# The More, the Better: Evaluating the Effects of a Three-Year Multi-Course Financial Education Intervention

**Yang Bai**
Everfi

**Daniel Zapp**
Everfi

*Using an RCT experimental design, this study analyzed the effects of a three-year, multi-course financial education program on a group of upper middle school students recruited online. The impact of the fully digitized courses was evaluated at the end of the study and six months after the program completion. Results of repeated measure mixed linear model estimation showed that compared to the single-course alternative, the multi-course intervention was significantly more effective in increasing students' confidence in their basic financial skills, and the effect remained six months post-intervention. Although no effect of the intervention on the reported financial behaviors was found immediately after the program, the participants who took multiple courses started to show improvement six months after the intervention. The analysis also found that the multi-course intervention, though not leading to more conversations between the participants and their parents on financial topics, prevented the decline of communication which was observed among those who took only one course. Taking a single course on fundamental financial literacy topics such as saving, budgeting, and investing had a short-term impact on students' financial knowledge, which completely diminished by the end of the intervention.*

*Keywords: Financial education, teenagers, experimental design, longitudinal study, multi-course intervention*

## Introduction

Currently, facing an overwhelming number of complex financial and economic situations, many young people are unprepared to make informed financial choices as they move into adulthood. Academic literature on the state of financial capability has been very clear regarding the alarmingly low financial literacy among future generations, with only about 10% of 15-year-olds achieving high proficiency (OECD, 2022). Financial literacy scores have been found to be directly correlated with an individual's financial wellness. Compared to Gen Z, members of Gen Y are three times more likely to have even one month of expenses stored in non-retirement savings (TIAA / GFLEC, 2022). Recognizing that the habits adolescents form at young age can often shape financial behaviors in adulthood (Lusardi, 2019), many programs have been developed which focus on improving the financial capability of younger people. In general, studies have shown positive effects of early financial education on adolescents' financial knowledge, attitude and behaviors (Amagir, Groot, van den Brink & Wilschut, 2018).

Despite the generally positive effects found in the literature, a few issues in early financial education and its impact analysis should also be noted. First, although many studies detected

positive changes immediately after program completion, there is mixed evidence for effects in the middle and long run. The few studies which do examine post-intervention effects tend to focus on financial behaviors (Rehman & Mia, 2024), while the middle and long-term effects of financial education on financial knowledge and self-efficacy are much less researched. Second, while most research focuses on school-based programs, home-based financial education where students can receive the education in a more natural and relaxing setting and where parents are actively involved can be an important supplement or, in some cases, enhance the formal education at school (Moreno-Herrero, Salas-Velasco & Sanchez-Campillo, 2018). Nevertheless, few studies provide empirical evidence to show if home-based financial education indeed leads to significant improvement in learners' financial capability. Last, but not least, although intensive financial capability programs which last for a longer time and have more sessions have been shown to generally lead to better learning outcomes (Lusardi, Michaud & Mitchell, 2020; Choudhary & Jain, 2023), there are not many studies which test whether increasing program intensity also benefits adolescent students. These teenager students are more prone to the diminishing returns of increasing intensity (Kaiser & Menkhoff, 2017) as they may not have faced that many financial situations in their life to contextualize and internalize what they learn in the courses.

Considering the existing research and its limitations, this study examined the effects of a six-course intervention lasting for three years on adolescent learners and analyzed how those who took multiple courses differentiated from those who only took one introductory financial literacy course in their financial knowledge, self-efficacy and reported behaviors. To create an intensive educational experience without overwhelming the students, participants of the study only needed to finish one assigned course within a two-month course window in each semester from Fall 2021 to Spring 2024. Participants were allowed to take the fully digitized courses online and at home. Apart from the survey immediately after students finished each course, a follow-up survey was conducted six months after the last course window to test if the effects of the courses still existed after the program concluded.

## Literature Review

In general, studies have found compelling evidence which shows that financial education can significantly increase adolescents' financial capability. Increased financial knowledge is one of the most well-documented effects of financial education. Kaiser, Lusardi, Menkhoff and Urban (2022) conducted a thorough meta-analysis of 76 RCT studies examining the effects of financial education programs. They found the programs, on average, had positive, causal treatment effects on financial knowledge and downstream behaviors with meaningful sample sizes, even considering the potential publication bias that studies with significant findings are more likely to be submitted to journals for publication.

Increased financial self-efficacy is also recognized as a positive outcome of financial education. As a multi-facet term, financial self-efficacy, in general, refers to the level of confidence people have in their ability to manage their personal finances and deal with various financial situations to achieve their financial goals (Farrell, Fry & Risse, 2016). Heckman and Grable (2011) conducted one of the first empirical studies on financial self-efficacy. The path analysis showed that increasing financial knowledge significantly increased the students' confidence in dealing with personal financial issues. More recently, Brady, Miller, Balmuth, D'Ambrosio and Coughlin (2021) analyzed a national survey of student loan borrowers in the US and found that those with higher

perceived financial literacy on loans and debt were significantly more confident that they could manage their student loans in a responsible manner.

Financial behavioral change is undoubtedly the most heavily researched area in financial literacy studies. Kaiser and Menkhoff (2020) conducted a review of 37 experimental studies examining the effects of school-based financial education and concluded that there was a small but significant average treatment effect of school-based programs on fostering desirable financial behaviors such as saving, budgeting and healthy credit behaviors. A more comprehensive systematic literature review by Kaiser, Lusardi, Menkhoff and Urban (2022) showed a robust effect of financial education on some financial behaviors (such as saving and budgeting), but less certain on other behaviors (such as insurance and healthy credit behaviors).

### *The Sustainability of Financial Education's Effects*

Although many studies have shown the positive effects of financial education on financial knowledge, attitudes, and behaviors, the longevity of the effect remains unclear. Fernandes, Lynch and Netemeyer (2014) conducted a meta-analysis of 168 academic studies on the effect of financial education, and the findings suggested that most programs ceased to generate sizable impacts within 20 months after the intervention.

The sustainability of the effect seems to vary based on the types of behaviors measured and the age of the audience. The study by Collins (2013) tracked low-income families who were assigned to receive financial education in a housing program for 12 months. The participants had less risky credit behaviors during and shortly after the study. However, only reported behaviors were found to have improved 12 months after the program with no sizable actual behavioral changes were detected. Another study by Frisancho (2023) provided conflicting evidence. The credit and repayment behaviors of a group of high school students were checked using the data from the local credit bureau three years after they received in-class financial education. Although much smaller than the effect observed immediately after the intervention, a significantly positive effect still existed. Recognizing the need to test the post-intervention effects of financial education programs, in this study, a follow-up survey was conducted six months after the last course window.

Besides the effects of financial education, there is also a growing body of research into the optimal forms of financial education. The following sections review the literature on two major discussions which are relevant to the current study.

### *Continuous Financial Education*

Although most studies reviewed are evaluations of individual programs, there is growing recognition that continuous financial education is crucial to bring about behavioral changes. Fan and Zhang (2021) examined the data from over 17,000 individuals, they found positive behavioral changes (i.e., setting up emergency savings) were more likely to take place when education occurred at multiple venues (e.g., at home and at school) and through different life stages (e.g., from students to emerging adults) such that the positive changes caused by education of different sources can reinforce each other. The study by Wagner and Walstad (2019) provided more evidence on why continuous financial education that lasts from high school to adulthood is necessary for maintaining financial health. Examining a sample of over 22,545 individuals, they tested the differentiated effects of high school, college and on-the-job financial education. While financial education received later in one's life led to more desirable changes in behaviors that had more

imminent consequences, such as credit card and mortgage payment, early financial education was a stronger predictor for desirable financial behaviors which may not have had immediate consequences, such as having an emergency fund and making financial investments.

The importance of continuous financial education can also be examined from a program intensity perspective. Measuring retirement saving behavior, Lusardi, Michaud and Mitchell (2020) found that intensive programs with follow-up sessions after the primary instruction led to an increase in saving for retirement which lasted long after program completion, while one-time programs only had short-term effects. Choudhary and Jain (2023) conducted a systematic literature review of studies about financial literacy education programs for marginalized women. The 22 studies they examined revealed that programs with longer duration (6 months to 3 years) and follow-up sessions were more effective in fostering healthy financial behaviors such as account opening and saving.

