

# Learning Context When Studying Financial Planning in High Schools: Nesting of Student, Teacher, and Classroom Characteristics

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*Grounded in social construction theory, the current study investigates the learning context when studying financial planning in high school by analyzing the nesting of student, teacher and classroom characteristics. Key findings were that three student characteristics (initial financial knowledge, gender, senior grade level), one teacher variable (use of all curriculum assessments), and two classroom variables (proportion of junior students and students who spent more money per week) were significant predictors of students' financial knowledge gain. Significant predictors of students' behavior gain were one student characteristic (senior grade level), two student access to money variables (employment status, spending per week), and three classroom variables (mean initial financial behavior, proportion of students working part-time, proportion of rural students). Findings indicated that subject matter content alone was not sufficient to create behavior change; learning context must be considered.*

*Key Words: evaluation, financial behavior, financial knowledge, financial literacy, social construction, teen finances*

## Introduction

Financial literacy is positively associated with the way individuals manage their finances over time (Braunstein & Welch, 2002). For example, higher financial literacy is associated with less credit card debt, higher savings rates, and fewer personal bankruptcies (Bernheim, Garrett, & Maki, 2001). Recent responses to the learned importance of financial literacy include an increasing number of states now requiring a high school course with personal finance content for graduation (CEE, 2011; NEFE, 2006). Because of this need for increased financial literacy, evidence linking curricula to increased knowledge, and most importantly, improved financial behavior has never been greater. The current study aims, in part, to fulfill this need by studying the financial knowledge and behavior change of high school students who were exposed to one financial planning curriculum: the National Endowment for Financial Education's (NEFE's) High School Financial Planning Program (HSFPP).

Evaluation research investigating the impact of studying a high school financial planning curriculum has focused primarily on student knowledge outcomes (e.g., Mandell, 1998; NCEE, 2005; Walstad, Rebeck, & MacDonald, 2010). Prior research has ignored the influence of the learning context in achieving those outcomes. The current study went beyond the investigation of knowledge acquisition to the study of student financial behavior gains as a result of studying financial planning and to investigation of the classroom learning context in which the curriculum was taught. There are a number of dimensions of the learning context of any classroom that are nested within each other. The nesting of student, teacher, and classroom characteristics is an important consideration when evaluating students' financial knowledge and behavior change after the study of financial planning (Cook-Gumpres, 2006). Thus, the specific purpose of the current study was to investigate the learning context when studying financial planning in high school by analyzing the nesting of student, teacher, and classroom characteristics.

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This study contributes to the literature in a number of ways. First, it incorporates pre-study measures of financial knowledge and behavior that high school students have socially constructed through various social milieus prior to studying the curriculum (McCormick, 2009). A critical time to impact financial literacy is high school, because it is a time when social meanings and realities are being shaped (Gudmunson & Danes, 2011). It is a time when students begin to earn their own money, manage that money independently from parents, and make short- and long-term financial goals (Beutler & Dickson, 2008; Gudmunson & Beutler, 2012). Students' unique characteristics that are rooted in the family environment (Danes, 1994) have the potential to deeply impact how they approach and interact with personal finance curricula in their classrooms. In short, high school students bring individual meanings and realities to their learning context (Berger & Luckmann, 2011). Further, research suggests that a majority of parents leave their children's financial education to the formal education system (American Savings Education Council, 2001), and high school is often students' first exposure to formal personal finance curricula.

Evaluation research on high school student financial planning knowledge and behavior acquisition has focused primarily on within-classroom results. Adding to the current literature, the study investigated both within- and between-classroom outcomes. Part of the reason that learning context and between-classroom results have not been previously studied is partially due to limitations of analytical software that could not analyze the nested nature of student, teacher, and classroom characteristics. However, hierarchical linear modeling now allows for this nesting of data and was the analytical procedure utilized in the study (Raudenbush & Bryk, 2002; Woltman, Feldstain, MacKay, & Rocchi, 2012). With the introduction of this analytical software, one of the deterrents to the investigation of learning context has been eased.

The third literature contribution is that the study conceptually distinguished between behaviors and outcomes. Behaviors (e.g., saving money regularly) and outcomes (e.g., increased savings) are not the same thing (Xiao, 2008). Behaviors only contribute partly to outcomes, because they result from both one's behavior and other factors in many situations (Ajzen & Fishbein, 1980). For example, a high school student who works part time may want to save money for future education, but saving substantial amounts of their earnings may not be possible because their low income family or their ethnic values may

require them to contribute most of their earnings to rent and other family necessities. The study focused on positive financial behaviors through using a competency-based curriculum with assignments and assessments where students were expected to demonstrate their ability to perform specified financial behaviors.

### **Description of the Competency-Based High School Financial Planning Program**

Evaluation data from high school students who studied NEFE's HSFPP were used in the study. The HSFPP acquaints students with basic financial planning concepts and illustrates how these concepts apply to everyday life. The curriculum goal is to increase the financial planning literacy of teens. The hallmark of the curriculum is that it is *competency-based*, meaning that achievement of competencies (i.e., behaviors) is emphasized. Knowledge acquisition is a curriculum facet, but demonstration of each unit competency is its core organizing principle.

The curriculum is divided into seven units, with each unit building upon the previous one: (1) *Your Financial Plan: Where It All Begins*, (2) *Budgeting: Making the Most of Your Money*, (3) *Investing: Making Money Work for You*, (4) *Good Debt, Bad Debt: Using Credit Cards Wisely*, (5) *Your Money: Keeping It Safe and Secure*, (6) *Insurance: Protecting What You Have*, and (7) *Your Career: Doing What Matters Most*. Each unit contains an overview using examples and language common to high school students, a goal statement identifying the main focus of the unit, and learning objectives indicating the degree of mastery students are expected to demonstrate. Corresponding to each unit are competency-based assignments and at least one assessment designed to assess students' ability to apply what they learn (see Table 1).

The HSFPP is free of charge and comes with an extensive Instructor's Manual and Student Guide. The program can be taught in as few as 10 classroom hours, but it is not uncommon for it to be taught over a much longer time period. In fact, nearly 50% of teachers in the current study dedicated 10 or more weeks to teaching the curriculum content. About 18% of teachers devoted four to nine weeks to the HSFPP content, while 12% taught it in two to three weeks.

