

Testing the Use of the Mint App in an Interactive Personal Finance Module

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Executive Summary

If today's youth are to be full participants in society, they must be financially literate. To advance understanding of effective financial education methods, the Global Financial Literacy Excellence Center (GFLEC) conducted an experiment using Mint, a financial improvement tool offered by Intuit, whose financial products include TurboTax and QuickBooks. This study measures Mint's effectiveness at improving students' financial knowledge, attitudes, and behavior. Students at the George Washington University participated in a half-day budgeting workshop and were exposed to either Mint, which is a real-time, automated platform, or Excel, which is an offline, static tool. We find that participation in both workshops was associated with improved preparedness to have conversations about money matters with parents, a greater sense of financial autonomy, and an increased awareness of the importance of budgeting, but that participants in the Mint workshop were more likely to have a positive experience using the budgeting tool, to feel confident that they could achieve a financial goal, and to be engaged in budgeting one month after the workshop. Results show that even short financial education interventions can meaningfully influence students' financial attitudes and behavior and that an interactive tool like Mint may have advantages over a more static tool like Excel.

INTRODUCTION

Today, financial literacy is an essential skill, as changes of the past few decades have shifted financial responsibility onto the individual. Access to financial services has increased, but those services have become more complex. The rising cost of college and associated student debt burden means that decisions made in high school can have significant financial implications later in life. Because defined benefit retirement plans have given way to defined contribution plans, young people are increasingly responsible for planning for their own retirement. Moreover, years spent in retirement are increasing as life spans increase, requiring the accumulation of even more savings, which means saving needs to begin earlier. Financial knowledge and the ability to apply that knowledge is critical to navigating this increasingly complex environment.

Our research shows that financially literate individuals are more likely to have precautionary savings, be current on credit card and loan payments, and have a higher level of financial well-being (Hasler and Lusardi, 2019; Lusardi, 2019; Yakoboski et al., 2020). They are more likely to plan and save for retirement and to accumulate greater retirement wealth (Lusardi, Michaud, and Mitchell, 2019; Lusardi and Mitchell, 2007). However, we know that many of today's students are woefully unprepared for the financial decisions they will soon face. Results from the 2012 and 2015 Programme for International Student Assessment (PISA) show that about one in five 15-year-old students in the U.S. lack basic proficiency in financial literacy (Lusardi, 2015; OECD, 2017). Results from the 2018 PISA show improvements in student financial literacy but many students (16%) are still considered low performers (OECD, 2020). Increasingly, research has shown that financial education effectively improves financial knowledge and behavior among students (Lusardi et al., 2010; Kaiser et al., 2020, Urban et al., 2015). However, evaluating outcomes from youth financial education can be difficult. Implementation of financial education varies widely from semester-long courses to short, one-time presentations. These differences impact effectiveness at improving student financial knowledge and behavior. Previous research has shown that to be effective, financial education should be rigorous and taught over a longer period of time (Urban et al., 2015). Other research suggests that significant improvements in financial behavior may not be fully realized until youth enter the labor market and are required to make more complex financial decisions (Frisancho, 2018).

Despite these challenges, there are opportunities for researchers and practitioners to better understand how financial education can be effective for students. Short programs, such as one-day interventions, are not likely to improve financial knowledge but may, for example, increase awareness, which can lead to better future outcomes. Moreover, technological innovations provide new ways for students to engage with financial decision-making, which has been shown to be an important element of effective financial education. Engagement has often been a challenge for youth financial education since parents or guardians make most of the financial decisions and students have few opportunities to interact with the financial system. However, through simulations and case studies, technology allows students to get hands-on experience in a controlled environment.

This study provides new insights into how technology can be leveraged to improve student financial knowledge and awareness by evaluating the effectiveness of Mint's budgeting application. We take a comprehensive approach to measuring students' knowledge, behavior, and attitudes in order to understand how short financial education programs may be effective.

STUDY DESCRIPTION

The Global Financial Literacy Excellence Center (GFLEC) conducted an experiment to assess Mint as an educational tool, evaluating its impact on student's financial attitudes, knowledge, and behavior. The experiment involved a six-hour budgeting workshop for students from the George Washington University (GW), with content tailored to improving their knowledge relating to financial challenges they are likely to face when they graduate. Our evaluation was divided into two stages:

- In the first stage, we determined how participation in the workshop influenced students' financial attitudes, knowledge, and behavior. Students completed a pre- and post-survey as well as a follow-up survey one month after the workshop. Results were compared to a control group that participated in all three surveys but not the workshop. We compared differences between students who participated in the workshops (treatment) and those in the survey-only group (control).
- In the second stage, we examined Mint's effectiveness and its features that students benefitted from. This was determined by exposing half of the workshop participants to Mint and the other half to Excel. We used data from the surveys, focus groups, and student observations to compare effectiveness of these tools.

Mint and Excel

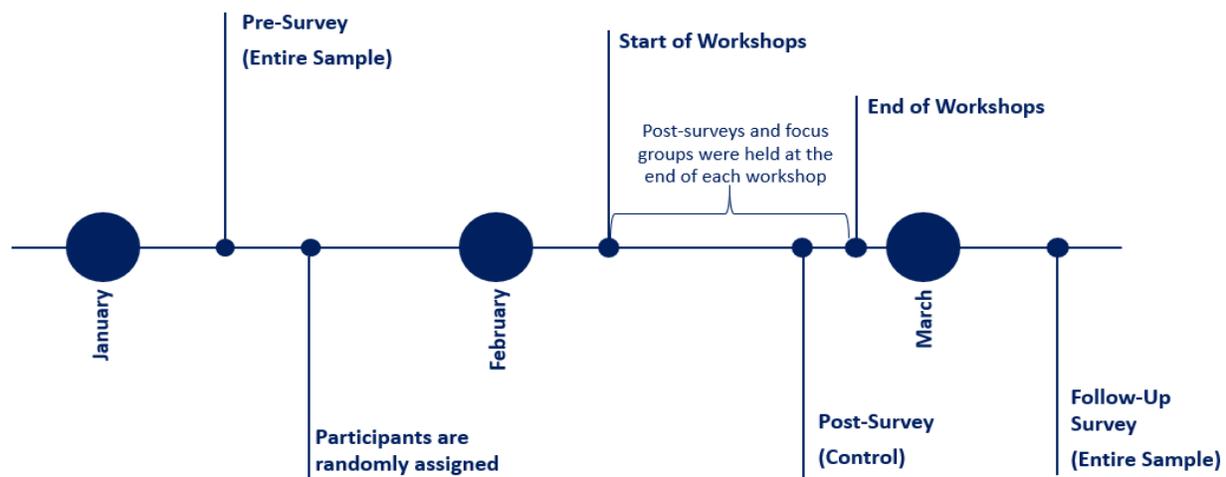
Mint is an interactive, online budgeting tool that links to financial accounts and automatically tracks spending and income. Excel is an offline, static tool that requires income and spending be manually entered and tracked. We evaluated these two types of budgeting tools in the workshops to determine whether Mint is more beneficial for students than Excel. Excel provides a good comparison to Mint because its features are significantly different. Mint offers data visualization tools resulting from the automated income and expense tracking while Excel requires users to create their own visual tools from the data that they have entered. Mint provides a customizable budget template while Excel is a blank slate that requires users to build their own budget.

Timeline

Figure 1 shows the intervention and evaluation activities conducted in the spring semester of 2020. In January, we conducted a pre-survey to gather information for our baseline analysis. Students were then randomly assigned to an Excel workshop, a Mint workshop, or the survey-only group. Four workshop sessions occurred in late

February with post-surveys and focus groups conducted at the end of each workshop: two workshop sessions exposed students to Mint while the other two used Excel. Students in the survey-only group completed the post-survey concurrently with the last workshop at the end of February. A follow-up survey was conducted in late March, one month after completion of the last workshop.

Figure 1: Study Timeline



The workshops were conducted on the weekends, apart from students' regular classroom activities, and were voluntary. To incentivize participation, monetary compensation was provided for survey completion and workshop participation. It is important to note some differences between the pre- and post-surveys and follow-up survey. Students were required to complete the pre- and post-surveys before receiving compensation. The follow-up survey was conducted after students received compensation. The follow-up survey was conducted in late March, a few weeks after the World Health Organization declared, on March 11, the Novel Coronavirus Disease to be a pandemic (CDC, 2020). Therefore, results from the follow-up survey may be biased as many students experienced drastic changes in their financial and living situations shortly after completion of the workshops.