Recognizing the value of continuous financial education, this study created an intervention which consisted of six financial education courses that adolescent participants were asked to take over a three-year period. By comparing the effect of the multi-course program to that of a single-course alternative and a control group, this study tested if the more intensive program could generate better learning outcomes. This replicates the prior research shown in adult populations.

### *Home-Based Financial Education*

Another area which receives increasing attention in financial literacy literature is the value of financial education outside of the school setting. Although school-based programs have been shown to be effective in increasing students' financial knowledge and behaviors (Kaiser & Menkhoff, 2020), there may be unique advantages in home-based financial education.

Gudmunson and Danes (2011) conceptualized financial socialization as a type of process in which individuals form attitudes, values, perceptions, and behaviors regarding financial matters by observing, modelling, modifying and learning from the people and environments around them. They also posited that family interactions could profoundly influence the financial capability of young people. The comprehensive review of the literature on financial socialization by LeBaron and Kelley (2021) showed that, despite the increasing availability of various financial education resources, parents are still the primary source for their children's financial learning.

While the critical role of parental involvement in financial education has been heavily discussed, quantitative evidence is limited. A key study by Maldonado, De Witte, and Declercq (2022) compared the learning outcomes of two financial education models: classroom intervention with parental involvement in homework and homework alone. The findings showed that although classroom intervention alone was already effective, having parental involvement at home further increased students' financial literacy by 0.38 standard deviation. Another empirical study conducted by Jorgensen and Savla (2010) showed that high levels of perceived parental involvement (i.e., how much the students feel that their parents were involved in their financial education) contributed to the formation of healthy financial attitudes and indirectly led to desirable financial behaviors. This finding suggested that the emotional support students feel in their financial learning could be a factor underlying the benefits of home-based financial education.

Given the importance of parental involvement in adolescents' financial education and the lack of empirical studies to show its value, the current study asked the participants to take the assigned courses at home to create a relaxing learning environment so that the participants could freely discuss the course content and financial matters with their parents. The study also explicitly

measured the effect of the program on student-parent communication on financial topics to test if the home-based program could encourage financial socialization with parents.

## Methodology

### *The Sample*

The participants were recruited from 567 parents with 7th or 8th grade children in Fall 2021 who confirmed their interest in participating by submitting a signup form on the study webpage. Each parent was allowed to sign up one child for this study from their family and all children signed the assent form before being included in the study. Initially, 350 children were randomly selected from 567 families, but five did not complete the baseline survey and were not included in the final sample. Each family was assured of $500 incentives each year after they finished the assigned courses and surveys from 2021 to 2024.

Among the 345 participants, 49% were in the 7th grade and 51% were in the 8th grade when the study began. There were more female participants (53%) than male participants (46%). While Hispanic/Latino students were slightly underrepresented in our sample, Black/African American students were overrepresented. In general, the percentage of students of color in the sample matched the race/ethnicity composition of the U.S K12 student population. Compared to the US general population, more parents in this study received a bachelor's or higher degree (88%). The average annual household income of the sample was between $100,000 to $149,999 and in line with the average household income of $120,000 of American families with children (US Census Bureau, 2022). When the study ended in Summer 2024, 276 participants remained in the study, and the demographic characteristics and baseline outcomes of the remaining participants were not significantly different from those of the initial sample.

### *Study Procedure*

To analyze the effects of the courses, participants were randomly assigned to one of the four condition groups:

Group 1: Participants took all six financial educational courses designed for middle school and high school students. After they finished the basic introductory course in Fall 2021, the participants continued to take five more courses on advanced topics such as banking applications, investing and business finance in the following semesters.

Group 2: Participants only took the basic introductory course at the beginning of the study and were only surveyed afterwards.

Group 3: Participants took all the courses except for the first introductory course.

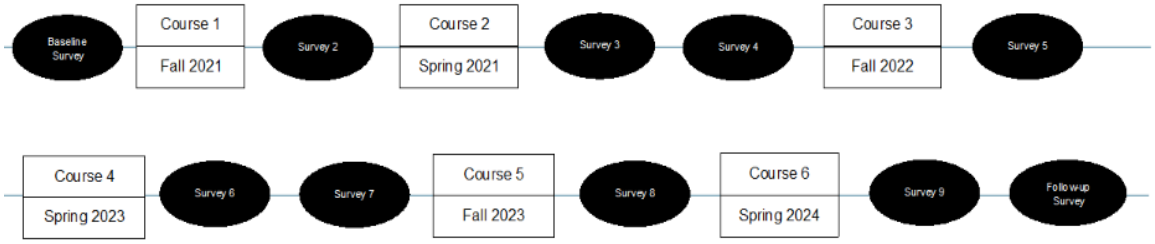
Group 4: This group served as the control group, and participants did not take any course and were only surveyed during the study.

After the random assignment, 30% of the 345 participants were in Group 1, 26% were in Group 2, 28% were in Group 3, and 16% were in Group 4. According to the baseline survey responses, the four groups did not differ significantly from each other in their starting financial knowledge, self-efficacy, or behaviors. By the end of study, 276 participants remained. The group distribution

of the 276 participants was 28% in Group 1, 28% in Group 2, 27% in Group 3 and 17% in Group 4. Attrition was not found significantly different among the four condition groups. We also compared the baseline outcomes and demographics of the 276 remaining students against those of the initial 345 participants, and no significant differences were detected. Therefore, severe attrition bias is unlikely.

The timeline of the study is provided in the chart below. All participants took the baseline survey in Summer 2021 and starting in Fall 2021, participants in the treatment groups took one course in a two-month window in each of the following semesters at home, followed by a financial capability survey (in-study survey) about their financial knowledge, attitudes and behaviors. There was a two-month interval between each in-study survey during which time the students took the assigned courses except for survey 4 and survey 7 which the participants took after the summer break without taking any courses. Given the profound influence of parents on their children, the parents also took surveys about their financial knowledge, attitudes and behaviors in each survey window, and the measures were included in the analysis as covariates.

**Figure 1**
**Timeline of the Study**




In total, the participants took nine financial capability surveys during the study (in-study surveys). A follow-up survey was conducted six months after the last in-study survey to test the effects of the program after content conclusion. Although tracking the students for even longer, as Frisancho (2023) did in the analysis of credit card repayment behaviors, could reveal more information on the long-term effects of the intervention; it also imposes several challenges. First, the longer the interval between the last activity and the survey, the more participants would leave the study, which decreases the sample size and power of the analysis. Second, as the participants grew up, more incidents could happen in their life which can potentially impact their financial behaviors but are difficult to measure and control for in the study, decreasing the validity of statistical testing. Therefore, the six-month gap was selected as a compromise between the need for post-intervention effect evaluation and research validity and feasibility.

### *The Course Overview*

The financial educational programs used in the study are six digital courses designed by a leading online education company in the US for middle school and high school students. Students could finish all courses online by themselves without any assistance. Students assigned to the courses took one course each semester from Fall 2021 to Spring 2024 at home without the supervision of the researchers. Participants were given a two-month window in each semester to

complete all modules of each course. The total screen time to finish each course varies from 1.5 hours to 2.5 hours. The topics covered by the courses included:

- Basic financial literacy knowledge such as interest rate, saving and credit
- Introduction to financial investment
- Banking applications and account management
- Basic business finance and entrepreneurship
- Financing higher education plans

It is worth noting that all six courses used in this study were designed for and, in most cases, used by students at school as part of their financial education curriculum. Since this study allowed the participants to use each one of them at home and study at their own pace for two months in each semester from 2021 to 2024, the findings can shed light on whether financial education programs designed for school use can achieve the intended learning outcomes if they are used at home.