### **Theoretical Grounding**

Social construction theory guided the current research. When social construction theory is applied to financial literacy acquisition in high schools, learning context is a

**Table 1. Units, and Competency-Based Assignments and Assessments in the NEFE HSFPF**

<b>Units</b>	<b>Assignments</b>	<b>Assessments</b>
1. Your Financial Plan: Where It All Begins	1. My SMART Goals 2. 30-Day Countdown to Goal 3. My Personal Spending Log 4. Decisions, Decisions 5. Financial Planning Strategies 6. Financial Planning Process Steps	My Financial Plan
2. Budgeting: Making the Most of Your Money	1. How Am I Doing? 2. My Fixed and Variable Expenses 3. Saving for My Goals 4. Build a Budget	My Personal Budget
3. Investing: Making Money Work for You	1. Time Value of Money 2. Which Is the Best Deal? 3. My Investing Options 4. My Risks and Rewards	My Investing Plan
4. Good Debt, Bad Debt: Using Credit Wisely	1. FAQs About Credit 2. Compare Phone Plans 3. My 4 C's of Credit 4. Please Correct My Credit Report	My Plan to Handle Credit
5. Your Money: Keeping It Safe and Secure	1. Shopping for My Financial Services Provider 2. Use a Checking Account 3. Choosing a Credit Card 4. What Are the Trends? 5. Online Warnings	Use Financial Services
6. Insurance: Protecting What You Have	1. A Case for Insurance 2. My Personal Financial Risk Exposure 3. Insure the Car of Your Dreams	My Insurance Plan
7. Your Career: Doing What Matters Most	1. My Marketable Skills 2. My Career Prep 3. My Job Benefits	Planning for My Career

major theory concept (Cook-Gumperz, 2006). The theory is composed of four central assumptions when applied to the classroom learning context: (a) learning occurs not just through objective, unbiased observation but through critical thinking and application, (b) learning is historically and culturally specific, (c) learning is sustained by social processes, and (d) learning and social interaction go together. Each of these assumptions was investigated.

When applying social construction's first assumption to financial literacy acquisition, the shaping of social meanings and realities about money is not based entirely on objective and unbiased world observations but through critical thinking and application (Burr, 2003). Social con-

struction theory posits that content alone in learning is not sufficient to create behavior change, but that content application through instructional activities and classroom practices creating student interaction establishes a deeper integration of learning (Cook-Gumperz, 2006). One way the current study addressed this assumption was by measuring the use of competency-based assignments and assessments. Each of the chapter assignments and assessments was designed to evaluate the achievement of a particular behavior competency related to the chapter content.

The second social construction assumption states that learning is historically and culturally specific. As part of the learning context in studying financial planning, stu-

dents bring varying characteristics and experiences, some of which come from their families (Danes & Haberman, 2007; Gudmunson & Danes, 2011). For example, differing communication patterns and the amount of parent-child communication affect the endorsement of materialistic values (Chan & Prendergast, 2007). More specifically, Allen (2008) explained that concept-oriented parents (encouraging debate, rational discussion, and creative thinking) were more likely to purchase goods rationally rather than buying due to social needs, to display more discontent with the products they purchased, and to develop and articulate an independent consumption perspective. On the other hand, those raised by socio-oriented parents (encouraging conformist thinking and emphasizing family harmony and acceptance of authority) were more likely to grow up to depend more on mass media content and peer conversation for consumer information. The current study measured the pre-study student financial knowledge and behavior to address what students bring into their classroom including what had emanated from the cultures in which they are grounded (family, gender, work, hometown location, and peer environments). The classroom in which teachers instruct, as well, is grounded in an educational culture (e.g., whether financial planning is a state mandate); this classroom culture has been found to significantly influence students' financial socialization (Bartholomae & Fox, 2002). Such other factors as teacher confidence in teaching financial planning, the number of hours the teacher teaches the subject content, and the years of teaching experience are also part of the classroom culture that may affect student outcomes (Danes & Haberman, 2007).

The third assumption of social construction theory stipulates that learning is sustained by social processes. Classrooms are places where values, beliefs, attitudes, expectations, and motivations about money are stimulated if they do not already exist, or if they do already exist from socialization in other contexts, those values, beliefs, attitudes, expectations and motivations are further verified or challenged (Beutler & Dickson, 2010). Classrooms are a social context where students interact with their existing internalized norms instilled by families (Danes & Haberman, 2007; Gudmunson & Beutler, 2012). Thus, in addition to the strong influence that the parental learning has in shaping children's financial behaviors and attitudes, financial knowledge and behavior acquisition achieved through the classroom learning context have also shown to influence youth in important ways (Shim, Barber, Card, Xiao, & Serido, 2010).

The fourth theory assumption is that learning and social interaction go together. In a competency-based learning curriculum such as NEFE's HSFPP, where behavior change is the key target rather than merely knowledge accumulation, student and teacher interactions create shared understandings and underpinnings for lifelong behavior patterns (outcomes as defined by Ajzen & Fishbein, 1980). Behavior acquisition resulting from competency-based education is performance-based (Curran et al., 2009). As such, both instruction and assessment are organized around student acquisition of positive financial behaviors and emphasize behavior change in addition to knowledge gain (Chyung, Stepick, & Cox, 2006).

### **Literature Review**

Mixed results exist as to whether studying personal finance in high school affects students' financial literacy. In several Jump\$tart surveys, high school seniors taking a full-semester high school class in personal finance were no more financially literate than students who did not take a course (Mandell, 2008). However, increases in financial knowledge (Walstad, et al., 2010) and increases in financial behavior (Danes & Haberman, 2007, Danes, Huddleston-Casas, & Boyce, 1999) were found when a specifically identified curriculum was studied and the evaluation was carefully implemented and grounded in evaluation theory (Jacobs, 1988). Because the current study's purpose was to investigate the learning context when studying financial planning in high school by analyzing the nesting of student, teacher, and classroom characteristics, the literature review is organized around those characteristics.