There was a total of 161 participants randomly assigned to one of three groups. Of these, 46 participated in the Excel workshop, 49 participated in the Mint workshop, and 66 in the survey-only group (the control group). Small differences in observations are due to no-shows the day of the workshop. Ninety-nine students participated in the follow-up survey. Of these, 30 had participated in the Mint workshop, 32 in the Excel workshop, and 37 in the survey-only group.

The Workshops

The budgeting workshops were designed to help prepare students for financial challenges they will likely face as they leave college and enter the labor market. Each workshop session was comprised of 20-25 students. The sessions lasted for six hours, with a short lecture followed by an interactive case study. The lecture focused on the basics of budgeting, such as how to calculate net worth and create an income and expense statement. It covered assets, liabilities, net worth, income, expenses, and net gain or loss. Participating students had varied backgrounds and experiences with budgeting; some students had never received any personal finance education while others were more knowledgeable. The provision of budgeting fundamentals helped ensure students were at the same level of understanding before applying that knowledge to the case study.

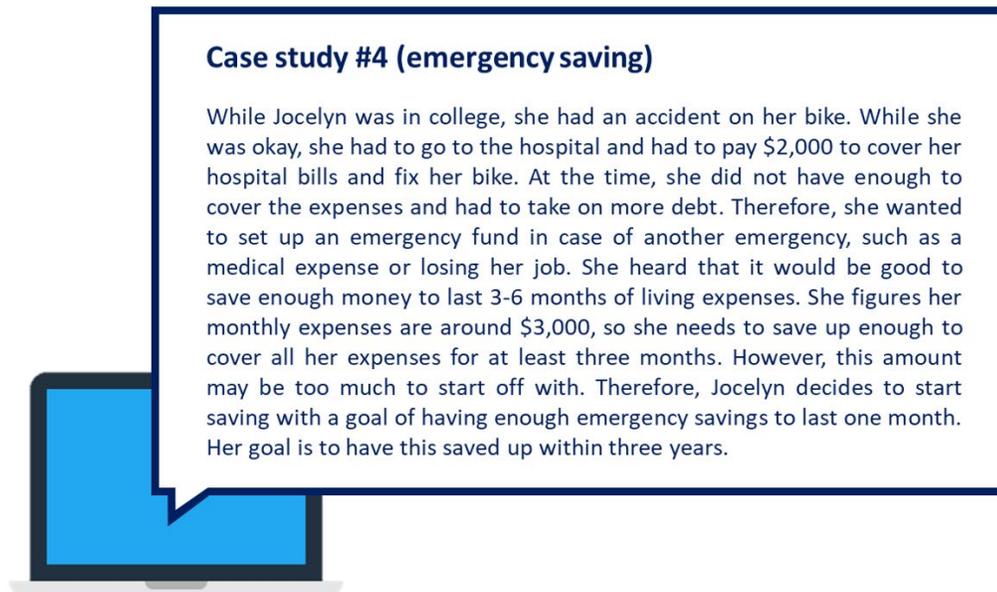
For the case study, students were asked to build a budget for a fictitious character, Jocelyn. The character had recently graduated from GW and had numerous financial challenges, including how to pay off her student loan and save for retirement. Students were asked to develop a budget for Jocelyn that would allow her to accomplish four specific financial goals, each based on a fundamental financial concept and associated with a learning objective, while also keeping in mind her existing expenses and obligations.

The financial concepts and learning objectives were the following:

Financial Goal	Learning Objective
Emergency savings (e.g., enough savings to cover three months of expenses)	Understanding the importance of a buffer stock to cover unexpected expenses.
Long-term savings (e.g., retirement saving)	Understanding the importance of saving early and how compounding interest can be beneficial to savings.
Debt management (e.g., paying off credit card and student loan debt)	Understanding loan amortization schedules and how increasing or decreasing monthly payments can affect the total interest paid.
Short-term savings (e.g., saving for a car down payment)	Understanding how to save for a large purchase.

Students were divided into groups of two to three and were asked to develop a budget based on one of the four financial goals. Figure 2 shows the prompt that was given to students who were assigned the emergency savings goal.

Figure 2: Emergency Savings Student Prompt



Jocelyn's financial goals are interrelated, as they would be in real-life decision making. So while the case study assignments asked students to help Jocelyn budget for a specific goal, they had to keep in mind her other goals and obligations. Students were provided with assumptions relating to the other goals and had to include those assumptions in the budget they came up with. For example, the group assigned to the emergency savings goal were told how much money Jocelyn should be allocating to long-term savings, debt management, and short-term savings. In addition to the financial goals, students had to keep in mind Jocelyn's other expenses, such as rent, food, and entertainment. This required students to think critically about how to prioritize financial goals, balance expenses with income, and understand how daily financial decisions interrelate and have short- and long-term implications. Once students completed the budgets, they were asked to present their results to the class and discuss how Jocelyn could allocate her saving and spending to achieve her goals.

DATA

Our analysis used quantitative and qualitative data to evaluate how workshop participation and the use of Mint influenced students' financial knowledge, attitudes, and behavior. Our quantitative data came from the pre-survey, post-survey, and follow-up surveys. Our qualitative data came from the focus groups and student observation during the workshops.

Surveys

The pre-survey provided baseline information on students' initial level of financial knowledge, financial behavior, and attitudes toward budgeting. Financial knowledge was measured with three basic questions that assessed understanding of inflation, risk diversification, and interest compounding and with five questions to assess students' understanding of budgeting concepts, such as calculating net worth and identifying net income. The pre-survey also collected basic demographic information: ethnicity, age, gender, parent's education, and grade level. Financial behaviors were measured with information students provided on whether they record bills and expenses, track money in an account, and use budgeting tools. We measured attitudes toward finance with specific budgeting questions and more general questions. Students were asked if they feel budgeting is a useful tool and if it can help them achieve financial goals. They were also asked questions to measure financial autonomy. These are a selection from a series of fifteen questions that are aggregated to make up a financial autonomy index, developed by Bruhn et al. (2016). The index measures whether respondents feel confident and capable of making financial decisions.

The post-survey used the same questions as the pre-survey with slight changes to the numbering and ordering of the financial knowledge questions and with demographic and behavior questions removed. The questions to measure behavior change were allocated to the follow-up survey, which was conducted one month after the workshops, to allow time for behavior changes to occur. The follow-up survey also included questions about students' experience with Mint or Excel and their general feedback on the workshop.

Focus Groups

Each of the four workshop sessions culminated in a one-hour focus group. To maximize student opportunity to contribute to the discussion and their likelihood of

being comfortable speaking up, we divided each workshop into two groups. There were a total of eight focus group discussions with topics centered on understanding what a budget is, its importance and relevance to students' financial situation, and barriers or challenges to budgeting. We were also interested in their experience with the particular budgeting tool they used during the interactive case study and on the four financial goals covered in the case study.

Student Engagement

The Behavioral Engagement Related to Instruction (BERI) protocol was used to identify the level of student engagement at specific points in the lecture portion of the workshop (Lane and Harris, 2015). Originally created for large university classes, the BERI protocol provides a practical criterion with which to evaluate students. During the workshop, researchers were seated throughout the classroom and assigned to observe and evaluate eight to nine students.

SAMPLE DEMOGRAPHICS AND BUDGETING EXPERIENCE

We conducted our evaluation with a total of 161 GW students. The target group was undergraduate students between the ages of 18 and 22, selected because this age group is likely to have low levels of financial knowledge and because they will be facing more complex financial decisions as they prepare for and enter the labor market. Thus, they can benefit greatly from financial education. Of our total sample, 86% were undergraduate students and 14% were graduate students. Graduate students were included due to undergraduate attrition, to ensure we reached a minimum participation level.

The average age of students in our sample was 21 with almost half (49%) of the students enrolled as upperclassmen (juniors or seniors) and freshmen and sophomores made up 37% of our sample. Workshop participants were slightly younger than our survey-only group. The survey-only group had an average age of 22 compared to 20 for our workshop groups, as a lower percentage of graduate students participated in the workshops: 10% of graduate students participated in the Excel and 4% in the Mint workshops. Workshop participation was randomly assigned but needed to be accepted by the students. The resulting allocation of students in the workshops indicate that younger students had more interest in workshop participation.

The majority of students (80%) reported parents' education level as a bachelor's degree or higher, suggesting that many students in our sample are from middle- to high-income families. This is further evidenced by the high percentage of students (83%) who reported their college education was, at least in part, being financed by their families. Many students reported use of multiple sources to fund their education, including student loans (45%) and employment income (62%). About half of full-time students reported having a part- or full-time job. This indicates that our sample of students had varied economic backgrounds and varied levels of family financial support.

