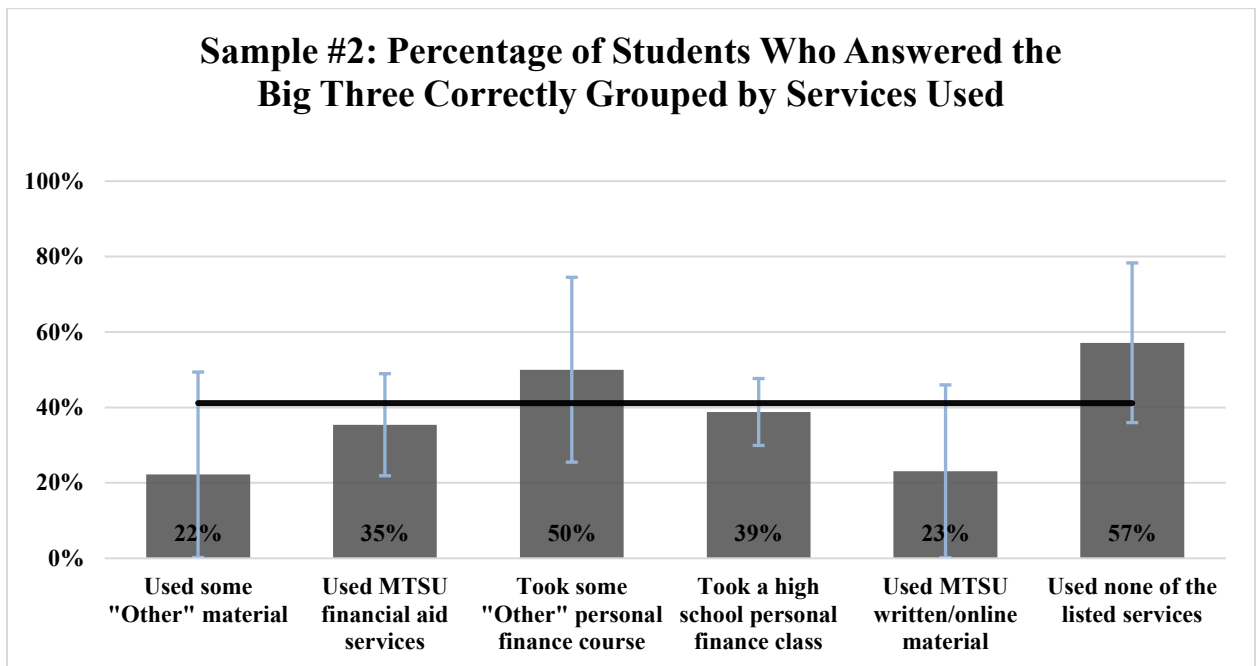


Figure 10

Unfortunately, results from this test were very scattered and had small sample sizes, making the confidence intervals large. Sample #1 had a higher percentage of respondents across the board answer the Big Three questions correctly, but the trends, indicating

which services are be most beneficial to students, do not have much in common. Many students in both samples indicated they had completed a high school personal finance class. The students who had checked taking a high school personal finance class, a total of 174 individuals from both samples, and the students who checked having never taken a high school personal finance class, a total of 105 individuals from both samples, were evaluated separately to conclude which set was more likely to answer the Big Three Questions correctly. A statistical significance test was run at the 90% confidence level and results found that students who had taken a high school personal finance class did not score significantly better than those who had not. In fact, both samples reported almost identical performance between those who had taken a high school personal finance class and those who had not, as displayed in Table 2 below. These results coincide with similar results found determining that high school personal finance classes play little role in financial literacy (JumpStart Coalition for Personal Financial Literacy, 2008).