### *The Measurements*

To measure the effects of the courses, a comprehensive survey that evaluated the students' financial knowledge, self-efficacy and behaviors was administered immediately before and after each course window. The main measurements for the students included the following items:

#### Financial Knowledge

The financial knowledge of the students was tested using a simplified version of the *Test of Financial Knowledge for upper middle school or lower high school students* developed by the Council for Economic Education (2016). The internal consistency of the assessment tool was tested, and a high scale reliability was found (Cronbach's alpha = 0. 77). The 19-question test covers the following essential financial topics:

- Jobs and Income
- Buying Goods and Services
- Saving
- Credit
- Financial Investing
- Protecting and Insuring

#### Financial Self-Efficacy

The financial self-efficacy measurement for students evaluates how much confidence the students have in performing essential financial tasks suitable for their age such as making financial plans and managing a savings account (1 = Not confident at all, 5 = Extremely confident). The measurement has been used and validated in the published study conducted by Johnson, Spraggon, Stevenson, Levine and Mancari (2021). Our data confirms the high reliability of the measurement (Cronbach's alpha = 0.82).

Financial Behaviors

The 4-item scale developed and validated by Chowa and Despard (2014) was adopted in this study to measure the financial behaviors of the participants. Specifically, the frequency that students engaged in desirable financial behaviors such as tracking their monthly expenses, creating a budget, saving money for long-term goals and investing, were gauged in the survey (1 = Never, 5 = Very often). The scale had satisfactory reliability (Cronbach's alpha = 0.71).

Student-Parent Communications

Given that money-related conversations during adolescence are one of the strongest predictors for financial capability in adulthood (Jorgensen, Rappleyea, Schweichler, Fang, & Moran, 2017), a special type of behavior, the frequency that the students had conversations with their parents about financial topics at home, was measured in this study. Students were asked how often they had conversations with their parents on important financial topics (1 = Never, 5 = Very often), such as how to use their money, long-term financial goals and career and education planning. The 6-item scale had a high reliability of 0.84.

The survey also asked about the students' demographic information (age, race and grade) and previous experience with financial education (0 = No, 1= Yes). The participants were also asked to rate the interest they had in the study as a proxy for how serious they were taking the courses and surveys. The participants' parents were surveyed about their financial knowledge, self-efficacy and behaviors. These were all included in the model as control variables.

### *Statistical Method*

This study used the repeated measure mixed model method (RMM) to evaluate the impact of the courses where the time points were used as the within-subjects factor. The intercepts and time effects were allowed to vary for individuals to account for the correlated nature of the measured outcomes of the same subjects over time. Specifically, the joint test of the interaction between group assignments and time was examined to show if the change over time varied for different groups. In addition, the post-hoc test of trends was conducted as a supplementary analysis to show the differentiated change trajectories across the groups. In cases where both the treatment group and control groups showed significant trends in the same direction, the 50% confidence interval overlap rule developed by Cumming (2009) was used to determine if the change in the treatment groups was significantly larger than that of the control group. The CI overlap rule is a common method used to determine if two estimated values are significantly different. When the upper limit of one 95% CI is lower than 50% of one leg of the other 95% CI, the two values are different at about 0.95 significance level ($p = 0.05$). All statistical analyses were conducted using the STATA 17 software package.

The main purpose of the study was to examine the differentiated impact of taking multiple courses versus one course. Therefore, although the students were surveyed before and after each course window, the analysis mainly focused on the changes observed immediately after the program ended (Survey 9), followed by an additional analysis of the change from Survey 9 to the follow-up survey students took six months later. Figures showing learning outcomes immediately following each intervention for each group can be found in the appendix.

## Analysis and Results

### *Financial Knowledge*

The baseline survey showed that the students' financial literacy scores were very low before the study began, as the average test score was only 32/100 (SD = 17.3), as shown in Table 1. Model 1 tested the change from the baseline survey to the last financial capability survey immediately after the last course window. Model 2 tested data from the baseline survey to the follow-up survey. The high Wald $\lambda^2$ values showed that the set of variables included in the model were jointly significant. The LR test results showed that the RMM method fits the data significantly better than the simple linear model. Although the ICC for both models were relatively low, they were significantly different from 0. The random component estimation also showed significant differences in both the intercepts and the change over time for different individuals. Therefore, adding a random component improved the overall model fit.

**Table 1**
**RMM Estimation Results for Financial Knowledge**

| | **Model 1 (baseline – survey 9)** | **Model 2 (survey 9 - follow-up survey)** |
|---|---|---|
| **Group** | | |
| *Group 1* | -3.09 | 2.83 |
| *Group 2* | -3.73 | 0.58 |
| *Group 3* | -2.08 | 4.07 |
| **Post** (reference group = baseline survey in Model 1, = survey 9 in Model 2) | 2.91 | 2.24 |
| **Group*Post joint test** | $\lambda^2 = 1.54$, $p > 0.05$ | $\lambda^2 = 1.25$, $p > 0.05$ |
| Household income | -0.49 | -0.58 |
| Married | -1.85 | -1.01 |
| Grade | 3.4 * | 2.8 |
| Male | 6.57 ** | 7.84 ** |
| White | 4.45 * | 12.2 ** |
| Knowledge parent | 0.13 ** | 0.11 * |
| Behavior parent | 2.24 | 0.09 |
| Efficacy parent | -0.43 | -1.01 |
| Student interest | 2.43* | 1.36 |
| **Constant** | -11.43 | 0.54 |
| **Random components** | | |
| *Std (constant)* | 10.31 (95% CI: 8.03 – 13.22) | 4.41 (95% CI: 0.03 – 11.56) |
| *Std (time)* | 1.59 (95% CI: 1.25 – 2.04) | 1.96 (95% CI: 1.02 – 3.81) |
| **Wald $\lambda^2$** | 358.85, $p < 0.01$ | 60.37, $p < 0.01$ |
| **LR test vs. linear model** | $\lambda^2 = 42.13$, $p < 0.01$ | $\lambda^2 = 150.79$, $p < 0.01$ |
| **ICC** | 0.36 | 0.33 |

*Note: * $p < 0.05$, ** $p < 0.01$. Student demographics, the annual income of the households and parents' financial knowledge, attitudes and behaviors were added in the model as covariates.*

As the insignificant interaction term in Model 1 indicated, after students finished the courses, the change in their financial literacy test scores did not differ significantly from that of the control group. In fact, the post-hoc trend analysis (see Table 2 below) shows that the scores of those who took the courses and those who did not both increased significantly, and the size of improvement was not significantly different from one another. Therefore, the intervention did not seem to have an immediate impact on students' financial knowledge.

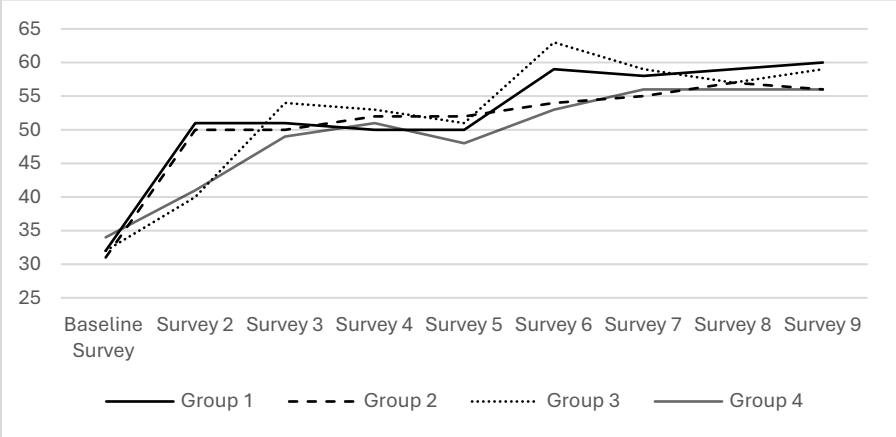
**Table 2**
**Post-hoc Trend Analysis for Financial Knowledge by Group (Baseline – Survey 9)**

| | Linear Trend | z | p> \|z\| | 95% CI | |
|---|---|---|---|---|---|
| Group 1 | 13.49 | 8.79 | 0.00 | 10.48 | 16.50 |
| Group 2 | 12.32 | 8.32 | 0.00 | 9.41 | 15.22 |
| Group 3 | 12.72 | 8.4 | 0.00 | 9.75 | 15.69 |
| Group 4 | 10.70 | 5.6 | 0.00 | 6.96 | 14.45 |

Model 2 and trend analysis showed that six months after the students took survey 9, there were no significant changes in the participants' financial knowledge scores, and those who took multiple courses during the study did not perform better than those who took only one course or did not take any courses.