We also collected information that would enable us to understand students' educational background and previous experience. Thirty-six percent of students in the study were majoring in a course of study in the Columbian College of Arts and Sciences, 28 percent were in the School of Business, and 27 percent were in the Elliott School of International Affairs. Each of these schools offer numerous majors and

many include economics or finance courses as prerequisites or electives as part of the regular curriculum. Therefore, students may have been exposed to financial concepts before participating in the workshop, resulting in some bias. Additionally, bias may be present in our sample due to the voluntary nature of the study. Students who choose to participate may have done so because they already had some knowledge of or interest in personal finance.

National Comparison

We compare the demographic characteristics of our sample with a nationally representative sample using data from the 2018 National Financial Capability Study (NFCS). This allows us to understand how our sample compares to national averages, helping to understand the applicability of our findings for other students.

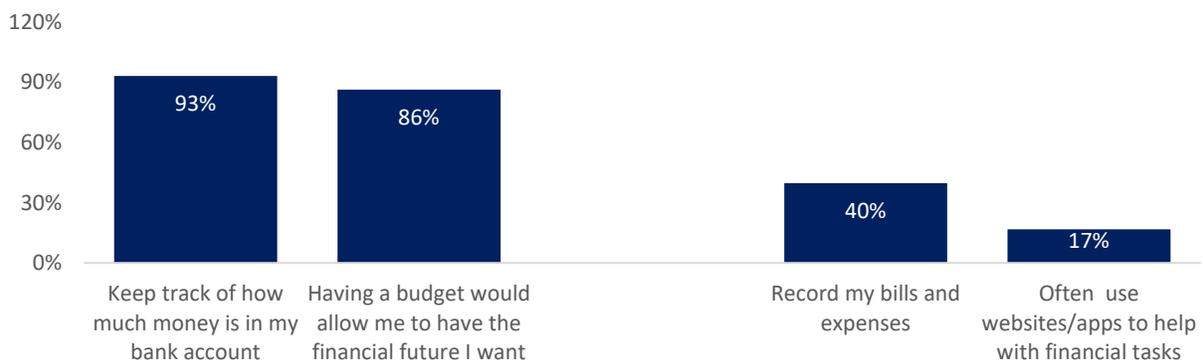
The nationally representative comparison sample from the 2018 NFCS is comprised of individuals between the ages of 18 and 22, who are full- or part-time students, and whose parents or guardians have attained at least a bachelor's degree. The latter sample restriction was imposed because the majority of students in our sample were affluent, as measured by the education level of their parents. Like the comparison sample, our sample is composed of predominantly White, full-time students. The NFCS sample is comprised of students who are 56 percent White, 13 percent Asian, 13 percent Black, and 16 percent Hispanic. Our sample is 52 percent White, 21 percent Asian students, but just 4 percent Black and 8 percent Hispanic. Students who are enrolled full time make up 71 percent of the NFCS sample compared to 91 percent of our sample. The higher percentage of full-time students in our sample is likely because we targeted undergraduate students. There is a notable difference in gender, as our sample is only 30 percent male, compared to 50 percent of the NFCS sample. There is also a large difference in financial knowledge. In our sample, 51 percent could correctly answer three basic financial literacy questions compared to just 19 percent of the representative sample, indicating a much higher level of financial knowledge among GW students. This difference may be attributable to the potential biases in our sample, such as previous exposure to financial concepts. Additional demographic statistics can be found in Table A of the Appendix.

Baseline Budgeting Activities

Findings from the pre-survey show students' baseline budgeting behaviors, prior to participation in the workshop. We find that many students have a basic sense of the importance of budgeting and engage in some budgeting activities. Figure 3 shows that a majority (86 percent) agree that having a budget would allow them to have the

financial future they want and 93 percent keep track of how much money they have in their bank account. However, when it comes to actively engaging in budgeting practices, including recording their expenses or using apps to help with financial tasks, few students participate: 40 percent record their bills or expenses and only 17 percent regularly use technology to facilitate financial tasks. This suggests that students may know that budgeting is useful, but do not see the need or do not have the knowledge to create and maintain a budget.

Figure 3: Baseline Budgeting Activities



Note: Responses are based off 161 observations from the pre-survey.

We further explored this topic in the focus groups, asking students about their budgeting activities prior to workshop participation. Only a few students reported actively engaging in budgeting. About a quarter said they do not budget, either because it takes too much time or because they do not see the need for it. The majority of students reported engaging in some level of budgeting, mostly trying to be frugal or keeping a mental account of what they have spent (Figure 4).

Figure 4: Previously Engaged in Budgeting Activities



Results from the pre-survey and focus group discussions show that students do understand the need to limit their spending or spend within their means. They realize the importance of knowing where their money is being spent and how much money is in their bank account so as to not overdraw it. Nevertheless, very few saw the need to plan for the longer term or rigorously allocate their money to savings. Students justified this behavior by stating that most of their financial decisions are simple: their major expenses, such as tuition and housing, are predetermined. Therefore, many of their financial decisions revolve around smaller expenses, such as going out to eat or shopping. However, students did understand that they would need to actively engage in short- and long-term budgeting in the future, when their financial decisions become more complex.

RESULTS

The results of our evaluation are split into two stages. In the first stage we determine how participation in the budgeting workshop influenced students’ financial knowledge, attitudes, and behavior. In the second stage, we examine whether integrating Mint into the budgeting workshop had added benefits for students compared to Excel. Figure 5 below summarizes our findings from each stage and the comparison group.

Figure 5: Summary of Main Findings

Treatment	Stage I: Workshop Participation	Stage II: Mint
Comparison Group	Survey-Only	Excel
Results	Treatment group was more likely to: <ul style="list-style-type: none"> • Feel prepared to talk with parents about money matters • Have a greater sense of financial autonomy • Have an increased awareness of the importance of budgeting 	Treatment group was more likely to: <ul style="list-style-type: none"> • Have a positive experience using the budgeting tool • Feel confident that they could achieve a financial goal • Record bills and expenses

Findings from Stage 1: Workshop Participation

Previous research shows that more rigorous financial education programs are more likely to improve students’ financial knowledge, attitudes, and behavior. Our workshop was a one-day intervention which restricted the content that could be taught to students and the time they could spend applying their knowledge. Despite these limitations, we find that the workshop positively influenced how students discuss money matters with friends and family and how capable they feel making independent financial decisions. While the workshop did not improve students’ financial knowledge, we do note important changes in their level of awareness of the importance of budgeting.

Financial Discussions with Family and Friends

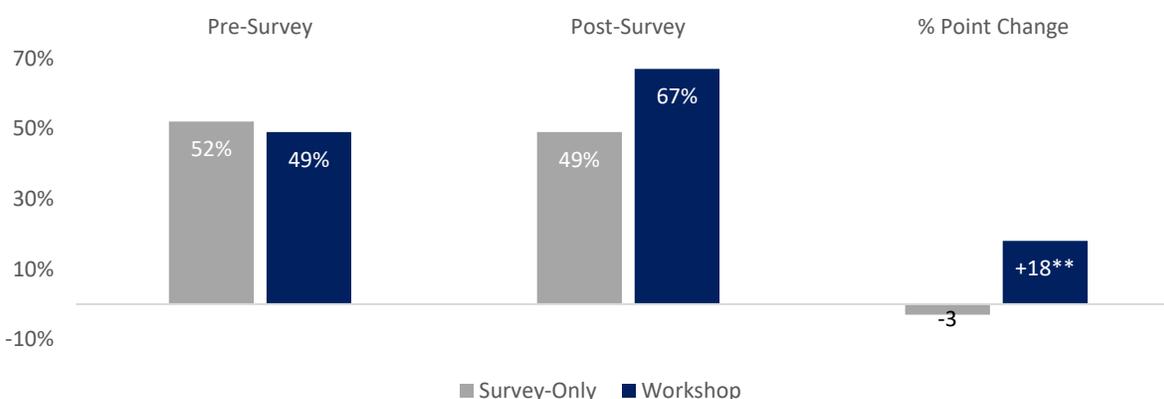
Family and friends play an important role in shaping young people’s attitude toward and understanding of personal finance. While the availability of high school personal

finance courses has increased in the last few years, it is still common for students to graduate without having taken these courses (CEE, 2020). Therefore, it often falls to parents and guardians to provide personal finance education and shape financial attitudes. An avenue through which parents can teach their kids is discussions about money matters.

Prior to the workshop, just under half of student participants (49 percent) reported feeling prepared to discuss money matters with their parents compared to 67 percent immediately following the workshop, a significant 18 percentage-point increase (Figure 6). This is an important finding since students who talk with their parents on a regular basis are likely to have higher levels of financial knowledge (OECD, 2017). While the direction of the causation between discussion with parents and financial knowledge is not clear, it is possible this increased sense of preparedness for financial discussions resulted from knowledge received through the workshop.