	<b>No High School Personal Finance</b>	<b>High School Personal Finance</b>
<b>Sample #1</b>	55.17%	55.95%
<b>Sample #2</b>	38.79%	38.10%

*Table 2*

The final, and most fruitful, tool that was tested to determine its effect on financial literacy were finance classes offered by Middle Tennessee State University. The students surveyed had 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 geared more towards corporate and business finance. In Sample #1, there were 43 students who reported that they had been, or were currently, enrolled in a non-personal finance class and were not taking a personal finance class, 41 students had been, or were currently, enrolled in a personal finance class, many of these students were also taking

other finance classes, and 58 students had never, at any point, been enrolled in a finance class of any type. In Sample #2, a small number of students were currently enrolled in only non-personal finance classes; therefore, they were grouped in with the students that were in a personal finance class. The numbers from Sample #2 are as follows, 62 respondents were currently taking a finance class, 94 were not enrolled and had never taken a finance class, and 26 students had 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 complete, in Sample #1, and/or are currently taking, in Sample #2.

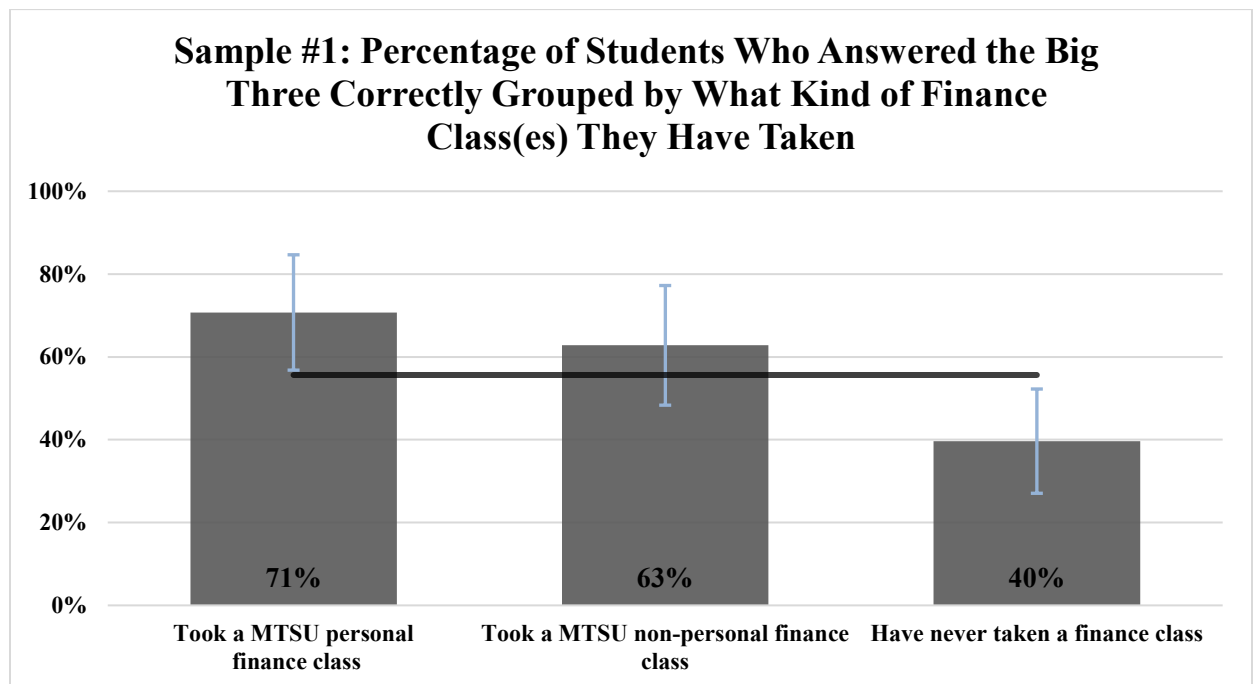


Figure 11

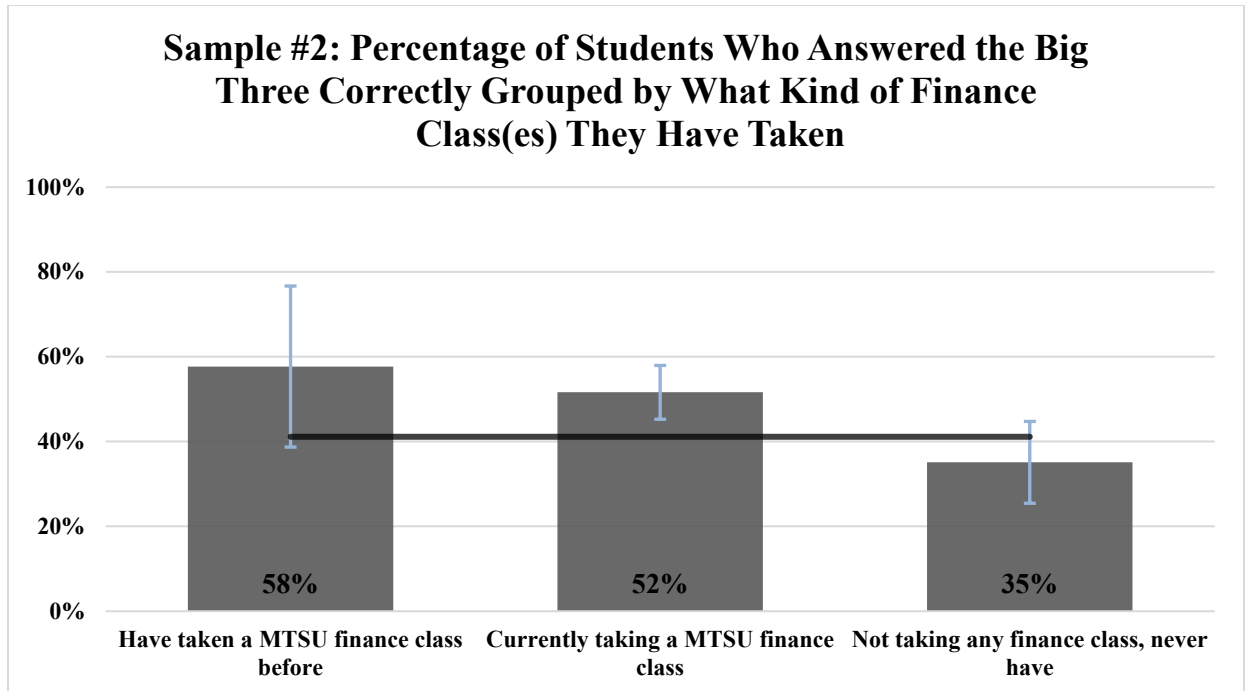


Figure 12

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

Figure 12 indicates that students currently enrolled in a college personal finance class perform above average, which begs 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?” To answer this question, a deeper look was taken into the data and two important things were found. First, 39% of the students currently enrolled in a finance class had previously taken a finance class in the past. Second, 77% of the students that were currently enrolled in a finance class were business students. Those two factors are indicators that the respondents from the sample would perform above average. Furthermore, a statistical significance test was run to compare the percentage of students in a personal finance class who answered the Big Three questions correct in Sample #1, after they had completed most of the course, and Sample #2, as they were 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.