The insignificant effect of the courses on students' financial knowledge might be explained by several factors. Particularly, given the time points used in the analysis, the short-term impact of courses taken earlier in the study was not shown. To illustrate, Figure 2 below shows the changes in the test scores for all four groups over the entire course of the study. Although in the end, the four groups did not differ significantly in their test scores, at several points during the study (e.g., survey 2, survey 3 and survey 6), it was clear that students who took the course at those times had significantly larger improvement in their test scores than the control group. In addition, the last two courses students took during the study covered topics about banking applications and financing higher education, while the test instrument employed in the study focused on more standard financial literacy topics such as interest rate, budgeting and saving. As a result, the knowledge students learned from the later courses might not have been fully tested by the assessment.

**Figure 2**
**Financial Knowledge Scores by Groups**




***Note: The predicted values were shown in the figure.***

### *Financial Self-Efficacy*

In general, the participants felt quite confident in their basic financial skills before the program started, as the average self-efficacy score was 3.3/5 (SD = 0.86). By the end of the program (Survey 9), the self-efficacy of those who took multiple courses (Group 1 and Group 3) increased significantly to 4.3/5. The confidence of the students who did not take any course or took only the introductory course also increased but by a lesser degree to 3.8/5. As shown in the table below, the joint test for the significance of the *time*group* interaction indicated that the changes over time varied for different groups.

**Table 3**
**RMM Estimation Results for Financial Self-Efficacy**

| | **Model 1 (baseline – survey 9)** | **Model 2 (survey 9 - follow-up survey)** |
|---|---|---|
| **Group** | | |
| *Group 1* | -0.01** | 0.42** |
| *Group 2* | -0.18 | 0.05 |
| *Group 3* | -0.06** | 0.45** |
| **Post** (reference group = baseline survey in Model 1, = survey 9 in Model 2) | 0.29* | -0.07 |
| Group*Post joint test | $\lambda^2 = 11.36$, $p < 0.01$ | $\lambda^2 = 0.73$, $p > 0.05$ |
| Household income | -0.02 | -0.03 |
| Married | -0.12 | -0.19 * |
| Grade | 0.18 * | 0.12 |
| Male | 0.14 | 0.06 |
| White | 0.04 | 0.08 |
| Knowledge_ parent | 0.002 | 0.001 |
| Behavior_ parent | 0.08 | 0.01 |
| Efficacy _ parent | 0.06 | -0.06 * |
| Student interest | 0.25** | 0.15** |
| **Constant** | 1.58 ** | 0.54 |
| **Random components** | | |

| | | |
|---|---|---|
| *Std (constant)* | 0.39 (95% CI: 0.31 – 0.49) | 0.55 (95% CI: 0.49 – 0.60) |
| **Wald $\lambda^2$** | 324.58, $p < 0.01$ | 102.19, $p < 0.01$ |
| **LR test vs. linear model** | $\lambda^2 = 19.39$, $p < 0.01$ | $\lambda^2 = 224.35$, $p < 0.01$ |
| **ICC** | 0.38 | 0.77 |

***Note: * p < 0.05, ** p < 0.01. Student demographics, the annual income of the households and parents' financial knowledge, attitudes and behaviors were added in the model as covariates. Based on both AIC and BIC, models without random time effect have better goodness of fit. Therefore, the models only allow the intercepts to vary for individuals.***

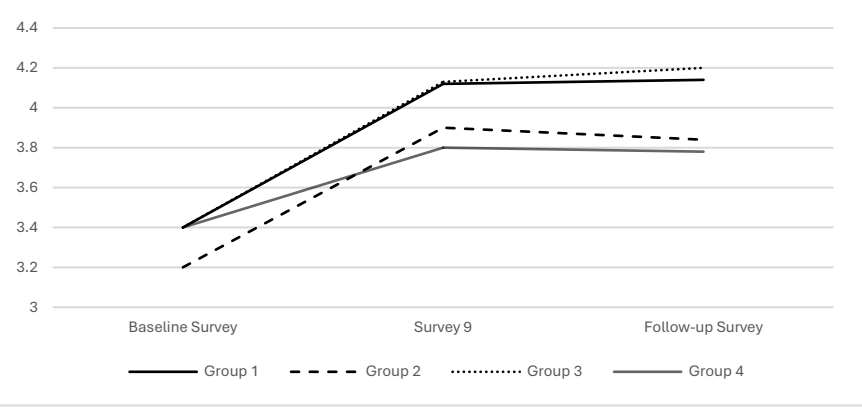
To further test how the change in students' confidence varied across the groups, the post-hoc test of trend was conducted, and a clear difference in the change was detected. The test results are summarized in the table below.

**Table 4**
**Post-Hoc Trend Analysis for Financial Self-Efficacy by Group**

| | Linear Trend | z | p > \|z\| | 95% CI | |
|---|---|---|---|---|---|
| Group 1 | 0.39 | 7.04 | 0.00 | 0.28 | 0.50 |
| Group 2 | 0.30 | 5.63 | 0.00 | 0.20 | 0.41 |
| Group 3 | 0.43 | 7.76 | 0.00 | 0.32 | 0.54 |
| Group 4 | 0.17 | 2.38 | 0.017 | 0.03 | 0.30 |

From the baseline survey to the last financial capability survey (Survey 9), all groups became significantly more confident in their financial skills. However, based on the 50% CI overlap test, the change of Group 2 was not significantly different from that of the control group, while the changes in both Group 1 and Group 3 were significantly larger than that of the control group. Therefore, the analysis suggested that taking multiple courses significantly increased students' financial confidence, while taking only one course did not have this effect. Group 1 and Group 3 did not have significant differences in the size of their improvement.

**Figure 3**
**Changes in Financial Self-Efficacy**




***Note: The predicted values were shown in the figure.***

As Model 2 shows, the *group*post* interaction for the follow-up period was not significant. Thus, there was no significant difference among the groups in how the confidence level changed six months after the intervention. Nevertheless, those who took multiple courses (Group 1 and

Group 3) were still significantly more confident than those who took only one course or no courses, as shown in Figure 3. According to this finding, it can be concluded that the effects of taking multiple courses remained for at least six months after the last in-study survey.

**Table 5**
**RMM Estimation Results for Financial Behaviors**

| | **Model 1 (baseline – survey 9)** | **Model 2 (survey 9 - follow-up survey)** |
|---|---|---|
| **Group** | | |
| *Group 1* | 0.08 | 0.19 |
| *Group 2* | -0.18 | -0.06 |
| *Group 3* | -0.05 | 0.11 |
| **Post** (reference group = baseline survey in Model 1, = survey 9 in Model 2) | 0.38* | 0.09 |
| **Group*Post joint test** | $\lambda^2 = 1.29$, $p > 0.05$ | $\lambda^2 = 2.76$, $p > 0.05$ |
| Household income | 0.03 | 0.06 |
| Married | -0.03 | 0.01 |
| Grade | 0.03 | 0.09 |
| Male | 0.02 | 0.03 |
| White | -0.06 | 0.04 |
| Knowledge _parent | 0.001 | 0.001 |
| Behavior _parent | 0.31** | 0.11* |
| Efficacy _parent | -0.06 | 0.1 |
| Student interest | 0.22** | 0.23** |
| **Constant** | 1.26 | 1.84 * |
| **Random components** | | |
| *Std (constant)* | 0.45 (95% CI: 0.35 – 0.59) | 0.71 (95% CI: 0.63 – 0.79) |
| **Wald $\lambda^2$** | 158.28, $p < 0.01$ | 67.16, $p < 0.01$ |
| **LR test vs. linear model** | $\lambda^2 = 15.26$, $p < 0.01$ | $\lambda^2 = 122.15$, $p < 0.01$ |
| **ICC** | 0.35 | 0.62 |

***Note: * p < 0.05, ** p < 0.01. Student demographics, the annual income of the households and parents' financial knowledge, attitudes and behaviors were added in the model as covariates. Based on both AIC and BIC, models without random time effect have better goodness of fit. Therefore, the models only allow the intercepts to vary for individuals.***

### *Financial Behaviors*

According to baseline survey responses, the participants reported that they did not often engage in desirable healthy financial behaviors, as the average financial health score was only 2.6/5 (SD = 0.96), and only a little over one third of the participants engaged in the desirable financial behaviors "often" or "very often". Like the case of financial self-efficacy, from baseline survey to Survey 9, the financial behaviors of students in all groups improved, but the changes were not significantly different across the groups, as indicated by the insignificant *group * time* interaction in Table 5. Thus, the courses did not seem to have an immediate effect on students' financial behaviors.