### ***Student Characteristics***

A distinguishing component of Danes and Brewton's (2010) mixed-methods evaluation of NEFE's HSFPP was that it explored the role of learning context on students' financial knowledge and behavior outcomes in an attempt to determine the relevance of the content to students of varying backgrounds. Findings showed that while male, farming, and working students had higher financial knowledge pre-study, it was female, non-farming, and non-working students who gained more from it. Moreover, students in classrooms that mandated financial education and those not living on farms gained more from the curriculum than their counterparts on nearly every financial behavior. A scant amount of studies not connected to NEFE's HSFPP have been conducted to explore the role of context on high school students' learning and/or behavior, and these studies are reviewed, and organized by student characteristic.

### *Students' ethnicity status*

Researchers have established a link between ethnicity and financial literacy. Lucey and Giannangelo (2006) showed that minority students generally had much lower levels of financial knowledge compared to their White peers. A similar finding was reported in the 2006 Jump\$tart survey of high school seniors (Mandell, 2008). In a separate analysis of African American students from that 2006 survey, financial literacy was found not to be related to family income, but the study suggested that African American teens might be missing opportunities to develop money management skills because a lower proportion of them worked part time in the summer (Bowen, 2008). Also, African American and Hispanic female students tended to be more financially at risk for credit card debt compared to their counterparts (Johnson & Sherraden, 2007). Despite initial ethnic differences in financial knowledge and behavior, Peng, Bartholomae, Fox, and Cravener (2007) found no differences between White and non-White students following a personal finance course.

### *Hometown location*

Valentine and Khayum (2005) tested financial knowledge differences between rural and urban high school students and found no overall differences between the two groups. Differences were found in regards to specific personal finance topic areas, however. Specifically, financial knowledge of urban highschoolers was higher than that of rural highschoolers in topic areas of housing rentals and food purchases, while rural students, on average, achieved higher scores than urban students in the topic area of automobile insurance.

### *Students' gender*

Of the distinguishing student characteristics known to possibly affect financial literacy, gender has been studied to the greatest extent. Danes and Haberman (2007) found that female high school students gained more knowledge on credit, auto insurance, and investments than did the male students after studying financial planning, but male students had more knowledge entering the course. Females believed that managing money affected their future more than males, but males felt more confident making money decisions. After studying the curriculum, males reported achieving financial goals more than females, whereas females reported using budgets, comparing prices, and discussing money with family more than males. In sum, as a result of the study, male teens reinforced their existing knowledge, whereas female teens learned significantly more about finances in areas in which they were unfamiliar.

In another study, Varcoe, Martin, Devitto, and Go (2005) found that male high school students' knowledge increased more than females' after studying personal finance. Further, Lusardi, Mitchell, & Curto (2010) found that females from ages 12 to 15 were less knowledgeable about interest rates, inflation, and risk diversification than males of that age; that difference persisted after controlling for many demographic, family background, and peer characteristics.

### *Grade level*

The majority of financial literacy research in high schools is conducted with juniors and seniors rather than freshmen and sophomores. Personal finance is usually taught then and there is a belief that these older high school students are about ready to live on their own, and, thus, they will find the content more relevant. Researchers have generally found that teens have low levels of financial literacy, and despite recent attention to the importance of financial literacy, literacy scores have not improved (Mandell & Klein, 2007). Thus, there has been a call to teach personal finance content earlier in high school because of the content's importance and because drop-out rates increase as students progress in school (McCormick, 2009).

### *Teacher Characteristics*

A knowledge gap exists in demonstrating how teachers affect their students' financial knowledge and behavior outcomes. Understanding how teachers' instruction affects study outcomes when studying financial planning is important because the manner in which teachers choose curricula and utilize those curricula has the potential to ultimately affect the way that teachers instruct and what students gain from their courses (Cook-Gumperz, 2006). Way and Holden (2009) studied an initial dimension of this premise by focusing on teachers' backgrounds and capacity to teach personal finance. The authors found that K-12 personal finance teachers tended to be female (75%) and only slightly more than one third of them reported that they had ever taken college coursework with any financial education-relevant content. With regard to their estimation of their competency to teach personal finance, relatively few teachers reported feeling very competent to teach personal finance. The topic areas for which teachers reported feeling most competent to teach were income and careers, and planning and money management, but fewer than 20% selected the "very well prepared" option in these areas. Teachers reported feeling least competent in the more specific areas of risk management and insurance, saving and investing, and financial responsibility and decision-making. Over half of the teachers felt "not very competent" to

teach risk management and insurance, and nearly half felt “not very competent” to teach about saving and investing. In states where educational testing or courses are mandated, teachers expressed no difference in teaching competency compared to teachers in states where personal finance was not mandated.

The Way and Holden (2009) findings are quite important in that teacher content expertise research from other disciplines, such as math, reading, and science education, have indicated that well-qualified teachers are those teachers with a degree in the subject matter being taught (U.S. Department of Education, 2004). These “well-qualified” teachers produced the greatest achievement gain in their students.

### *Student Access to Money*

Part of high school students’ unique context is their access to money. Employment, weekly spending, and debt accumulation are directly related to money accessibility. A handful of research studies address how these factors affect financial knowledge and behavior.

### *Students’ working status*

There is little known about how working status affects high school students’ financial knowledge and behavior after exposure to personal finance curricula, and when studied, the findings were not consistent. Worthington (2004) found that non-working individuals generally have lower financial knowledge than working individuals. Valentine and Kharyum (2005) found that working up to 20 hours per week (i.e., part time) was positively related to overall scores on a financial literacy quiz. On the other hand, Walstad et al. (2010) found that with exposure to financial education, employed high schoolers’ behavior did not differ from non-employed high schoolers’ behavior. Erskine, Kier, Leung, and Sproule (2006) found that high school students who worked, whether full time or part time, saved more money than non-working students. These same authors further discovered that students who worked part-time were more likely to save money for future education than those students working full-time.

### *Spending*

Following exposure to NEFE’s HSFPP, Danes, Huddleston-Casas, and Boyce (1999) found that, in the short-run, self-reported financial behavior improved immediately after exposure to the curriculum. They conducted a 3-month follow-up survey and found that over half of the respondents reported making positive changes to their spending habits. Grimes, Rogers, and Smith (2010) found

that taking an economics course in high school positively influenced an individual’s decision to maintain a bank account in later life.