As a robustness check, we compare this result with the survey-only group. We find that students who only participated in the surveys showed no significant change in preparedness to discuss money matters with their parents (Figure 6). This suggests that the increased preparedness reported by workshop participants is likely to be a direct result of their participation.

Figure 6: Feel Prepared to Talk to Parents about Money Matters



*Note: Responses are based on 95 observations for the workshop and 66 for the survey-only. Significance based on Welch's t-test, *** p<0.01, ** p<0.05, * p<0.1*

Discussions about money matters are important, as they may shape how students feel and what they know about personal finance, but these discussions can be challenging; students may feel embarrassed talking about personal finance with their

friends, and parents may feel they lack sufficient knowledge to discuss financial matters with their kids. We explored this topic during the focus groups.

Students described varied experiences, depending on family background and culture, discussing finances with their parents or guardians. Many said that their parents helped shape their habits and attitude toward budgeting. Some have parents who set up savings accounts for them when they were younger to instill a saving habit. One student stated that he “grew up with my parents and all the elders around me telling me that you shouldn't buy something unless you can buy it twice,” which instilled a habit of frugality. Other students said they were the ones helping their parents learn about personal finances; this was more common among students with immigrant parents who did not have a strong understanding of the U.S. financial system. Family background and socioeconomic status influenced topics discussed with parents. Students from families with more limited resources said they talked about their spending habits with their parents because of the need to spend carefully.

Socioeconomic status affected discussions about personal finance with friends, too. Though pre-survey results indicated that many GW students come from affluent families, students in the focus group were from a variety of economic backgrounds. Students who felt they had to live on restricted funds expressed frustration that their peers did not relate to their spending constraints.

“A lot of people don't necessarily relate to people who aren't completely funded by their parents. So, it makes it difficult to talk about finances... in some instances, it just feels a little embarrassing when you compare your financial situation to others.”

Other students said affluent friends did not have to budget, as they were funded by their parents, and had little interest in learning about personal finance. Students reported feeling most comfortable sharing challenges with friends who were in similar financial circumstances. Students close to graduating noted it was particularly helpful to commiserate with friends who were also close to graduating, as they were all facing more complex financial decisions. These focus group insights illuminate the challenges that arise around peer discussions of personal finance.

Students in the focus groups also discussed whether it was preferable to learn personal finance concepts at school or at home. Only a few students said they had received formal financial education in high school or earlier, but most agreed that personal finance should be part of school curricula. Those who did not receive

financial education felt they would have benefitted from an earlier understanding of financial concepts, especially when selecting a college.

“I wish that I had financial classes when I was in high school and I think even deciding to go to college is like a really huge financial decision...I mean my parents were able to help me make that decision, but... I didn't have anyone actually teaching me anything.”

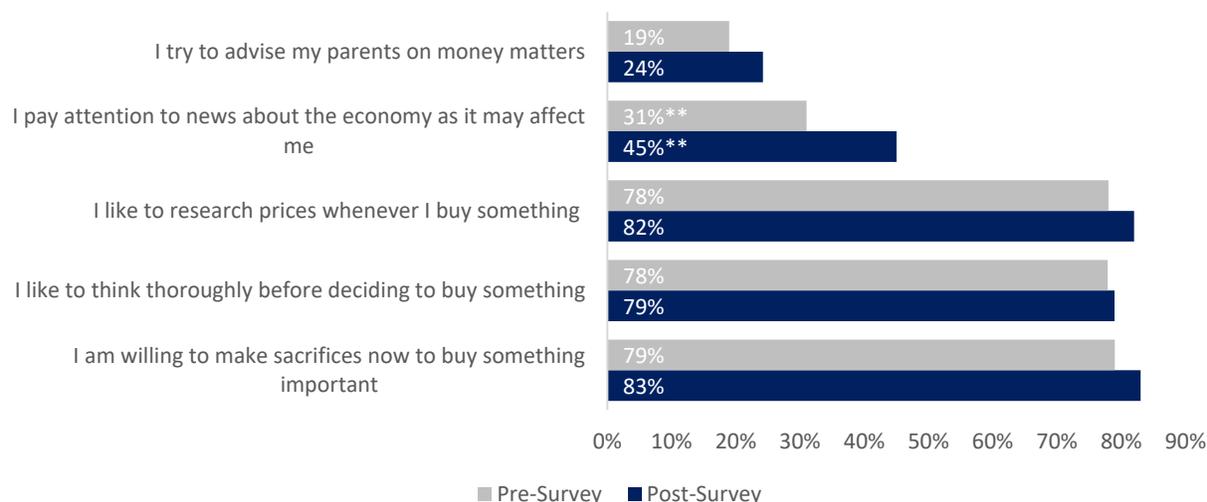
Regardless of whether they had received school-based financial education, students saw their parents as having an integral role in shaping their financial attitudes and habits. Students suggested that “the school might be better for shaping your [financial] knowledge” when parents and guardians do not have a high level of financial knowledge themselves, but regardless of knowledge, the role of parents is to teach kids about the values surrounding money: “what [one] should do with money and what one shouldn't do.” Students agreed personal finance should be taught both at home and at school.

Financial Autonomy

Financial autonomy measures students' sense of empowerment, confidence, and capability “making independent financial decisions and influencing the financial decisions of their household” (Bruhn et al., 2016). To understand how workshop participation may have influenced students' financial autonomy, we use a selection of questions from Bruhn's aggregated index. These questions measure students' sense of responsibility for their financial decisions; confidence in making independent decisions, even amidst influence from family; and sense of competence in making financial decisions.

We find that students had a greater sense of financial responsibility and felt more empowered to make their own financial decisions after participating in the workshop. Figure 7 shows students' responses to the financial autonomy questions, before and after workshop participation.

Figure 7: Financial Autonomy Indicators



*Note: Responses are based on 95 observations. Significance based on Welch's t-test, *** p<0.01, ** p<0.05, * p<0.1*

Students were more likely to advise their parents, pay attention to the news, research prices, think through spending decisions, and be willing to make sacrifices after participating in the workshop. The significant increase in students' willingness to pay attention to economic news because they understand that it may affect them indicates a greater feeling of responsibility for making informed financial decisions. When we compare these results, we find students in the survey-only group showed no significant improvement in any of the financial autonomy indicators. Statistics on this comparison can be found in Table B of the Appendix.

An additional question used to measure financial autonomy asks if students feel prepared to talk to their parents about money matters. This question, similar to the question about advising parents on money matters, measures sense of capability for making their own financial decisions or influencing the decisions of their family. As discussed above, we find that students were significantly more likely to feel prepared to talk to their parents after the workshop. To gain a better understanding of how the workshop influenced students' financial autonomy, we created an aggregate measure based on all six questions, similar to Bruhn et al. (2016). Each of the six financial autonomy questions were based on a 10-point scale and therefore the aggregated measure is based on a scale of 0 to 60, with 60 indicating a high level of financial autonomy and 0 indicating no sense of autonomy. Students had an average score of 38.8 before the workshop and 42 after the workshop, a significant improvement of 3.2 points (Figure 8). We find that this improvement in financial

autonomy is likely to be a result of the workshop since students from the survey-only group showed little to no improvement.

Figure 8: Financial Autonomy Index



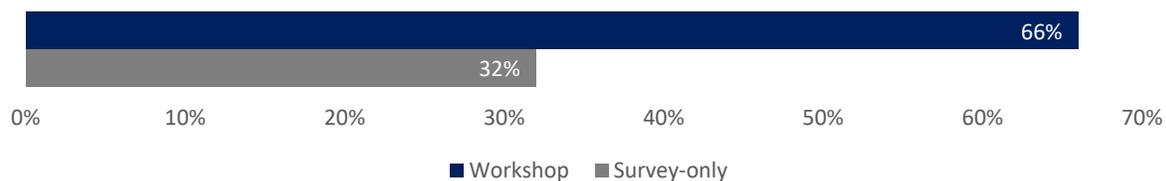
*Note: Responses are based on 95 observations for the workshop and 66 for the survey-only. Significance based on Welch's t-test, *** p<0.01, ** p<0.05, * p<0.1*

This indicates that the workshop resulted in students feel more empowered to make and capable of making financial decisions. While autonomy is not considered a financial behavior, students with a greater sense of financial autonomy may begin to engage in activities that lead to more informed financial decisions.

Budgeting Behavior

Measuring changes in financial behavior in students can be challenging, as changes may not be fully realized until students enter the labor market and face more complex financial decisions. However, our follow-up survey allowed us to examine some mid-run behavior changes. This survey was conducted one month after the workshop, allowing time for application of lessons learned in the workshop. Workshop participants were more likely to have changed their budgeting behavior than were individuals in the survey-only (control) group. Two-thirds (66 percent) of students who had participated in the workshops reported having changed their habits compared to only 32 percent of the survey-only group (Figure 9).