The change after the students took the last course was further examined and compared to that of those who took only one course or no courses. As Table 6 shows, the behaviors of the participants who took multiple courses, i.e., Group 1 ($\beta = 0.13$, $p < 0.05$) and Group 3 ($\beta = 0.12$, p

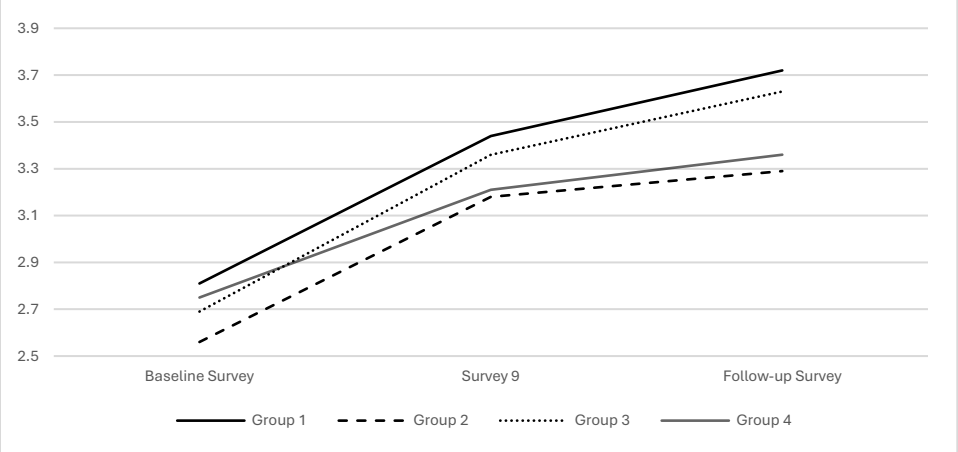
< 0.05), slightly improved six months after they finished the courses, while those in Group 2 and the control group did not significantly change.

**Table 6**
**Post-Hoc Trend Analysis for Financial Behaviors after the Intervention**

| | Linear Trend | z | p> \|z\| | 95% CI | |
|---|---|---|---|---|---|
| Group 1 | 0.12 | 2.03 | 0.04 | 0.00 | 0.2423296 |
| Group 2 | 0.04 | 0.62 | 0.54 | -0.08 | 0.1494399 |
| Group 3 | 0.12 | 1.95 | 0.05 | 0.00 | 0.2395664 |
| Group 4 | 0.05 | 0.76 | 0.45 | -0.09 | 0.1938088 |

However, as the insignificant *group*post* interaction shown in Model 2 indicated, the difference in the changes was not large enough to be statistically significant. Despite the insignificant interaction term, the clearly different trends in Group 1 and Group 3 after Survey 9 in the follow-up period provided preliminary evidence that taking multiple financial education courses could benefit them in the middle or long run. Figure 4 below shows the changes in financial behaviors for each group during the entire course of the study.

**Figure 4**
**Changes in Reported Frequency of Desirable Financial Behaviors**




***Note: The predicted values were shown in the figure.***

### *Student – Parent Communication on Financial Topics*

At the beginning of the study, only 17% of the participants reported that they talked with their parents on financial topics “often” or “very often”. As Model l in the table below shows, from the baseline survey to Survey 9, the changes in the frequency of communication were not significantly different across the four condition groups.

**Table 7**
**RMM Estimation Results for Student-Communication Frequency**

| | Model 1 (baseline – survey 9) | Model 2 (survey 9 - follow-up survey) |
|---|---|---|
| **Group (Group 4 as the reference group)** | | |
| *Group 1* | 0.11 | 0.26 |
| *Group 2* | -0.16 | -0.04 |
| *Group 3* | 0.03 | 0.14 |
| **Post** (reference group = baseline survey in Model 1, = survey 9 in Model 2) | 0.05 | -0.24* |
| Group*Post joint test | $\lambda^2 = 1.06$, $p > 0.05$ | $\lambda^2 = 8.03$, $p < 0.05$ |
| Household income | -0.01 | 0.03 |
| Married | -0.14 | -0.28* |
| Grade | 0.19 * | 0.23* |
| Male | -0.06 | -0.01 |
| White | -0.19 * | -0.08 |
| Knowledge_ parent | 0.001 | -0.01 |
| Behavior_ parent | 0.11 | 0.09* |
| Efficacy _ parent | -0.001 | 0.12* |
| Student interest | 0.17 ** | 0.16** |
| **Constant** | 1.73 * | 1.93 ** |
| **Random components** | | |
| *Std (constant)* | 0.46 (95% CI: 0.37 – 0.57) | 0.62 (95% CI: 0.55 – 0.70) |
| **Wald $\lambda^2$** | 64.82, $p < 0.01$ | 77.15, $p < 0.01$ |
| **LR test vs. linear model** | $\lambda^2 = 23.19$, $p < 0.01$ | $\lambda^2 = 120.99$, $p < 0.01$ |
| **ICC** | 0.30 | 0.63 |

***Note: * p < 0.05, ** p < 0.01. Student demographics, the annual income of the households and parents' financial knowledge, attitudes and behaviors were added in the model as covariates. Based on both AIC and BIC, models without random time effect have better goodness of fit. Therefore, the models only allow the intercepts to vary for individuals.***

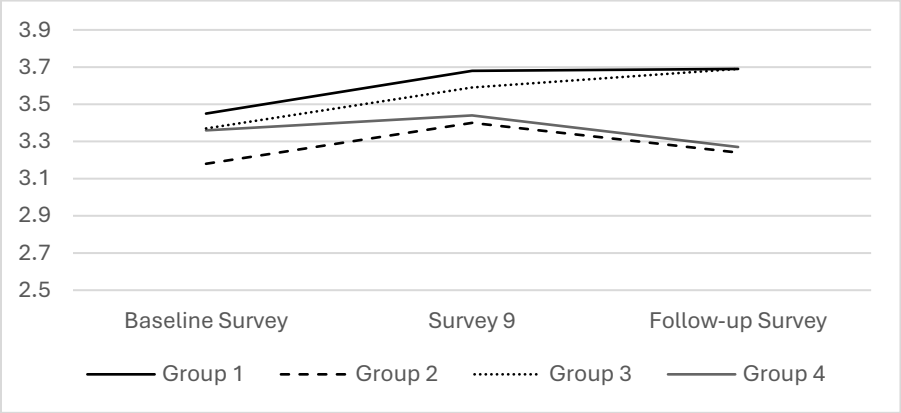
Notwithstanding what the insignificant interaction term suggested, the trend analysis (see Table 8 below) showed that by the end of the last course, students in Group 1 ($\beta = 0.13$, $p < 0.05$) and Group 3 ($\beta = 0.14$, $p < 0.05$) had a small but significant increase in their communication frequency, while those in the control group and Group 2 did not have any significant improvement. Although the difference might not be statistically significant, it did provide preliminary evidence that taking multiple courses might help encourage student-parent communication on financial topics.