### *Debt status*

High school students accumulate debt through use of credit cards that are in their own name, formal loans with banks or credit unions, and informal loans with family members and friends. In a study of high schoolers studying personal finance (Danes & Haberman, 2007), 23% of male students and 27% of female students had debts. There was a significant difference between the genders regarding debt levels owed. Males owed \$1,040 and females owed \$504, on average. Students who had purchased a car or motorcycle had formal loans from a bank or credit union. Other students had borrowed money from family members or friends for such items as cell phones, stereos, TVs, computers, or gaming systems.

The 2006 Jump\$tart survey found that 32% of high school seniors used a credit card (Mandell, 2008). More than half of these students used a card in their own name while in the Danes and Haberman (2007) study that included mostly juniors and seniors in high school, about 8% had a credit card in their own name. Varcoe et al. (2002) found that teens were more interested in learning “how to get credit” than about “what credit is” or the “consequences of bad debt.”

### *Teacher Use of Curricula*

Danes, Huddleston-Casas, and Boyce, in 1999, and Danes and Brewton, in 2010, assessed the impact of NEFE’s HSFPP curriculum on the financial knowledge, behavior, and confidence of over 4,000 teens and found changes in their financial knowledge, behavior, and confidence both immediately after and three months following program completion. Thus, there is evidence that competency-based curricula, such as the HSFPP, are effective. However, these evaluations also showed that, while many teachers presented the curriculum in its entirety, others did not. Presenting an abbreviated version of the curriculum may mean that those teachers’ students were not exposed to as much competency-based education as students whose teachers presented the curriculum in its entirety. It is possible that this difference in context could result in differences in financial knowledge and behavior.

### **Method**

The current study aimed to predict high school students’ financial knowledge and behavior gains as a result of

studying NEFE's HSFP using nested student, classroom, and teacher characteristics. In this section, procedures are discussed first, followed by operational definitions of variables, and a description of the analytic procedures.

### ***Sampling Procedures***

A sample of 2,300 teachers across the U.S. who requested NEFE's HSFP for their classrooms were sent a 1-page participation survey to determine intended use of the curriculum during the project timeframe, commitment to the evaluation project, class size, and intended ending date of the curriculum. Of the 1,062 surveys returned, many of the teachers did not plan to use the materials during the identified data collection period; others declined to participate or were ineligible for the study.

There were 299 teachers who anticipated teaching NEFE's HSFP in the timeframe of interest and were eligible and willing to participate in the evaluation. Of these teachers, 156 indicated that no school or district permission was needed to participate. Permission was required, however, for 143 schools. Appropriate staff at the 143 schools were contacted by letter, email, and telephone to learn what steps needed to be taken to obtain permission. Requirements varied. Some school administrators requested copies of the surveys and other project materials, some simply had a few questions for clarification, and some sent forms to be completed and returned. Some requirements were so extensive and time-consuming that it was impractical to pursue. Ultimately, permission was received from 130 of the 143 schools. Teachers at the remaining 13 schools did not participate, because official permission was not obtained. Teachers at the 130 schools from which permission was granted were mailed packets containing one teacher survey and enough student surveys for those teachers' anticipated students. In total, completed surveys were received from 212 teachers and 4,794 of their students; these teachers' and students' data were used in the study.

### ***Post-Then-Pre Method for Evaluating Financial Knowledge and Behavior***

Financial knowledge and behavior were assessed and used in the current study using a post-then-pre method (Rockwell & Kohn, 1989). In comparison to the more traditional pre-test – post-test method, where pre-tests are given before studying subject matter and post-tests are given after studying subject matter, the post-then-pre method first asked students about their levels of financial knowledge and behavior post-study, and then, in the next set of questions, asked about their levels of pre-study financial

knowledge and behavior. Questions about what students knew and how they behaved prior to studying the curriculum were asked in past tense. Overall, the post-then-pre method took less time and was less intrusive than the pre-test – post-test method and avoided the pre-test sensitivity and response shift bias that often results from pre-test overestimation or underestimation (Lam & Bengo, 2003; Pratt, McGuigan, & Katzev, 2000). The post-then-pre method has been found to be more reliable in measuring change after studying specific content compared to the traditional pre-test – post-test method, primarily because students do not know what they do or do not know before studying a curriculum.

A criticism of this evaluation design is its reliance on self-reported data. Such data create a problem when the study solely or primarily emphasizes knowledge acquisition where objective and unbiased worldly observation are essential (Berger & Luckmann, 2011). However, in this evaluation study, the primary focus was behavior change and demonstration of competencies that are socially grounded and constructed within classroom learning contexts. Social construction theory's main tenet (study's theoretical grounding) calls for historical and cultural understandings of the learning contexts from which the reality of behavior change emanates (Berger & Luckmann, 2011). The social construction of reality and the behavior that epitomizes a person's reality is best reported from the individual's lens, because learning is achieved through more than objective, unbiased observations but rather through critical thinking and application within social interaction (Cook-Gumperz, 2006).

Furthermore, if a formal, conventional knowledge test were given for such subject matter as financial management and students had little to no foundation for answering the question, they could only answer the question by guessing. Guessing creates random responses. Such random responses create a statistical issue, because statistical analysis is unusable with random answers (Berger & Luckmann, 2011).

### ***Operationalization of Dependent and Independent Variables***

#### ***Financial Knowledge and Behavior Gains***

Employing the post-then-pre evaluation method meant that students were first asked their post-study level of knowledge and behavior. The knowledge items, rated on a 5-point scale ranging from "strongly disagree" (1) to "strongly agree" (5), were: (1) I know key questions to

ask when shopping for auto insurance, (2) I think about how much I need the things I buy, (3) I know that paying off debt quickly means I pay less interest, (4) I understand why a credit rating is important, (5) I know what I do for a career will affect how much money I will have to meet my goals, (6) I understand how debit cards work, and (7) I understand how checking accounts work. Then, they were asked their pre-study level of knowledge. The seven items that were used to assess students' knowledge after studying the curriculum were also used to assess their knowledge before having studied the curriculum; the only difference is that the latter items were phrased in the past tense (e.g., I knew key questions to ask when shopping for auto insurance).

Student' scores for each "post" item were subtracted from their scores for each "pre" item, resulting in a "gain" in knowledge for each of the seven items. The gains were summed to create a total gain in knowledge score for each student. The mean gain for students was 5.79 and the range was 0 to 25 (see Table 2).