Figure 9: Changes in Budgeting Behaviors



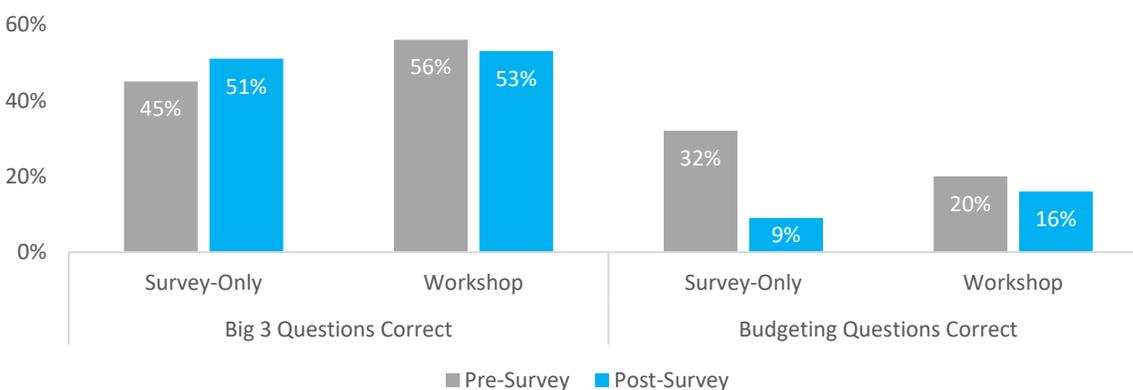
Note: Responses are based on 99 observations from the follow-up survey.

Financial Knowledge

We use two measures to understand how the workshop influenced students' financial knowledge. The first is based on three basic financial literacy questions (Big Three), which assess knowledge of fundamentals: interest compounding, inflation, and risk diversification. Previous research has shown aptitude on these questions to be strong indicators of financial knowledge. The second measure is based on five questions about budgeting; it assesses understanding of concepts that were addressed in the workshop, including how to calculate net worth, determine net income, and calculate savings amounts. Results from the pre-survey showed that GW students had a high level of financial literacy when compared to the nationally representative NFCS comparison sample. However, financial literacy is still considered low among GW students, as only about half of students could correctly answer all three basic financial literacy questions. Our second measure of financial knowledge, the budgeting questions, showed similar results, with only one in three students from our survey-only group and one in five from our workshop group able to correctly answer all five budgeting questions.

After participating in the workshop, students showed no significant improvement in their performance on the three financial literacy questions or budgeting questions (Figure 10). This indicates the workshop did not help improve students' financial knowledge. This is a relatively predictable outcome since our workshop was held over the course of one day, and previous research has shown that short interventions are unlikely to improve financial knowledge.

Figure 10: Financial Knowledge



Note: Responses are based on 95 observations for the workshop and 66 for the survey-only.

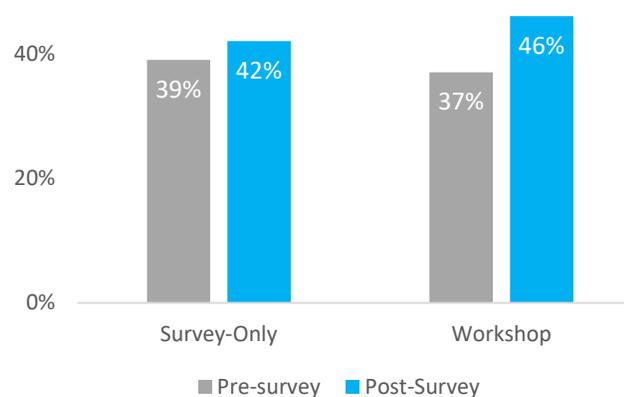
While significant knowledge gain was not an expected workshop outcome, some caution in interpreting the results should be taken, as they may be downwardly

biased. Students were asked to complete the post-survey at the end of the workshop, after a long day in the classroom, and might have done so hurriedly, not answering the knowledge questions to the best of their ability. Unlike the pre-survey, on which potential participants may have been motivated to do well in order to be chosen for the workshops, students completing the post-survey knew they would be receiving their compensation as soon as the survey was finished. Analytical results from the survey software confirm that the average time spent to complete the pre-survey was longer than the time spent on the post-survey. While there were no significant gains in financial knowledge, an important result is improved awareness of the need for financial knowledge and budgeting among workshop participants, and this heightened awareness may be an important step toward improving financial knowledge and behavior.

Financial Awareness

Prior to the workshop, just over one-third of students reported being concerned about their ability to repay their student loans. After the workshop, this increased to 46 percent (Figure 11). This is an interesting result, as we had expected that the workshop would make students feel more prepared for and thus less concerned about student loan repayment. However, this increased concern may be a positive result, as it could emerge from an increased level of awareness. Prior to the workshop, students may not have been thinking about how much they would owe or what their monthly loan payments would be. Exposure to information about interest compounding and loan amortization may have prompted students to think more critically about their financial situation after graduation, resulting in increased concern. This slight increase in financial anxiety may be beneficial, as it might motivate future planning. In the survey-only group, we find little to no change in concern about repayment, confirming that the increased concern is likely a result of workshop participation.

Figure 11: Concern about Repaying Student Loans



Note: Responses are based on 95 observations for the workshop and 66 for the survey-only.

Financial awareness was further explored during the focus groups. When asked what they found most helpful from the workshop, the majority of students cited increased awareness of the importance of budgeting. One said, “I think the most valuable thing that I took away was, well it’s a reality check.” Awareness is an important measure because it can be a first step toward improved financial knowledge and behavior. As students become more aware of the financial challenges facing them, they may be motivated to better prepare for those challenges.

“I always knew that budgeting was of paramount importance...but at the same time, I would say [the workshop] inspired me to actually make it because I knew it was important that I wasn't doing it. Now that I'm seeing it, I'm like I should probably do it.”

Motivation to Change Behaviors

The focus groups provided a unique opportunity to better understand what motivates changes in financial behavior, so we asked students if they would consider making any changes as a result of the workshop. Responses indicate that motivation to change is linked to relevance of and anxiety around a financial concept.

The financial concepts covered in the workshop, e.g., debt management and long-term savings, were designed to be applicable to many financial situations. However, some students found it difficult to relate to the concepts covered in the case study because the details of the case did not match the details of their own or her financial situation. For example, the case study character, Jocelyn, has a regular salary, unlike the typical student whose income from part-time work or summer jobs tends to fluctuate.

Students struggled to relate to the task of budgeting for a car down payment for Jocelyn. The task was intended to teach students how to budget and save for any large purchase, such as a car or a trip. However, instead of focusing on the concept of saving for a large purchase, students were distracted by the relevance of a car purchase to their situation. Some felt that they had no need for a car because they lived in the city; one student stated she was “not planning on buying a car anytime soon”; others expressed plans to move to a location where a car would be unnecessary. This illustrates the importance of financial education that is targeted to the needs and interests of participants.

Students did generally find that learning about retirement savings and the importance of saving early was useful. During the workshop, students were presented with a graph that showed total retirement savings for two hypothetical

individuals. The only difference between the two was the age at which the individuals started saving: one at age 22 and the other at age 30. This small difference resulted in considerably more retirement wealth for the individual who started saving earlier. During the focus groups, students expressed surprise and concern at the realization of how quickly savings accumulate and awareness that they need to start thinking about saving now rather than later.

Another topic that students found motivating was emergency savings. In the workshop case study, students were asked to budget for emergency savings. Because Jocelyn had regular income, a specified amount could be put away each month to build up her emergency fund. Despite not having regular incomes themselves, students were able to relate to the idea of saving for emergencies because of their experiences with income volatility.

"I worked last summer, and I got a really high paying job but now I have no savings. And now I understand I could have saved so much this summer...if I'm going to work for the same place...I would love to save more just because it's nice to have an emergency fund, no matter what happens."

Students understood that covering unexpected expenses could mean pulling from their savings or relying on their parents. They reported some anxiety around the idea of unexpected bills, such as medical bills. Despite a sense that they did not need to save for emergencies currently, they did understand there would be a need for it in the near future.

"The part about the emergency savings fund was really interesting...We discussed the case like, "Oh, she had medical bills, she couldn't pay off." At the moment, I feel that my parents would help me out with it. But then in a few years, as soon as you graduate...you have to have an emergency savings account so you can pay for things like that, that you wouldn't expect to show up. But then they come up really suddenly."