**Table 8**
**Post-Hoc Trend Analysis for Parent-Student Communications (Baseline- Survey 9)**

| | Linear Trend | z | p> \|z\| | 95% CI | |
|---|---|---|---|---|---|
| Group 1 | 0.13 | 2.28 | 0.02 | 0.02 | 0.27 |
| Group 2 | 0.04 | 1.38 | 0.47 | -0.02 | 0.11 |
| Group 3 | 0.14 | 2.15 | 0.03 | 0.01 | 0.26 |
| Group 4 | 0.05 | 0.68 | 0.50 | -0.10 | 0.21 |

The effect of taking multiple courses was more clearly manifested in the follow-up period of the study. As Figure 5 below shows, six months after students took Survey 9, a clear distinction emerged between those who took multiple courses in the study and those who took no course or only one course.

**Figure 5**
**Changes in Reported Frequency of Student – Parent Communication**




***Note: The predicted values were shown in the figure.***

As Table 9 shows, the post-hoc trend analysis confirmed that while the frequency of student-parent communication of Group 1 and Group 3 did not change significantly, those in Group 2 ($\beta$ =- 0.11, $p < 0.05$) and Group 4 ($\beta$ = - 0.12, $p < 0.05$) both had a significant decrease in how often they talked with their parents about financial topics. This difference suggested that while taking multiple courses might not have a strong, immediate effect on the participants' financial communication with their parents, it could prevent the decline of communication, which was observed among those who took only one course or no courses.

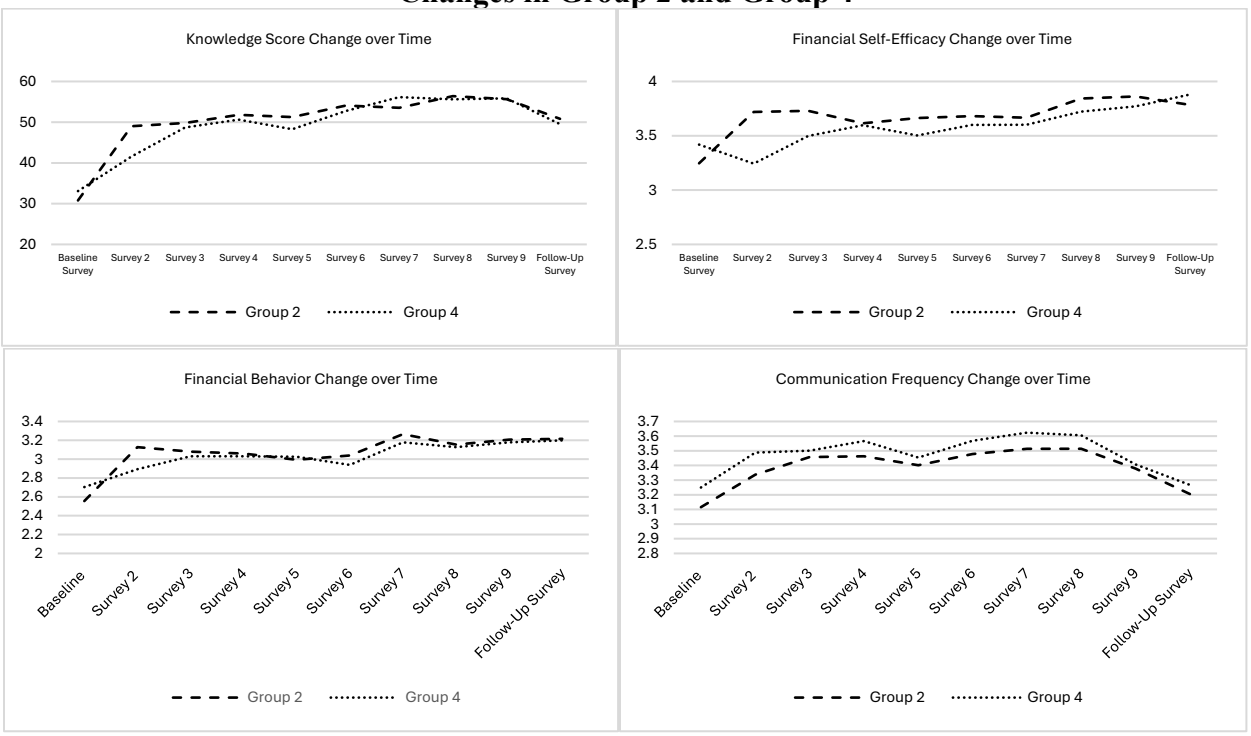
**Table 9**
**Post-Hoc Trend Analysis for Parent-Student Communication after the Intervention**

| | Linear Trend | z | p > \|z\| | 95% CI | |
|---|---|---|---|---|---|
| Group 1 | -0.03 | -0.51 | 0.612 | -0.13 | 0.08 |
| Group 2 | -0.11 | -2.11 | 0.035 | -0.21 | -0.01 |
| Group 3 | 0.02 | 0.33 | 0.743 | -0.09 | 0.12 |
| Group 4 | -0.12 | -1.97 | 0.048 | -0.25 | 0.00 |

### *Effects of the Introductory Course*

As the RMM analyses showed, when the program ended in Spring 2024 (Survey 9), no evidence was found that those who took only one introductory course (Group 2) made larger improvements in any of the outcomes measured than those in the control group did. Nevertheless, this does not mean taking a single introductory course had no effect at all. Due to the long duration of the program, it was necessary to examine if the introductory course had any short-term effects which did not sustain until the end of the program. The figures below show the changes in Group 2 and Group 4 during the study.

**Figure 6**
**Changes in Group 2 and Group 4**




***Note: The predicted values were shown in the figures. Students in Group 2 took the only course assigned to them between the baseline survey and survey 2.***

When all time points were included in the analysis, the RMM estimation and trend tests clearly indicated that even the introductory course alone had a positive impact on the students' financial knowledge, self-efficacy and reported financial behaviors. However, apart from the case of financial self-efficacy, the course only had a short-term impact immediately after students finished the course (Survey 2), and the effect diminished quickly. In the case of financial self-efficacy, two months after students took the introductory course (at Survey 3), although their score did not further increase, they were still significantly more confident than those in the control group. The positive effect ceased to exist over the Summer of 2022 (Survey 4), when no difference was found between Group 2 students and the control group.

## Discussion and Conclusion

This study analyzed the effects of a three-year financial education intervention and examined how the effects differed from students who took multiple courses to those who took only one course or no courses. Based on the repeated measure mixed model estimation and post-hoc tests of trend, the study investigated how the financial knowledge, self-efficacy, behaviors and communication changed after students finished the courses and examined if the effects of the courses still existed after the intervention ended. This section summarizes the main findings of the study and discusses the implications for students, educators, and education policymakers.

Consistent with what many studies suggest, our analysis showed that financial education did have a positive impact on students' financial knowledge test scores. However, such positive impacts were only found immediately after students finished those courses and quickly diminished within two months after course completion without additional reinforcement. While the lack of

long-term, sustained effects might be disappointing, the short-term, immediate boost to students' financial knowledge should not be taken lightly. According to the Planned Behavior Theory (Ajzen, 1991), possessing more knowledge on a subject is an important prerequisite to the formation of attitudes toward a behavior, which can eventually lead to behavioral changes. Studies have shown that increasing financial knowledge can make the learners more confident in their financial skills, and increased financial self-efficacy could lead to desirable financial behaviors (Lone & Bhat, 2021). More studies can be done to further analyze how short-term financial knowledge increase might impact long-term attitudes and behaviors differently.

The study also examined the effects of the courses on students' confidence in their basic financial skills. The findings clearly showed the value of taking multiple financial education courses as opposed to only one introductory course. In both situations, students had a significant increase in their financial self-efficacy immediately after the course. However, the effect of a single course was shorter than that achieved by taking multiple courses. The multiple-course model could lead to this positive outcome through several mechanisms. First, as students grew older, they may have started to face more complex and challenging financial situations, for which the introductory course might not be sufficient to help them make informed decisions. By providing more relevant and in-time information and knowledge, the courses on more advanced topics more directly tackled the increasingly complex issues students faced in their daily life, and therefore, more effectively increased their confidence. Second, students who took multiple courses may have had more chances to reinforce what they learned in the past. Through the reinforcement, students were reassured that they were educated on relevant topics so that they could handle real-life situations better.