Behavior gain questions were asked in a similar manner as the knowledge questions and the variables were calculated in the same manner. The nine behavior items, also rated on a 5-point scale ranging from (1) "almost never," to (5) "almost always," were: (1) I track where I am spending my money, (2) I look for the best prices for things I buy, (3) I save money for future needs, (4) I have a plan for spending my money, (5) I repay the money I owe on time, (6) I make savings goals for certain things I want, (7) I am better able to manage my money, (8) I discuss money matters with my family, and (9) I am careful to protect my personal information from being stolen. As with the knowledge items, those items assessing students' behavior before having studied the curriculum were asked in the past tense. The mean behavior gain for students was 5.81 and the range was 0 to 40 (see Table 2).

A confirmatory factor analysis (CFA) was conducted on the knowledge and behavior gain measures separately for the pre-study and post-study scores. This analysis was done using jMetrik 2.0 (Meyer, 2011) and allowed for a test of the fit of the data to the model, assuming a unidimensional model for each measure. Three indicators of fit were employed, including the goodness-of-fit test (GFI), adjusted-goodness-of-fit (AGFI), and the root-mean-squared-error-of-approximation (RMSEA). Guidelines for good fit were reviewed by Hooper, Coughlan, and Mullan (2008), such that GFI and AGFI values

greater than .90 indicate strong fit, RMSEA values less than .05 indicate strong fit, and RMSEA values between .05 and .10 indicate fair fit. Measures of fit for both pre-study and post-study measures were all fair to strong, with most in the strong range. For the behavior gain measure, GFI and AGFI were at .98 or better with RMSEA values less than .05. For the knowledge gain measure, GFI and AGFI were .92 to .96 with RMSEA values less than .10. Estimates of internal consistency (congeneric reliabilities) were very strong for such a small number of items in each measure as well; where reliabilities for the behavior gain measures were .87 (pre-study) and .82 (post-study), and reliabilities for the knowledge gain measures were .90 (pre-study) and .89 (post-study).

### *Independent Variables*

*Student demographic variables* consisted of their total financial knowledge and behavior before studying the curriculum, ethnicity, gender, hometown location, and grade level. Students' total knowledge and behavior before studying the curriculum were computed by summing just students' values on the "pre" knowledge/behavior questions. Ethnicity was coded as 0 = Non-White and 1 = White. Gender was coded as 0 = Male and 1 = Female. Hometown location was coded as 0 = Not rural and 1 = Rural. Two variables represented grade level, one for 12th grade (Senior, coded as 0 = Not in 12th grade, 1 = In 12th grade), and one for 11th grade (Junior, coded as 0 = Not in 11th grade, 1 = In 11th grade). In this way, grades less than 11th were represented by zeros in these two variables.

The average amount of money that students spent per week and their employment and debt statuses were the variables that composed the *access to money category of variables*. The amount of money spent per week was a negatively skewed continuous variable such that almost 60% of the students spent between \$0 and \$20. To ensure a fairly normal distribution for analysis, the natural log of this variable was used. Employment status was coded as 0 = No part-time job and 1 = Had a part-time job. Debt status was coded as 0 = No debt and 1 = Had debt.

*Classroom variables*, such as means/proportions on the student demographic and access to money variables, were computed to include in analyses. We were interested in what effect the classroom context may have had on knowledge and behavior gains. Those variables for which means (in the form of proportions for dichotomous variables) were calculated included: students' total financial knowledge and behavior before studying the HSFPP, ethnicity,

gender, hometown location, grade level, employment status, debt status, and average weekly spending (the log).

*Teacher demographic variables* included gender, whether the HSFPP was the only curriculum teachers used to teach financial planning, hours teaching the curriculum, years teaching the curriculum, confidence teaching the HSFPP, content expertise, and whether the teachers taught in states that mandated financial education. Gender was coded as 0 = Male and 1 = Female. Whether the HSFPP was the only curriculum used was coded as 0 = No and 1 = Yes. Hours teaching the curriculum was a continuous variable and years teaching was coded as 0 = Two years or less and 1 = More than two years. Confidence was coded as 0 = Less than very confident and 1 = Very confident. The final two variables, content expertise, and whether teachers taught in states that mandated financial education, were dummy variables. Content expertise differentiated teachers with more expertise in the content area (coded 1) from those with less content expertise (coded 0). Teachers were considered to have more expertise if they taught in family and consumer sciences or personal finance; teachers with less expertise taught in areas such as counseling and career management. The mandate variable was constructed using the Jump\$Start data (Jump\$Start Coalition for Personal Financial Literacy, 2012). Mandate states were states that required either a one-semester course or more devoted to personal finance or for personal finance to be incorporated into other subject matter (coded 1); non-mandate states did not require personal finance to be taught in classrooms (coded 0).

*Teachers' use of the competency-based aspects of the HSFPP* was measured using three variables based on the results of cluster analyses. The cluster analyses were conducted to examine associations among the ordinal variables as they exist in combinations given teachers' reports. The first two variables concerned the activities that were offered to teachers as part of the program. The first cluster variable distinguished between teachers who used all of the activities (coded 1) versus those who did not (coded 0). The second distinguished between teachers who used just the first few activities along with those that were more work-oriented (coded 1) and those who did not (coded 0). The third variable concerned the assessments that were offered to teachers as part of the program. The cluster variable distinguished between teachers who used all of the assessments (coded 1) and those who did not (coded 0).

### ***Analytical Procedure***

To investigate what predicted students' knowledge and behavior gains, data from students, classrooms, and teachers were analyzed using hierarchical linear modeling (HLM; Bryk, Raudenbush, Seltzer, & Congdon, 1988; Raudenbush & Bryk, 2002; Raudenbush, Bryk, & Congdon, 2004). In so doing, the study took a theory-based approach to the study of the financial knowledge and behavior gain context rather than an exploratory-based approach. Student demographic variables represented within-classroom characteristics and between-classroom characteristics were represented by teacher demographics, student access to money, classroom demographics, and teacher use of HSFPP. In a theory-based approach, a researcher is concerned about not only those variables that have statistical significance, but also those variables approaching significance. In this way, researchers discover which variables they are most certain about. Furthermore, when variable coefficients are not significant but the coefficient is non-zero, that variable is still contributing something to the context being studied.