Financial anxiety is commonly considered a barrier to learning about personal finance, and it can be an indicator that an individual is in a precarious financial position. However, a slight increase in financial anxiety for students may actually motivate them to better understand their situation, make a financial plan, and change their financial behavior. Focus group discussions made it clear that students saw how retirement and emergency saving concepts related directly to their situation. The information around these concepts caused anxiety because it made students understand that in order to be financially prepared, they needed to make changes to their financial behavior now or in the near future.

Findings of Stage 2: Mint versus Excel Budgeting Experience

In the second stage of our evaluation, we determine whether students who used the real-time, automated Mint platform in the budgeting workshop experienced greater improvements in their financial attitudes and behaviors than those in sessions that used the offline, static Excel platform. In focus groups discussions, Mint participants reported more positive experiences than Excel participants. The discussions also provided insight into student opinions about Mint and Excel features. Two of Mint's most popular features, goal-setting and automatic spending tracking, may have helped improve financial attitudes and behaviors, as post-survey and follow-up survey responses showed greater confidence in the ability to set and achieve a financial goal and record expenses among Mint workshop participants.

At the start of each focus group, students were asked about their previous experience with the budgeting tools they were exposed to in the workshops. Students in the sessions that used Excel were unlikely to have used it for budgeting but had used it in their college courses. Students in the Mint workshop had experience with budgeting apps but only three reported having actively used Mint. Therefore, the workshops were the first hands-on exposure many students had to using the tools in a budgeting context.

Strengths and Weaknesses of the Budgeting Tools

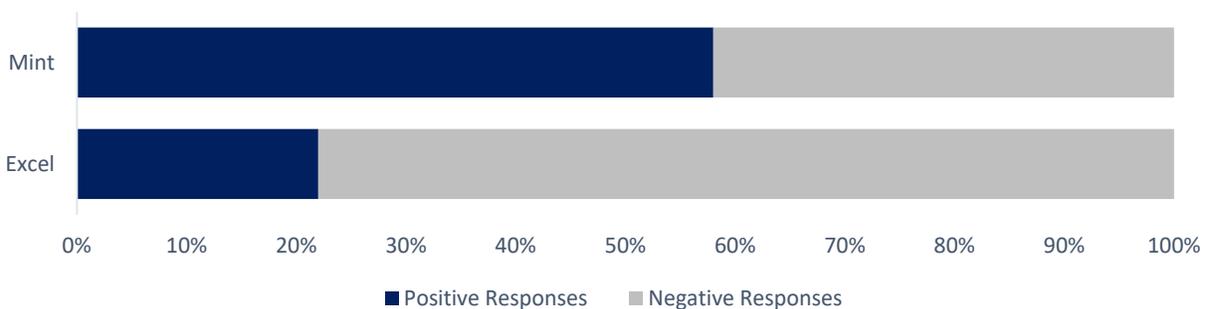
To understand how the workshop may have influenced their attitudes, we asked students to describe their experience with the budgeting tools. Figure 12 provides examples of common responses, with distinctions between positive and negative descriptions.

Figure 12: Student Descriptions of Mint and Excel

	Positive Responses	Negative Responses
Mint	<p>"I think using an app that does all of the math for you is really helpful"</p> <p>"As everyone has said, it's definitely easy to use."</p>	<p>"I like the interface, but like personally don't think I would use it a lot as you have to put your actual info into it."</p> <p>"I felt like it was helpful, but it wasn't anything too different from what my bank offers."</p>
Excel	<p>"Excel gives more freedom"</p> <p>"It's very clear and I didn't have trouble using it"</p>	<p>"Inputting the data...it was a bit too extensive"</p> <p>"It's not super intuitive...there are people out there who... would have no clue how to use [Excel]"</p>

Figure 13 shows that participants in the sessions that used Mint were almost three times more likely to speak positively about their experience than were Excel session participants, indicating that Mint provided a more positive budgeting experience.

Figure 13: Positive and Negative Responses Using Budgeting Software



Note: Responses are based on 95 focus group observations.

Focus group discussions elicited student opinions about the main strengths and weaknesses of each tool (Figure 14).

Figure 14: Strengths and Weaknesses

	Mint	Excel
Strengths	<ul style="list-style-type: none"> • Easy to set up • Manageable to maintain 	<ul style="list-style-type: none"> • Flexibility • Customization
Weaknesses	<ul style="list-style-type: none"> • Customization of the budget • Use of personal financial information 	<ul style="list-style-type: none"> • Time Consuming • Need prior experience

Note: Responses based on 95 focus group observations.

Mint

Mint’s strengths were making it less overwhelming to create a budget and more manageable to maintain one. Most students in our sample reported not using a budget and that one of their biggest hurdles is knowing how to start, including knowing what categories to use and how to set up a budget format. They recognized that Mint helped overcome these challenges by offering a budget template and the ability to link accounts, providing a full picture of their finances. One student said, “[Mint] is just really good for organizing your thoughts and then being able to see it. It’s having everything there for you.” Students also liked that Mint helped with budget maintenance by automatically tracking spending and income and offering visually appealing graphs of spending trends. This helped them to easily understand where money was going.

“Having that visual alert you a little bit rather than just seeing numbers...I think the visual aspect helps a lot.”

The most common critiques were confusion about how to edit the various budget categories and mistrust in giving Mint access to personal financial information. While many said Mint was easy to use, they had difficulty understanding some budgeting features. Some students expressed frustration when they tried to create a new budget, adjust categories, or understand the sum of their income and expenses. One student said that “one of the least helpful things...the fact that I couldn’t make a new budget.” Another student made a similar comment: “on the budget [tab], me and my partner were having trouble...it was a little confusing.” Mint does allow users to delete, add, or change budget categories, but these features were not clear to students. Additionally, students liked the idea of having all financial information in one place but said they felt uneasy linking their accounts to Mint, as they were not sure how safe their information would be and how it would be used. Multiple

students expressed reluctance about linking their accounts because a similar budgeting tool was offered by their bank or because their main financial account was from GW and not compatible with Mint.

Excel

Students in the Excel workshop sessions felt that Excel's main strengths as a budgeting tool were flexibility and customization. Excel does not offer many budgeting templates and often requires a budget be built from scratch, and this was an appealing feature for many students. One student said he had investments but no debt, so he preferred Excel because he could build a budget that focused on investment value rather than debt repayment.

"I think Excel gives a great platform for programming yourself and seeing the final result rather than trying to find an app that fits your lifestyle."

Although Excel's adaptability was considered a strength by many students, the need to create a budget from scratch was considered a drawback by others. Not all students felt they had enough experience with Excel or adequate personal finance knowledge to successfully build a budget. They expressed concern that working with Excel would be difficult for individuals with no prior experience with the software. One student noted: "the most challenging thing would be if you didn't know about and how to use this software, then it would be really hard to analyze the whole case." Another critique of Excel was the time it would take to continually update and track spending. The consensus was that they would be unlikely to stick with budgeting if they had to continually input information. One student stated, "I'm definitely not going to have time to track my finances even though it would be a very good thing."

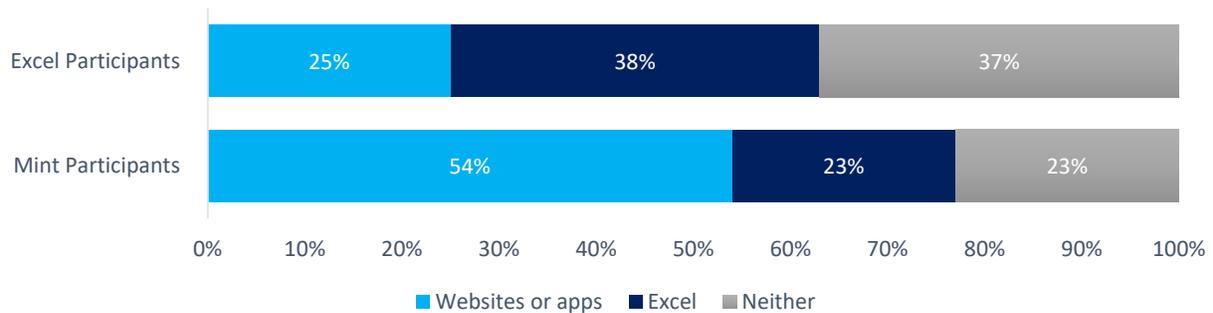
Students did not have the chance to experience both Mint and Excel. However, numerous students had enough familiarity with both to note that each software tool has its strengths for budgeting, with Excel best for long-term and broad planning and Mint best for daily, on-the-go tracking.