## **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 is evident is in the fact that business students performed the best on the Big Three questions. This trend is not unique to Middle Tennessee State University (Anderson et. al, page 18). Furthermore, when the group of non-business majors was analyzed it was found that 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 had a considerable number of non-business students who were finishing up a semester of a personal finance class. There

were a total 66 students in Sample #1 who were non-business majors, and within that group 18 of those students took a college personal finance class, the other 48 of them were not enrolled in a personal finance class. Of the non-business students who had taken a Middle Tennessee State University personal finance class 83.33% of them answered the Big Three completely correct. However, in the sample of non-business students who had never taken a personal finance class the performance was far poorer, with only 33.33% of students being able to correctly answer all the Big Three questions. Once again, a statistical significance test was run to compare these two percentages, and it was found, with 99% confidence, that the non-business students who had completed personal finance were significantly more likely to answer the Big Three correctly than the non-business students who had not had a personal finance class.

In analysis of the first research question, an anomaly appeared in Sample #1. Students with the best GPAs performed the worst on the Big Three questions. The research showed multiple possibilities that provided a reason for this trend. For starters, in the sample of students with a 3.5-4.0 GPAs there were significantly less business students, with 54% in the whole sample and only 41% in this subset. Additionally, the students in this top bracket of GPAs there were significantly more freshman and sophomores. Finally, for whatever reason, most students with 3.5-4.0 GPAs had not taken a finance course. In the original sample only 40.14% had not taken a finance class but in this 3.5-4.0 GPA sample of students a 56.63% of students had not taken a finance class. These findings show that the typical standard of higher school performance is not directly correlated to financial literacy but rather that financial literacy is a learned skill.