Independent variables were entered in steps. Student demographics were entered in the first step, teacher demographics were entered in the second, student access to money variables were entered in the third, and in the fourth, variables assessing teacher use of competency-based curriculum aspects were entered. An HLM was conducted at each step and newly entered variables that were highly unrelated to the dependent variable ( $p > .5$ ) were removed from the model. This procedure resulted in removal of eight variables from the knowledge analysis (i.e., student ethnicity, teacher hours, teacher confidence, student employment status, student debt, log of average student spending per week, mean classroom location, mean classroom employment status) and 11 variables from the behavior analysis (i.e., student ethnicity, student hometown location, teacher gender, teacher state mandate status, student debt status, mean classroom ethnicity, mean classroom gender, mean classroom grade level (junior and senior), mean classroom debt status, and mean classroom log of average spending per week). Two final models are presented in the following sections, one for knowledge gain and one for behavior gain.

**Table 2. Sample Descriptive Statistics**

<b>Variable</b>	<b>M/Proportion</b>	<b>SD</b>
<b>Dependent variables</b>		
Gain in financial knowledge	5.80	5.50
Gain in financial behavior	5.80	7.40
<b>Independent variables</b>		
<b>Student demographics</b>		
Financial knowledge before HSFPP	22.30	6.30
Financial behavior before HSFPP	31.30	8.30
Ethnicity (0 = non-White, 1 = White)	.56	
Gender (0 = male, 1 = female)	.52	
Hometown location (0 = non-rural, 1 = rural)	.52	
Senior (0 = no, 1 = yes)	.46	
Junior (1 = no, 1 = yes)	.23	
<b>Teacher demographics</b>		
Gender (0 = male, 1 = female)	.73	
HSFPP only curriculum used (0 = no, 1 = yes)	.49	
Hours teaching HSFPP	39.60	31.40
Years teaching HSFPP (0 = less than 2, 1 = 2 or more)	.47	
Confidence teaching content of HSFPP (0 = less than very confident, 1 = very confident)	.51	
Content expertise (0 = less expertise related to content, 1 = more expertise related to content)	.62	
Mandate state (0 = no, 1 = yes)	.54	
<b>Student access to money</b>		
Part-time job (0 = no, 1 = yes)	.33	
Debt (0 = no, 1 = yes)	.15	
Log average weekly spending	2.90	1.30
<b>Classroom demographics</b>		
Mean financial knowledge before HSFPP	22.40	2.30
Mean financial behavior before HSFPP	31.10	2.70
Proportion white	.64	
Proportion female	.51	
Proportion rural hometown	.58	
Proportion seniors	.49	
Proportion juniors	.25	
Proportion employed	.37	
Proportion with debt	.16	
Mean log average weekly spending	2.90	.48
<b>Teacher use of HSFPP</b>		
All activities cluster (0 = no, 1 = yes)	.06	
Work-oriented cluster (0 = no, 1 = yes)	.85	
All assessments cluster (0 = no, 1 = yes)	.58	

### Students' Financial Behavior Gain

At Level-1, students' financial behavior gain was modeled within classroom, adjusting for total behavior scores before studying the HSFPP, gender, grade level (senior and junior), employment status, and average spending per week (with log transformation to normalize the distribution).  $TotBehGain_{ij} = \beta_{0j} + \beta_{1j} (TotBeforeBeh)_{ij} + \beta_{2j} (Gender)_{ij} + \beta_{3j} (Junior)_{ij} + \beta_{4j} (Senior)_{ij} + \beta_{5j} (Employment)_{ij} + \beta_{6j} (LogSpending)_{ij} + r_{ij}$ , where  $\beta_{0j}$  is the estimate of the true classroom mean of students' behavior gain (TotSinceBeh), controlling for behavior before studying the HSFPP (TotBeforeBeh), gender (Gender), grade level (Junior and Senior), employment status (Employment), and the log of students' average spending per week (LogSpending); the individual student residual was normally distributed with a mean of zero and a constant variance,  $r_{ij} \sim N(0, \sigma^2)$ . Level-1 variables were group-mean centered to facilitate interpretation of the intercept  $\beta_{0j}$  as the average classroom behavior gain as a result of studying the HSFPP.

At Level-2, the classroom mean ( $\beta_{0j}$ ) was modeled as a function of teacher and classroom characteristics and teachers' use of the competency-based aspects of the HSFPP.

$\beta_{0j} = \gamma_{00} + \gamma_{01} (HSFPPOnly)_j + \gamma_{02} (Hours)_j + \gamma_{03} (Years)_j + \gamma_{04} (Confidence)_j + \gamma_{05} (Expertise)_j + \gamma_{06} (MeanTotBeforeBeh)_j + \gamma_{07} (PropHometown)_j + \gamma_{08} (PropEmployment)_j + \gamma_{09} (Activity1)_j + \gamma_{0,10} (Activity2)_j + \gamma_{0,11} (Assessment)_j + u_{0j}$ , where  $\gamma_{00}$  is the grand mean outcome in the population, adjusted for classroom differences in whether HSFPP was the only curriculum used to teach financial planning (HSFPPOnly), number of hours the curriculum was taught (Hours), number of years teachers had been teaching the curriculum (Years), teacher confidence (Confidence), teachers' content expertise (Expertise), students' average behavior before studying the HSFPP (MeanTotBeforeBeh), student proportion from a rural hometown (PropHometown), proportion of students employed (PropEmployment), and teachers' use of activities (Activity 1 and Activity 2) and assessments (Assessment); where  $u_{0j}$  was the random effect associated with each classroom and  $u_{0j} \sim N(0, \tau_{00})$ . Level-2 variables were grand-mean centered.

### Students' Financial Knowledge Gain

At Level-1, students' knowledge gain was modeled within classroom, adjusting for total knowledge scores before studying the HSFPP, gender, and grade level (junior and senior).  $TotSinceKnow_{ij} = \beta_{0j} + \beta_{1j} (TotBeforeKnow)_{ij} + \beta_{2j} (Gender)_{ij} + \beta_{3j} (Junior)_{ij} + \beta_{4j} (Senior)_{ij} + r_{ij}$ , where  $\beta_{0j}$  is the estimate of the true classroom mean of students' gains,

controlling for knowledge before studying HSFPP (TotBeforeKnow), gender (Gender), and grade level (Junior and Senior); the individual student residual is normally distributed with a mean of zero and a constant variance,  $r_{ij} \sim N(0, \sigma^2)$ . Level-1 variables were group-mean centered to facilitate interpretation of intercept  $\beta_{0j}$  as the average classroom knowledge gain post-study.