Post-Workshop Engagement with Budgeting Tools

Focus group discussions revealed increased willingness among students to start budgeting. The follow-up survey asked students if they had started using websites, apps, or Excel to help with financial tasks. We find that Excel participants were slightly more likely to report using Excel while Mint participants were more likely to report using automated websites or apps for financial tasks. This suggests that workshop

exposure to a particular budgeting tool influenced tool use following the workshop. Figure 15 reports students' responses from the follow-up survey.

Figure 15: Use of Budgeting Tools After Workshop



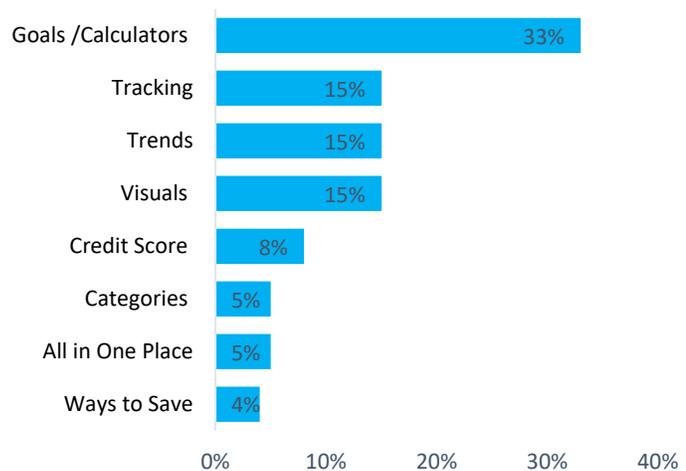
Note: Responses are based on 99 observations from the follow-up survey.

More than half (54 percent) of Mint session participants reported using websites or apps to help with financial tasks after the workshop compared to 25 percent of Excel session participants. Similarly, 38 percent of Excel session participants reported using Excel after the workshop compared to only 23 percent of Mint participants. Students who participated in the workshop sessions that featured Mint were more likely to engage in use of a budgeting tool for financial tasks following the workshop, with only 23 percent of the Mint group reporting no use of a budgeting tool following the workshops, compared to 37 percent of Excel session participants.

Feedback on Mint's Features

Students who participated in the workshop sessions featuring Mint were asked, during the focus groups, to identify Mint's most helpful features (Figure 16). The ability to set goals and the calculations integrated with the goal-setting were the most popular features. When using Mint to help allocate money to different goals in the workshop setting, students were able to use the calculators to help determine

Figure 16: Most Helpful Features of Mint



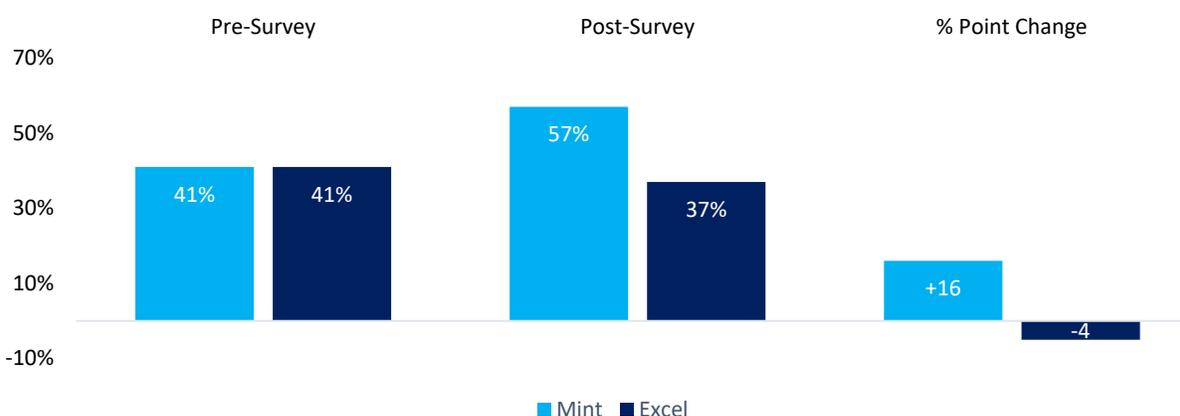
Note: Responses are based on 49 focus group observations.

how the meeting of debt repayment or saving goals changed with different budgeting scenarios. This helped students understand the long-term outcomes of daily saving and spending decisions. As one student stated about the loan repayment goal, “it does all of the math for you...it showed you exactly how much money you should save per week and then you can adjust it to see how you could cut down your loan time from 10 years to five years and as an individual, I wouldn't necessarily know what numbers to do that with. So, that was good.” Another feature that students liked was the automatic tracking of spending and income. Based on results of the pre-and post-survey, it seems that exposure to the goal-setting calculation feature and the automatic spending tracking may have influenced students’ financial attitudes and behaviors.

Influence of Budgeting Tool on Financial Behaviors and Attitudes

Before participating in the workshops, less than half (41 percent) of all participating students reported feeling confident in their ability to meet a financial goal. Post-survey results showed a 16 percentage-point increase in confidence among students who had participated in the Mint sessions (Figure 17). While this difference is not statistically significant, it is notable in comparison to students who participated in the Excel sessions, as they showed little to no increase in confidence. Because this change was seen only among participants in the Mint workshop sessions, it could be related to the goal-setting feature that was so popular with students who used Mint. Students’ confidence in their ability to achieve financial goals may have been impacted by their improved understanding of how daily spending habits impact the ability to achieve financial goals.

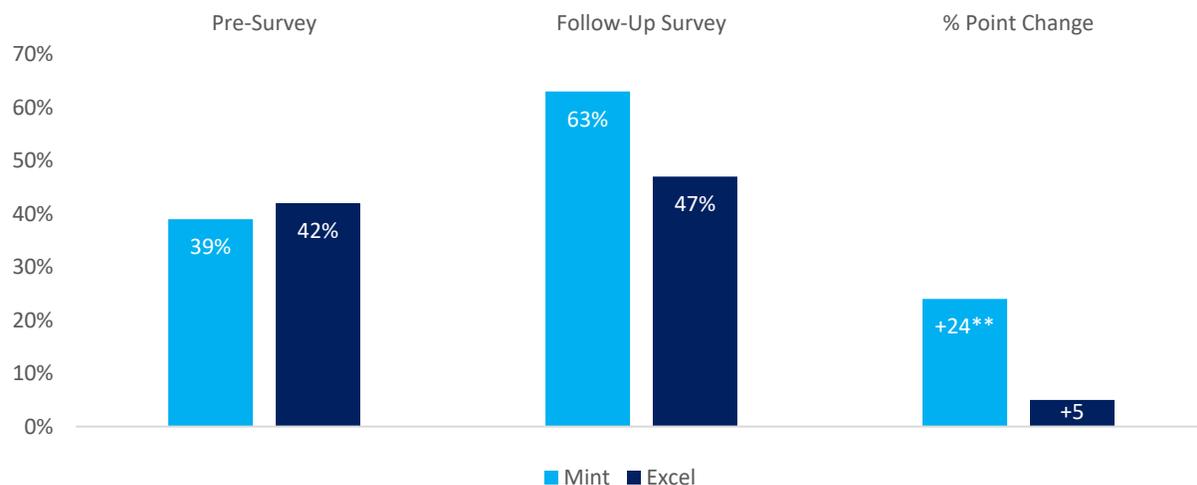
Figure 17: Students’ Confidence in their Ability to Achieve a Financial Goal



Note: Responses are based off 95 observations, 49 from Mint and 46 from Excel.

Based on the surveys, it also appears that exposure to Mint may have changed students' tracking of their spending. Before the workshop, less than half of students tracked their spending (39 percent of Mint session participants and 42 percent of Excel session participants). In the follow-up survey one month after the workshop, 63 percent of Mint session participants reported that they had recorded their bills and expenses in the month since the workshop, a significant 24 percentage-point increase (Figure 18). This is compared to little or no change for Excel session participants. The popularity of the spending tracking feature in Mint likely influenced this result, perhaps helping students understand how tracking their expenses could be beneficial to budgeting.

Figure 18: Percent of Students who Record their Bills and Expenses



*Note: Responses from the pre-survey are based on 95 observations and follow-up survey on 62 observations. Significance based on Welch's t-test, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$*

It is important to note that these results may be downwardly biased as the follow-up survey was conducted during the coronavirus pandemic. During this time, students were asked to leave campus and many returned home to their parents or guardians. As the shut-down began, stores were closed and spending drastically decreased. Moreover, students had other concerns relating to their living situation, health, and education. Despite these drastic changes, we still note a significant improvement in recording of spending among Mint session participants.

CHALLENGES TO IMPLEMENTING FINANCIAL EDUCATION

Financial education has many benefits, from improving financial knowledge and, ultimately, behavior to increased awareness and confidence. The young have the most to gain from financial education, as they can attain financial knowledge before consequential decisions are made. However, there are numerous challenges that prevent students from improving their financial behavior.