Based on the students' self-reported frequency of desirable financial behaviors, taking multiple courses did not immediately make a difference. In contrast, the introductory course alone improved students' financial behaviors right after students finished the course. According to the baseline survey, the vast majority of the participants reported not having taken any financial education courses before the study. Therefore, the surge in healthy financial behaviors could be explained by the "newness effect": something perceived as new and different from what people already know may stimulate interest in trying it (Song, 2011). However, this effect did not last long and ceased to exist two months after the course was taken. The lack of lasting effect may provide some critical insights on the timing of financial education and impact evaluation. While receiving financial education as early as middle school can lay a solid foundation for future financial health among students, it may not lead to long-lasting changes in financial behaviors as the students are too young to face real-life financial situations that motivate the formation of any financial habits. As shown by the analysis, though not having an immediate difference initially, those who took multiple courses showed improvement in their financial behaviors six months after the study concluded. Noticeably, the study lasted for about 3.5 years so by the time of the follow-up survey, all participants (who joined the program when they were in the $7^{th}$ or $8^{th}$ grade) were in their final years of high school. As the participants transitioned to early adulthood, they may have started to have more real-life situations that required them to act. Only at this point, the advantage of receiving more intensive financial education would have started to manifest, as those who took more courses had more knowledge and skills to support the implementation of desirable financial behaviors.

Although communication with their parents is an important component of adolescents' financial socialization, few studies have analyzed this aspect as a potential effect of financial

education. In line with what the literature on adolescence generally suggests, this study found that teenagers had a strong tendency to refrain from talking with parents. By the last in-study survey, even the participants who took multiple courses only had a small increase in their financial communication with their parents. Nevertheless, an important divergence was observed six months after the intervention. While no further improvement was found among those who took multiple courses, the students who did not take any course or took only one course communicated significantly less often with their parents. This finding lends another piece of evidence to show the value of the multi-course model of financial education: although it might not significantly increase the frequency that adolescents talk with their parents on financial topics, it can help prevent the decline in communication on this important topic during this critical period.

Through the RMM estimation and trend analysis, this study showed the importance of continuous financial education with a series of courses taken over a long period of time. Although the quality of individual courses should not be overlooked, effective financial education that leads to long-term improvement is a journey where students engage in financial learning throughout their development. Therefore, educators and policymakers should, besides focusing on the content design of each program, also pay attention to the synergy of various financial education resources and study the optimal implementation model, such as combining school use and home study time and ideal program intervals, to maximize the values of continuous financial education.

Another significant contribution of the study is that home-based financial education can also lead to significant improvement in key financial capability outcomes. Although a few studies have suggested that home-based financial education could have some unique advantages over school-based programs due to increased parental involvement and more natural and relaxing study settings (Gudmunson & Danes, 2011; LeBaron & Kelley, 2021), there is a lack of empirical evidence to support that. This study fills the gap by clearly showing the positive impact of the courses even though they were taken at home. Moreover, the fact that the courses used in the study were initially designed for school use challenges the assumption that home-based programs must be different from the ones used at school in order to be effective. The findings of the study suggest that well-designed, versatile programs have the potential to benefit both school users and home users. A natural follow-up study would be to compare the learning outcomes of the students who take the courses at home to those who take the courses at school to see in which areas home-based programs underperform and outperform the school-based counterparts.

## Limitations

This study has several limitations which should be noted. First, the students in this study were self-selected to participate in the study. Although we did control for their demographics, household socioeconomic conditions and level of interest in participating in the study, it is still possible that the positive learning outcomes were results of the high motivation and dedication of the self-selected participants. Second, although the study used a control group to control the potential bias caused by the natural change students experienced as they grew up, it cannot completely rule out the possibility that the effects detected are caused by the participants' awareness that they were in a research study on financial literacy. To ensure it was indeed the education that caused the positive changes, a natural experiment is needed where the change trajectories of students who took financial education courses in a natural setting are evaluated against a comparable group of students who did not take any course. Last, the participants of the study were given the freedom to take the courses at their own pace at home in each course window without the supervision of the

researchers. Although this arrangement provided a natural, anxiety-free learning environment for the students, the courses might not be used in the optimal way, which could have led to even better learning outcomes. Such an arrangement also made it impossible to examine the potential impact of learner behaviors, such as pace of learning, interval between usage, timing of studying, etc., on the learning outcomes.

## References


Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-T

Amagir, A., Groot, W., Maassen van den Brink, H., & Wilschut, A. (2018). A review of financial-literacy education programs for children and adolescents. Citizenship, Social and Econ*omics Education, 17*(1), 56–80. https://doi.org/10.1177/2047173417719555

Brady, S., Miller, J., Balmuth, A., D'Ambrosio, L. A., & Coughlin, J. F. (2021). Factors contributing to the financial self-efficacy of student loan borrowers. *Financial Counseling and Planning, 32*(3), 493–506. https://doi.org/10.1891/JFCP-19-00067

Choudhary, H., & Jain, H. (2023). Addressing financial exclusion through financial literacy training programs: A systematic literature review. *Empirical Research in Vocational Education and Training, 15*(1), 8–18. https://doi.org/10.1186/s40461-023-00147-9

Chowa, G. A. N., & Despard, M. R. (2014). The influence of parental financial socialization on youth's financial behavior: Evidence from Ghana. *Journal of Family and Economic Issues, 35*(3), 376–389. https://doi.org/10.1007/s10834-013-9377-9

Collins, J. M. (2013). The impacts of mandatory financial education: Evidence from a randomized field study. *Journal of Economic Behavior & Organization, 95*, 146–158. https://doi.org/10.1016/j.jebo.2012.08.011

Cumming, G. (2009). Inference by eye: Reading the overlap of independent confidence intervals. *Statistics in Medicine, 28*(2), 205–220. https://doi.org/10.1002/sim.3471

Fan, L., & Zhang, L. (2021). The influence of financial education sources on emergency savings: The role of financial literacy. *Family and Consumer Sciences Research Journal, 49*(4), 344–361. https://doi.org/10.1111/fcsr.12400

Farrell, L., Fry, T. R. L., & Risse, L. (2016). The significance of financial self-efficacy in explaining women's personal finance behaviour. *Journal of Economic Psychology, 54*, 85–99. https://doi.org/10.1016/j.joep.2015.07.001

Fernandes, D., Lynch, J. G., & Netemeyer, R. G. (2014). Financial literacy, financial education, and downstream financial behaviors. *Management Science, 60*(8), 1861–1883. https://doi.org/10.1287/mnsc.2013.1849

Frisancho, V. (2023). Is school-based financial education effective? Immediate and long-lasting impacts on high school students. *The Economic Journal, 133*(651), 1147–1180. https://doi.org/10.1093/ej/ueac084

Heckman, S. J., & Grable, J. E. (2011). Testing the role of parental debt attitudes, student income, dependency status, and financial knowledge in shaping financial self-efficacy among college students. *College Student Journal, 45*(1), 51–65.

Johnson, J., Spraggon, D., Stevenson, G., Levine, E., & Mancari, G. (2021). Impact of the FutureSmart online financial education course on financial knowledge of middle school students. *Financial Counseling and Planning, 32*(3), 368–386.
https://doi.org/10.1891/JFCP-19-00061

Jorgensen, B. L., & Savla, J. (2010). Financial literacy of young adults: The importance of parental socialization. *Family Relations, 59*(4), 465–478. https://doi.org/10.1111/j.1741-3729.2010.00616.x

Jorgensen, B. L., Rappleyea, D. L., Schweichler, J. T., Fang, X., & Moran, M. E. (2017). The financial behavior of emerging adults: A family financial socialization approach. *Journal of Family and Economic Issues, 38*(1), 57–69. https://doi.org/10.1007/s10834-015-94810

Kaiser, T., & Menkhoff, L. (2017). Does financial education impact financial literacy and financial behavior, and if so, when? *The World Bank Economic Review, 31*(3), 611–630. https://doi.org/10.1093/wber/lhx018

Kaiser, T., & Menkhoff, L. (2020). Financial education in schools: A meta-analysis of experimental studies. *Economics of Education Review, 78*, 101930. https://doi.org/10.1016/j.econedurev.2019.101930

Kaiser, T., Lusardi, A., Menkhoff, L., & Urban, C. (2022). Financial education affects financial knowledge and downstream behaviors. *Journal of Financial Economics, 145*(2), 255–272.