At Level-2, classroom mean ( $\beta_{0j}$ ) was modeled as a function of teacher and classroom characteristics and teachers' use of competency-based aspects of the HSFPP.  $\beta_{0j} = \gamma_{00} + \gamma_{01} (Gender)_j + \gamma_{02} (HSFPPOnly)_j + \gamma_{03} (Years)_j + \gamma_{04} (Expertise)_j + \gamma_{05} (Mandate)_j + \gamma_{06} (MeanTotBeforeKnow)_j + \gamma_{07} (PropEthnicity)_j + \gamma_{08} (PropGender)_j + \gamma_{09} (PropSenior)_j + \gamma_{10} (PropJunior)_j + \gamma_{11} (PropDebt)_j + \gamma_{12} (PropLogSpending)_j + \gamma_{13} (Activity1)_j + \gamma_{14} (Activity2)_j + \gamma_{0,15} (Assessment)_j + u_{0j}$ , where  $\gamma_{00}$  is the grand mean outcome in the population, adjusted for classroom differences in teacher gender (Gender), whether HSFPP was the only curriculum used (HSFPPOnly), years that the teacher has been using the HSFPP (Years), teachers' content expertise (Expertise), teachers' residence in a state that mandated financial education (Mandate), students' average pre-study financial knowledge (MeanTotBeforeKnow), proportion of White students (PropEthnicity), proportion of female students (PropGender), proportion of juniors and seniors (PropJunior and PropSenior), proportion of students with debt (PropDebt), students' average log of spending per week (PropLogSpending), and teachers' use of the activities (Activity 1 and Activity 2) and assessments (Assessment); where  $u_{0j}$  is the random effect associated with each classroom and  $u_{0j} \sim N(0, \tau_{00})$ . Level-2 variables were grand-mean centered.

### Findings

Findings for the two final HLM models are displayed in Tables 3 and 4. They are described in the following paragraphs here, beginning with the financial knowledge gain analysis.

### Students' Knowledge After Studying the HSFPP

In the final knowledge gain HLM model (see Table 3), the findings showed that three student characteristics, two classroom variables, and one teacher use of the HSFPP variable were significant predictors of students' financial knowledge gains ( $p < .05$ ). Students with greater financial knowledge before studying the curriculum showed lesser gains in knowledge compared to students with lower initial financial knowledge. Female students reported greater gains in knowledge than male students. Further, seniors reported greater gains in knowledge than students who were in lower grade levels.

Classrooms in which there was a greater proportion of junior students and students who spent more money per week than their counterparts reported lesser gains in financial knowledge. Lastly, teachers who used all of the assessments given to them had students in their classrooms who reported significantly greater knowledge gains compared to teachers who did not use all of the assessments.

### *Students' Financial Behavior Gain*

In the final behavior gain HLM model (see Table 4), the findings showed that one student characteristic, two student access to money variables, and three classroom variables were significant predictors of students' financial

behavior gains ( $p < .05$ ). Students who were seniors in high school were likely to report higher gains in financial behavior than students who were in lower grade levels. Those with part-time jobs tended to report higher gains in financial behavior than students without part-time jobs. Finally, students who spent more money per week were less likely to report financial behavior gains compared to students who spent less money per week.

Classrooms with students who had higher mean financial behavior before studying the curriculum and with a greater proportion of rural students tended to report, as a whole, fewer gains in financial behavior compared to

**Table 3. Final Estimation of Fixed Effects from Hierarchical Linear Modeling Analyses with Financial Knowledge Gain as the Dependent Variable**

Fixed effect	<i>b</i>	<i>t</i>	<i>p</i>
<b>Student demographics</b>			
Financial knowledge before HSFPP	-0.559	-35.553	<.001
Gender (0 = male, 1 = female)	0.624	4.071	<.001
Hometown location (0 = non-rural, 1 = rural)	-0.383	-1.836	.066
Senior (0 = no, 1 = yes)	0.883	2.603	.010
Junior (1 = no, 1 = yes)	0.370	1.417	.156
<b>Teacher demographics</b>			
Gender (0 = male, 1 = female)	-0.609	-1.617	.106
HSFPP only curriculum used (0 = no, 1 = yes)	-0.378	-1.171	.242
Years teaching HSFPP (0 = less than 2, 1 = 2 or more)	-0.025	-0.406	.685
Content expertise (0 = less expertise related to content, 1 = more expertise related to content)	-0.673	-1.600	.109
Mandate state (0 = no, 1 = yes)	0.171	0.524	.600
<b>Classroom demographics</b>			
Mean financial knowledge before HSFPP	0.053	0.627	.531
Proportion white	-0.725	-0.968	.334
Proportion female	1.040	1.017	.310
Proportion seniors	0.967	1.370	.171
Proportion juniors	-1.740	-1.970	.048
Proportion with debt	-2.290	-0.812	.417
Mean log average weekly spending	-1.230	-2.108	.035
<b>Teacher use of HSFPP</b>			
All activities cluster (0 = no, 1 = yes)	0.426	0.408	.683
Work-oriented cluster (0 = no, 1 = yes)	0.673	0.646	.518
All assessments cluster (0 = no, 1 = yes)	0.932	2.243	.025

**Table 4. Final Estimation of Fixed Effects from Hierarchical Linear Modeling Analyses with Financial Behavior Gain as the Dependent Variable**