One of these challenges is lack of awareness of the importance of financial education. Results from our focus groups and surveys show that few students actively engage in budgeting activities because of the perception that budgeting, while important later, is not a skill that is currently relevant for them. This attitude may keep students from seeking out financial education, and we find evidence for it in responses to the follow-up survey question that asked whether students would have participated in the workshop if no monetary incentive was offered; only one-third of students said they would have.

This offers insight into reasons that youth financial education programs may struggle with low participation rates. A potential avenue to increased participation could be to focus on topics that foster a healthy level of financial anxiety. We found that when students felt a sense of urgency about a topic, such as starting to save for retirement early, they were more willing to change their behavior.

Another challenge illuminated by our study is that engagement seems to relate to relevance. For students to feel the workshop information was relevant to them, it needed to relate directly to their current financial situation or plan. For example, workshop participants without student loans felt that learning about debt management was irrelevant, decreasing the likelihood that they would build debt management skills that could be of future use. Some students felt the case study character's situation was not relevant to them because they did not also have a consistent income stream. This gap in relevance might decrease the likelihood of participants adapting budgeting practices from the workshop to their own lives.

This finding implies that effectiveness of financial education programs can depend on their ability to adapt to the specific needs and interests of participants, which is a challenge when participants come from a range of socioeconomic backgrounds and have different experiences, priorities, and needs. So the first hurdle for programs, even prior to content creation, is in accurately identifying the needs and priorities of its participants. One way to deal with this hurdle is to offer a variety of topics or courses that participants can choose from.

The final challenge relates to understanding program effectiveness. As previously noted, short, one-time programs are unlikely to significantly improve financial knowledge and behavior, and we see this in our study: results from the pre- and post-survey show no significant improvement in financial knowledge. Moreover, the follow-up survey shows that while one-third of students are using a new budgeting tool, another third are still not budgeting, and the remaining third are using the same budgeting tool as before the workshop. However, following the workshop, many students noted increased awareness of the value of building budgeting skills and starting to save early. Even if their behavior does not change as a result of the workshop, students may be more likely to seek out information or talk with parents or peers about money matters, placing them on a path to greater financial knowledge and informed financial decision-making.

Measurements of attitudes and perceptions can be an important complement to information on financial knowledge and behavior in order to accurately understand the influence of a financial education program. Our study captured attitudes and perceptions by evaluating levels of confidence in achieving financial goals, willingness to make sacrifices now to buy something important in the future, and preparedness to speak with parents about money matters.

RECOMMENDATIONS

Following the workshops, we asked students what additional features would be helpful to have in the Mint application, or in a budgeting tool in general. Students suggested more guidance on Mint software and budgeting strategies. Students felt that Mint was easy to use but that short videos or a tutorial would help them better understand the features of the software.

“Had I had an overview before we started the case study of how to use Mint, it probably would have been better...cause there's just a lot of stuff you can do, which is great. But we didn't know how it worked.”

A limitation of this recommendation is that students were not exposed to any tutorials currently offered by Mint. Students were provided a brief description of some of the tabs within Mint during the workshop, but were not exposed to the full tutorial, so this recommendation is reflective of the setup of the workshop and not of Mint's actual features.

Students also expressed a desire for more educational content on budgeting. They suggested short videos or guidance on interest rates that would help users better understand how to manage their debt. They recommended short descriptions, such as “key facts about student loans or...the average time for people to pay back” their student loan and said they would not be likely to read lengthy content. General information on spending and saving could give students an understanding of how their behavior compares to a baseline. Others said that more tailored guidance, such as how to lower their tax burden, could be helpful. Their expressed preference was to receive educational content online through text or videos. Some expressed willingness to talk to an expert at Mint about their personal finance, but they felt they would be more likely to do so later on when they become more financially independent. Students also expressed some concern about whether the expert would be acting in their best interest.

Another student recommendation was to use notifications as positive reinforcement of good behavior or to increase financial anxiety to change negative behavior. As with diet and workout plans, a major obstacle to successful budgeting is the dedication to stick to a plan. Notifications that let users know if they were getting close to their goal would encourage them to continue their behavior. Notifications would also help if they were getting close to overspending. The resulting increase in anxiety could motivate them to change their behavior.

*"I think it would help me because I think that ...the shame of something calling you out.
 It's just enough to be like, okay, maybe I should not do that."*

Recommendations from GFLEC Staff

Researchers from GFLEC developed and performed the evaluation, conducted the workshop, and observed student engagement throughout all four workshop sessions. Based on observations of student engagement and student questions, GFLEC makes the following recommendations to improve the use of Mint as an educational tool:

- Improve the budgeting tab interface to provide more guidance and add goals that are relatable to young users. Numerous students were confused about how to create the budget and follow the format of income and expenses. Moreover, students did not easily understand how to adjust categories within the budget or how their financial goals were integrated with the monthly budget. This contrasted with the trends feature which, through charts and visual aids, students could easily understand how the money was being spent or how savings had changed over time.
- Add goals or categories that are more relatable to young people. We heard throughout the workshops and follow-up survey that students understand why budgeting is important but would like to have a greater focus on financial challenges they are currently facing. For example, categories could include textbook or school supplies. Additionally, goals or features could be included to help students accurately anticipate living costs as they become more financially independent.

CONCLUSION

Young people have a lot to gain from financial education. Many young people have levels of financial knowledge that are too low to enable them to successfully navigate the complex financial decisions they will face as they exit school and enter the workforce. Financial education can better prepare them, yet its benefits can be difficult to recognize and document: students do not prioritize personal finance because they do not see it as important to their current circumstances; financial education may not lead to behavior change if students do not feel it is relevant to their exact circumstances; and indicators frequently used to measure impacts of financial education do not always capture important effects.

We found that integrating Mint, a real-time, automated platform, into a budgeting workshop can have unique benefits for participants. Even greater benefits could be realized if Mint could incorporate more educational content—information on how to best take advantage of Mint’s features as well as information about personal finance in general—into its applications. Offering short descriptive videos could help students connect personal finance concepts with their own circumstances. Additionally, more notifications of positive and negative behavior might help students build budgeting habits and prioritize budgeting. Finally, Mint could add more spending categories and goals that directly relate to the financial decisions young people are currently facing. The more students feel the tool is applicable to their current financial situation, the more likely it is that they will use it, and this will in turn build good habits, which will have important future payoffs.

Acknowledgments

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Appendix

Table A: *Demographics (GW Sample and NFCS Comparison Sample)*

Variable	NFCS Comparison Sample*	Total GW Sample Population	GW Sample - Survey Only (Control)	GW Sample - Workshop (participants)
Age (mean)	20	21	22	20
Male	50%	30%	29%	32%
Race/Ethnicity				
White/Caucasian	56%	52%	54%	50%
Asian	13%	21%	21%	21%
Black/African American	13%	4%	NA	6%
Hispanic/Latino	16%	8%	8%	8%
Other	2%	3%	4%	2%
Prefer not to say		n/a	2%	n/a
Mixed		12%	11%	13%
Enrollment				
Full-time students (not working)	71%	40%	41%	40%
Full-Time students (working)		51%	44%	56%
Part-Time students	29%	9%	15%	4%

College Financing

(students choose all that apply)

Help from parents	NA	83%	80%	87%
Scholarship	NA	80%	74%	83%
Grants	NA	32%	30%	34%
Working	NA	62%	38%	41%
Student loans	47%	45%	47%	44%

Financial Literacy

Correctly answer Big 3	19%	51%	45%	56%
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Observations	341	161	66	95
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Note: *NFCS Comparison Sample includes individuals who are between the ages of 18 and 22, are full- or part-time students and whose parents/guardians have attained a bachelor's degree or higher.

Table B: Financial Autonomy Indicators of Workshop and Survey-Only Participants

Variable	Workshop Participants		Survey-Only Participants	
	Pre-Survey	Post-Survey	Pre-Survey	Post-Survey
I am willing to make sacrifices now to buy something important	79%	83%	83%	76%
% Point Change		(+4)		(-7)
I like to think thoroughly before deciding to buy something	78%	79%	82%	77%
% Point Change		(+1)		(-5)
I like to research prices whenever I buy something	78%	82%	74%	74%
% Point Change		(+4)		(0)
I pay attention to news about the economy as it may affect me	31%	45%	72%	29%
% Point Change		(+14**)		(+3)
I try to advise my parents on money matters	19%	24%	12%	20%
% Point Change		(+5)		(+8)
Observations	95		66	

Note: Significance based on Welch's t-test, *** p<0.01, ** p<0.05, * p<0.10

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