LeBaron, A. B., & Kelley, H. H. (2021). Financial socialization: A decade in review. *Journal of Family and Economic Issues, 42*(Suppl 1), 195–206. https://doi.org/10.1007/s10834-020-09736-2

Lusardi, A. (2019). Financial literacy and the need for financial education: Evidence and implications. *Swiss Journal of Economics and Statistics, 155*, Article 1. https://doi.org/10.1186/s41937-019-0027-5

Lusardi, A., Michaud, P. C., & Mitchell, O. S. (2020). Assessing the impact of financial education programs: A quantitative model. *Economics of Education Review, 78*, 101899. https://doi.org/10.1016/j.econedurev.2019.05.006

Maldonado, J. E., De Witte, K., & Declercq, K. (2022). The effects of parental involvement in homework: Two randomized controlled trials in financial education. *Empirical Economics, 62*(3), 1439–1464. https://doi.org/10.1007/s00181-021-02058-8

Moreno-Herrero, D., Salas-Velasco, M., & Sánchez-Campillo, J. (2018). Factors that influence the level of financial literacy among young people: The role of parental engagement and students' experiences with money matters. *Children and Youth Services Review, 95*, 334–351. https://doi.org/10.1016/j.childyouth.2018.10.042

OECD. (2022). *The Programme for International Student Assessment (PISA) 2022 results: United States.* https://www.oecd.org/en/publications/pisa-2022-results-volume-i-and-ii-country-notes_ed6fbcc5-en/united-states_a78ba65a-en.html

Rehman, K., & Mia, M. A. (2024). Determinants of financial literacy: A systematic review and future research directions. *Future Business Journal, 10*(1), 75. https://doi.org/10.1186/s43093-024-00365-x

Salas-Velasco, M. (2022). Causal effects of financial education intervention aimed at university students on financial knowledge and financial self-efficacy. *Journal of Risk and Financial Management, 15*(7), 1–16. https://doi.org/10.3390/jrfm15070284

The Council for Economic Education. (2016). *Test of financial knowledge: Examiner's manual.* https://www.econedlink.org/wp-content/uploads/2018/09/TFK-manual-final.pdf

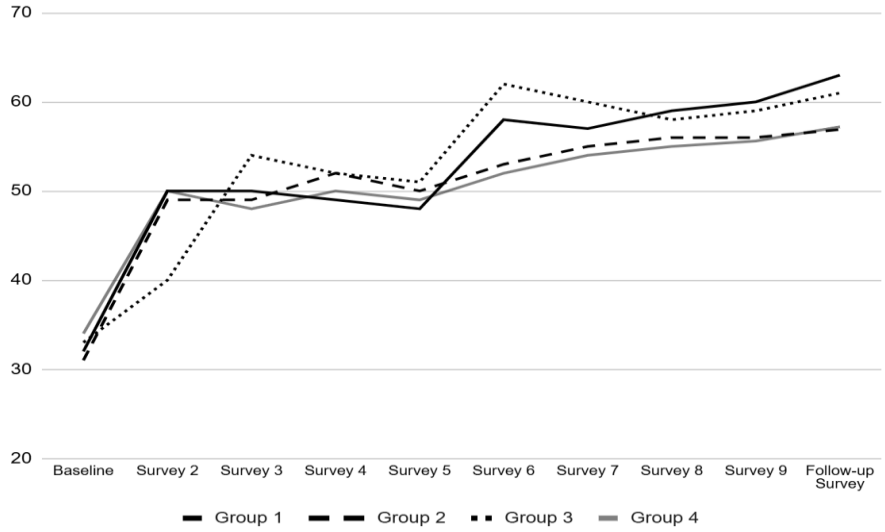
TIAA Institute & Global Financial Literacy Excellence Center. (2022). *How financial literacy varies among U.S. adults: The 2022 TIAA Institute-GFLEC Personal Finance Index.* https://www.tiaa.org/content/dam/tiaa/institute/pdf/research-report/2022-04/tiaa-institute-gflec-2022-personal-finance-p-fin-index-ti-yakoboski-april-2022.pdf

Wagner, J., & Walstad, W. B. (2019). The effects of financial education on short-term and long-term financial behaviors. *Journal of Consumer Affairs, 53*(1), 234–259. https://doi.org/10.1111/joca.12210

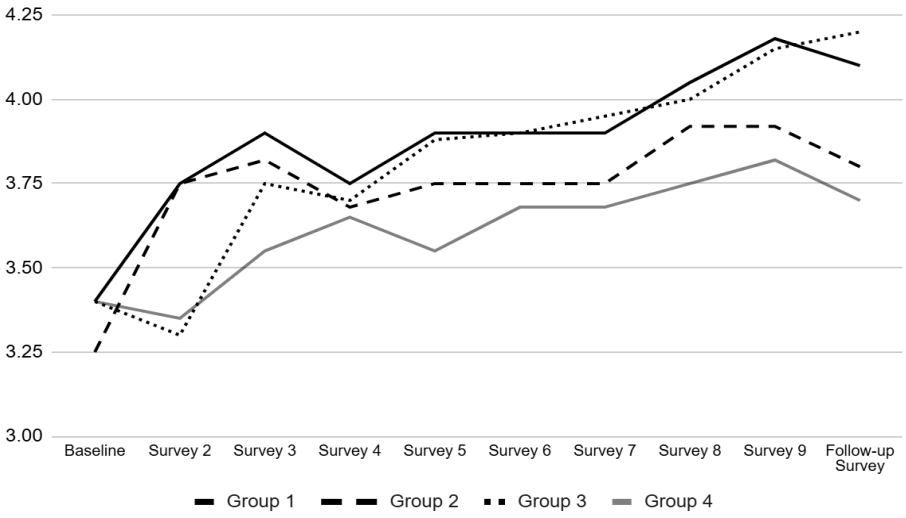
## Appendix

## Learning Outcomes for Each Group at Each Survey Period

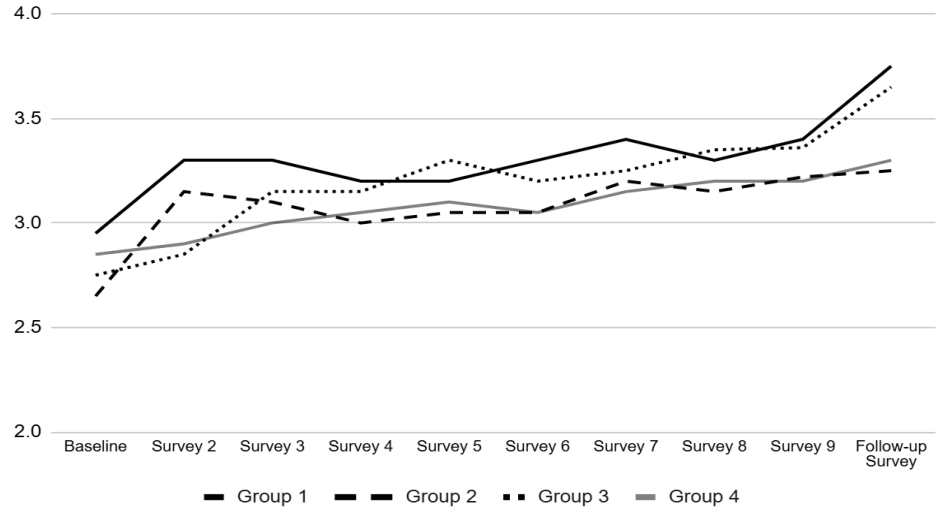
### *Financial Knowledge*




### *Financial Self-Efficacy*



***Frequency of Desirable Financial Behaviors***




***Frequency of Parent- Student Conversations on Financial Topics***