It was stated earlier that Middle Tennessee State University students scored far above average on the Big Three questions. 55.63% of students in Sample #1 and 41.14% of students in Sample #2 answered all the Big Three correctly. The positive correlation between college finance courses 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% were students who had completed a Middle Tennessee State University finance class. The second sample, where the average was almost 15 percentage points lower, only 16.46% of students had completed a finance class. Furthermore, in both Sample #1 and Sample #2 the majority of students were business majors. Therefore it stands to reason that the average literacy levels in these samples would be higher than national averages. It is also important to note that in 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. It could be argued that the information learned in these classes may completely fade away similar to the information learned in high school personal finance. However, unlike in high school personal finance, the information students are learning in college finance courses directly relates to their life and current choices. Memory of a college personal finance class may fade but it will likely hold better than high school personal finance classes did because it is more applicable to students' lives in college than it ever was in high school. That being said, a study that looked into the long term retention of the material learned in a college finance class would prove helpful and provide more accurate information on long term literacy levels.



Regarding students' knowledge of their student loan debt, it seems that many students are lacking some critical knowledge about their student loans. The variable of having completed a personal finance class was analyzed to determine whether it correlated to students knowledge of their own debt. General college finance classes were excluded from this analysis because typically business finance classes do not teach students about their personal financial situation. Furthermore, only data from Sample #1 was examined because Sample #2's data was 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, it was found that 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 were 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 were the results significantly significant, with a 90% and 99% confidence level respectively.

A study with more participants would have provided a better basis for understanding what methods increase students' knowledge of their debt. Furthermore, in a study with the goal of discovering what makes students more knowledgeable about their debt, the survey questions could be better crafted for that purpose. Nevertheless, a challenge that will continuously be faced when trying to understand student debt is a lack of access to actual records; most surveys will 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
<b>Had Taken a Personal Finance Class</b>	65%	15%	15%	20%
<b>Never Taken Any Type of Finance Class</b>	83.3%	22.2%	40.0%	73.3%
<b>Z-Statistic from Significance Test</b>	1.33	0.57	1.78	3.88

Table 3

### Conclusion

The three original questions that this survey set out to answer were: “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?” It was found that the financial literacy levels of students at Middle Tennessee State University were 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 was the high number of students in the samples who were either business majors and/or had taken a finance class. Addressing the second research question, students were found also to have a decent understanding of how much debt they would have upon graduation and how long it may take to pay off said debt. However, they did not accurately comprehend their interest rates or monthly payments. Unfortunately, due to the confines of this research, it was not able to determine many variables that increased students’ understanding of their debt. Student loan entrance

counseling did not appear to have an effect on students loan knowledge or financial literacy because only 57% of students with debt remembered taking the counseling, despite the fact that it is mandated for all students who withdrawal loans. It seems that a personal finance class is correlated better to student loan awareness, but the sample was too small to determine this conclusively. Determining what tools increase financial literacy was more successful. It was reasonably concluded that students who took a Middle Tennessee State University finance course performed significantly better on the Big Three questions.

With the national student debt crisis ever growing, it is more important than ever to implement efficacious policies to improve students' knowledge of personal finances and their student debt. There is still research to be done on the topic of how to most effectively inform students about important financial topics such as debt, interest, inflation, and investing. However, this study adds support to the growing body of literature that advocates that classes addressing finance are constructive ways ingrain the information into peoples' lives (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](mailto:mrb9c@mtmail.mtsu.edu) OR my faculty advisor Keith Gamble at 615-494-8613 or [Keith.Gamble@mtsu.edu](mailto: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](mailto: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.") \_\_\_\_\_

# IRB

## INSTITUTIONAL REVIEW BOARD

Office of Research Compliance,  
010A Sam Ingram Building,  
2269 Middle Tennessee Blvd  
Murfreesboro, TN 37129