Fixed effect	<i>b</i>	<i>t</i>	<i>p</i>
Student demographics			
Financial behavior before HSFPP	-0.562	-34.124	<.001
Gender (0 = male, 1 = female)	0.179	0.831	.406
Senior (0 = no, 1 = yes)	0.984	2.096	.036
Junior (0 = no, 1 = yes)	0.403	1.016	.310
Teacher demographics			
HSFPP only curriculum used (0 = no, 1 = yes)	0.068	0.163	.871
Hours teaching HSFPP	0.005	0.619	.537
Years teaching HSFPP (0 = less than 2, 1 = 2 or more)	-0.012	-0.217	.829
Confidence teaching HSFPP content (0 = less than very confident, 1 = very confident)	0.268	0.956	.341
Content expertise (0 = less expertise related to content, 1 = more expertise related to content)	0.713	1.812	.072
Student access to money			
Part-time job (0 = no, 1 = yes)	0.917	4.037	<.001
Log average weekly spending	-0.242	-2.550	.011
Classroom demographics			
Mean financial behavior before HSFPP	-0.811	-5.691	<.001
Proportion rural hometown	-1.356	-2.301	.023
Proportion employed	2.350	2.260	.026
Teacher use of HSFPP			
All activities cluster (0 = no, 1 = yes)	-0.623	-0.537	.592
Work-oriented cluster (0 = no, 1 = yes)	-0.294	-0.234	.815
All assessments cluster (0 = no, 1 = yes)	-0.509	-1.220	.225

their counterparts. Further, when a greater proportion of students in a classroom worked part time (versus not at all), classrooms as a whole had students in them who also reported greater gains in behavior. These findings point to the importance of both students' access to money and the context of their classrooms in which these financial behavior gains were achieved.

### Discussion

The current study contributes to the existing personal finance literature by (a) going beyond investigation of knowledge acquisition to investigating the learning context in which the curriculum was taught by including the nesting of student, teacher, and classroom characteristics; (b) incorporating pre-study measures of financial

knowledge and behavior that conceptually represented the high school students' social construction of their money values, beliefs, attitudes, expectations and motivations that they developed through their various social milieu; (c) investigating both within-classroom and between-classroom effects on knowledge and behavior acquisition; and (d) distinguishing conceptually between financial behaviors and outcomes.

Social constructionism was the theoretical base used. The theory posits that through interactions with others, social meanings and realities are shaped. In the study, high school students and their teachers alike came to classrooms with unique social meanings and realities about money management reflected in their initial financial knowledge and

behavior levels. These meanings and realities became part of the way that students interacted with curriculum content and how teachers taught it. We suggest that both students' initial financial understandings and behavior, as well as the teacher's use of curriculum competency-based activities and assessments, ultimately affected the way that students interacted with and gained from the program.

A unique quality of the study was that it utilized student, classroom, and teacher data in order to account for the effects of each. It is the first study of its kind to test the importance of variables at these multiple, nested levels. In the final knowledge gain HLM model, findings showed that three student characteristics (initial financial knowledge, gender, senior grade level), two classroom variables (proportion of junior students and students who spent more money per week), and one teacher use of the HSFPP variable (use of all assessments) were significant predictors of students' financial knowledge gain ( $p < .05$ ). In the final behavior gain HLM model, findings showed that one student characteristic (senior grade level), two student access to money variables (employment status, spending per week), and three classroom variables (mean beginning financial behavior, proportion of students working part-time, proportion of rural students) were significant predictors of students' financial behavior gains ( $p < .05$ ). These findings support the role of social constructionism in student learning; that is, the idea that students do not reside in vacuums but are rather deeply impacted by learning context. That learning context not only includes what and how the students are learning, but what is occurring in their classrooms and teaching practices (particularly those that are competency-based).

Further, the findings suggest that learning context affects financial knowledge and behavior gains differently. While student characteristics and teacher use of the HSFPP contributed most significantly to students' financial knowledge gain, it was more often students' access to money that they could manage and classroom characteristics that affected students' financial behavior gain. Thus, curriculum developers need to be aware that their curricula, particularly if competency-based, may have a different impact on students' knowledge compared to behavior. Further, the study provides evidence that financial knowledge and behavior acquisition really are two very different concepts, and that both should be assessed when conducting evaluations of personal finance curricula.

Teachers matter in the study, but the dimension of such in each context (knowledge or behavior gain) needs to be noted. Teachers' learning approach, not their individual characteristics and experience, is what is important relative to students' knowledge gains. In fact, because non-significant, within-classroom and between classroom variables are in the model, we can make the argument that it is teacher practice and not teacher demographics that make the difference in knowledge gains. Relative to student behavior gains, teacher experience makes a difference when teachers have greater content expertise.

Knowledge has to percolate before it can be incorporated into behavior. Knowledge is needed to inform decision making behavior. Use of multiple competency-based activities and assessments by teachers are all a part of this knowledge percolation process. Financial education is a different content arena than subject matter like math, reading or science. It is more self-contained and does not depend as much on the accumulation of what has been attained over the years of education. That is one explanation for why many teacher demographics are not significant in the HLM models. Thus, financial management education is not just a function of a great teacher but rather the experience of the student prior to entering the classroom. The study is about the social construction of financial knowledge and behavior so context is core and central to the study. Inclusion of significant and non-significant variables in the HLM models is important, because arguments can be made not only due to significance but also because we know about within-classroom as well as between-classroom variable contributions. For example, based on model findings, we know that seniors have the biggest knowledge gain and juniors have less. We also know that when there are more juniors in the class, fewer class gains are made so the class as a whole learns less. Thus, the application is that classroom composition makes a difference. The "biggest bang for the buck" comes with seniors, so the recommendation is that financial management should be taught primarily to seniors.

Other implications of this research are for future curriculum developers who are aiming to create curricula that are relevant to all students. Given the role that learning context plays in students' financial knowledge and behavior gains, we suggest that it be emphasized more in both teacher training sessions and in curriculum content itself. For example, in teacher trainings, asking teachers to self-fo-

cus about what they bring to their classrooms in terms of social meanings and realities about money may clue them in to how these factors affect the ways that they teach a curriculum. Having done the self-focusing, it would be possible for teachers to monitor their words and actions in the classroom.

Further, curriculum developers might think of ways that students could explore their context and that of the entire classroom as part of the actual curricula. An exercise could be developed and placed early in the NEFE HSFPF, for example, that would encourage students to explore their backgrounds (e.g., ethnicity, hometown location) and brainstorm ways that their backgrounds may influence how they learn personal finance and choose to behave as a result of it. One thing is for certain, in the future, student, classroom, and teacher characteristics should not be ignored, and it will become increasingly important for curricula developers and researchers to focus on their roles in shaping students' learning and behavior.

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