### IRBN007 – EXEMPTION DETERMINATION NOTICE

Tuesday, April 09, 2019

Principal Investigator **Montgomery Barreto** (Student)  
Faculty Advisor Keith Gamble  
Co-Investigators NONE  
Investigator Email(s) *mrb9c@mtmail.mtsu.edu; keith.gamble@mtsu.edu*  
Department Business & Aerospace  
Protocol Title **Analyzing financial literacy among undergraduate students and current methods of increasing financial literacy**  
Protocol ID **19-1218**

Dear Investigator(s),

The above identified research proposal has been reviewed by the MTSU Institutional Review Board (IRB) through the **EXEMPT** review mechanism under 45 CFR 46.101(b)(2) within the research category (1) *Educational Settings & Instructional Strategies and medical devices*. A summary of the IRB action and other particulars in regard to this protocol application is tabulated as shown below:

IRB Action	<b>EXEMPT from further IRB review***</b>	Date	<b>4/9/19</b>
Date of Expiration	<b>NOT APPLICABLE</b>		
Sample Size	50 (FIFTY)		
Participant Pool	<b>Healthy Adults (18 or older) - College students</b>		
Exceptions	Online consent and online data collection permitted		
Mandatory Restrictions	1. Participants must be 18 years or older 2. Informed consent must be obtained from the participants 3. Identifying information must not be collected		
Restrictions	<b>1. All restrictions for exemption apply. 2. Mandatory disclosure of the exclusion criteria. 3. Mandatory disclosure on compensation requirements.</b>		
Comments	NONE		

\*\*\*This exemption determination only allows above defined protocol from further IRB review such as continuing review. However, the following post-approval requirements still apply:

- Addition/removal of subject population should not be implemented without IRB approval
- Change in investigators must be notified and approved
- Modifications to procedures must be clearly articulated in an addendum request and the proposed changes must not be incorporated without an approval
- Be advised that the proposed change must comply within the requirements for exemption
- Changes to the research location must be approved – appropriate permission letter(s) from external institutions must accompany the addendum request form
- Changes to funding source must be notified via email ([irb\\_submissions@mtsu.edu](mailto:irb_submissions@mtsu.edu))

- The exemption does not expire as long as the protocol is in good standing
- Project completion must be reported via email ([irb\\_submissions@mtsu.edu](mailto:irb_submissions@mtsu.edu))
- Research-related injuries to the participants and other events must be reported within 48 hours of such events to [compliance@mtsu.edu](mailto:compliance@mtsu.edu)

**Post-approval Protocol Amendments:**

The current MTSU IRB policies allow the investigators to make the following types of changes to this protocol without the need to report to the Office of Compliance, as long as the proposed changes do not result in the cancellation of the protocols eligibility for exemption:

- Editorial and minor administrative revisions to the consent form or other study documents
- Increasing/decreasing the participant size

**Only THREE procedural amendment requests will be entertained per year. This amendment restriction does not apply to minor changes such as language usage and addition/removal of research personnel.**

Date	Amendment(s)	IRB Comments
NONE	NONE.	NONE

The investigator(s) indicated in this notification should read and abide by all applicable post-approval conditions imposed with this approval. [Refer to the post-approval guidelines posted in the MTSU IRB's website.](#) Any unanticipated harms to participants or adverse events must be reported to the Office of Compliance at (615) 494-8918 within 48 hours of the incident.

All of the research-related records, which include signed consent forms, current & past investigator information, training certificates, survey instruments and other documents related to the study, must be retained by the PI or the faculty advisor (if the PI is a student) at the secure location mentioned in the protocol application. The data storage must be maintained for at least three (3) years after study completion. Subsequently, the researcher may destroy the data in a manner that maintains confidentiality and anonymity. IRB reserves the right to modify, change or cancel the terms of this letter without prior notice. Be advised that IRB also reserves the right to inspect or audit your records if needed.

Sincerely,

Institutional Review Board  
Middle Tennessee State University

Quick Links:

[Click here](#) for a detailed list of the post-approval responsibilities.  
More information on exmpt procedures can be found [here](#).