

Assessing Changes in the Financial Knowledge of College Seniors

Brenda J. Cude, Ph.D., University of Georgia¹
Irina Kunovskaya, Ph.D., University of Georgia²
M.J. Kabaci, Ph.D., University of Georgia³
Theresa Henry, University of Georgia⁴

Financial literacy education is increasingly popular. Many public and private entities that deliver such programs seem poised to write new curricula and deliver new programs. However, it is important for a multitude of reasons to know if financial literacy education programs are effective, and, if so, in what ways. Fox, Bartholomae, and Lee (2005) described most financial literacy education programs as “making some effort toward evaluation” (p. 203). However, they also noted that there are “few clear commonalities in the approach taken” (p. 203), perhaps because of the difficulty in determining the most effective evaluation methods. It is clear that financial literacy educators strive to design programs that can demonstrate an impact, generally changes in knowledge, attitudes, behaviors, or some combination of the three. What is not clear, however, is how to select a method to assess the impact of financial education programs.

This paper focuses on evaluating financial knowledge changes and its predictors among a sample of college university seniors who were enrolled in a one-credit hour personal finance course. The paper discusses different methods to use a pre/post design to assess knowledge changes, presents results using several of the approaches to analyze data from 632 college seniors, and concludes with recommendations for future research.

Literature Review

This section discusses academic literature in two areas. First, the relatively extensive literature on measuring changes in financial knowledge is described. A subsection describes the relatively smaller body of work specific to college students. The second section reviews literature related to methodologies to assess knowledge change, specifically gain scores and effect sizes.

Measuring Changes in Financial Knowledge

Financial literacy has been the subject of hundreds of studies. Remund's (2010) and Huston's (2010) articles collectively reviewed more than 170 studies defining and/or assessing concepts that either were termed financial literacy or were conceptually akin. Although financial knowledge is only one aspect of financial literacy by most definitions (see, for example, both Remund and Huston), it is the aspect most commonly assessed. Among the studies Huston reviewed, nearly one-half used the terms financial knowledge and financial literacy synonymously.

Despite the frequency with which it has been assessed, there is little consensus about how to measure financial knowledge. Hastings, Madrian, and Skimmyhorn (2012) recently summarized the variety of approaches used over the years to assess financial knowledge, including Lusardi and Mitchell's

¹ Professor, Housing and Consumer Economics, 201 Housing Research, University of Georgia, Athens, GA. Phone: (706) 542-4857. Email: bcude@uga.edu.

² Extension Evaluation Specialist, Cooperative Extension, 230 Hoke Smith Annex, University of Georgia, Athens, GA. Phone: (706) 542-8884. Email: irkunovs@uga.edu.

³ Lecturer, Housing and Consumer Economics, Dawson Hall, University of Georgia, Athens, GA. Phone: (678) 654-8546. Email: mjktex@uga.edu.

⁴ BA/MS Student, Department of Economics, University of Georgia, Athens, GA. Email: thentry12@uga.edu.

(2005) “Big Three” questions.¹ Hung, Parker, and Yoong (2009) reported that in 18 different studies assessing financial knowledge all but two described the respondents’ knowledge as the number or fraction of correct answers to knowledge items. The remaining two used factor analysis to create an index that assigned different weights to each question based on the item’s difficulty.

The number/percent correct approach is common among assessments of the financial knowledge of college students. The Jump\$tart Coalition for Personal Financial Literacy has administered a 31-item paper and pencil multiple-choice financial literacy exam for high school students since 1997; the results (the percent of questions answered correctly) are widely cited each year to document that students earn failing grades. The exam was given to 1,030 full-time college students in 2008; the results were reported as the mean score (62.2%) (Hoffman, 2008). Despite its widespread use, the exam has been criticized as lacking reliability and validity (Lucey, 2005). The Jump\$tart Coalition’s website has, for the past two years, announced a Version 2 of the exam as “coming soon” (<http://www.jumpstart.org/survey.html>) although the announcement is not specific as to whether there will be a Version 2 for college as well as high school students.

A relatively small number of studies have assessed college students’ knowledge; all used a multi-item test, most often one created by the researchers (Avard, Manton, English, & Walker, 2005; Beal & Delpachtra, 2003; Borden, Lee, Serido, & Collins, 2008; Chen & Volpe, 1998, 2002; Goldsmith & Goldsmith, 2006; Gross, Ingham, & Matasar, 2005; Jones, 2005; Jorgensen, 2007; Makela, Punjavat, & Olson, 1993; Manton, English, Avard, & Walker, 2006; Markovich & DeVaney, 1997; Micomonaco, 2003; Murphy, 2005; Robb, 2007; Rosacker, Ragothaman, & Gillispie, 2009). The items in the tests were true/false and/or multiple choice and the number of items ranged from as few as six questions to as many as 44 items. In addition, while a few of the knowledge tests were comprehensive, others were specific to a content area, such as investing (see, for example, Goldsmith & Goldsmith). Despite differences in the tests and the students to whom they were administered, the results were remarkably similar, and always reported as the percent answered correctly with a mean score of around 50%.

A less common approach is to assess changes in financial knowledge following financial literacy education, using a pre/post test design. Studies have used the pre/post test design to assess knowledge changes after financial literacy education among bankruptcy filers (Wiener, Baron-Donovan, Gross, & Block-Lieb, 2005), domestic violence victims (Sanders, Weaver, & Schnabel, 2007), high school students (Varcoe, Martin, Devitto, & Go, 2005; Walstad, Rebeck, & MacDonald, 2010), and low-income individuals (Zhan, Anderson, & Scott, 2006). All of the researchers reported pre/post test knowledge as the number or percent correctly answered and assessed knowledge as the difference in post and pretest scores. All reported increases in knowledge. All except Zhan et al. and Gross et al. assessed the significance of the changes in knowledge using t-tests; both Zhan et al. and Gross et al. used repeated measures ANOVAs to analyze the data.

Three studies have used a pre/post test design to assess knowledge changes among college students. Borden et al. (2008) administered a seven-item knowledge pretest to 93 students at the beginning of a short seminar taught by peer educators. The same items were on the posttest administered to the same students at the end of the seminar. Using a one-tailed test of significance, the researchers documented a significant change in knowledge (as measured by the number of correct answers) from pretest to posttest but no significant effect of demographic factors.

Gross et al. (2005) assessed knowledge changes using a 48-item test given to 88 college students enrolled in a one-credit, pass/fail course delivered over two days. They described the observed knowledge changes in terms of mean exam scores, compared using both paired sample t-tests and ANOVAs. They reported significant knowledge gains but that no single control factor (age, gender, year in

¹ 1. Suppose you had \$100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow: *more than \$102*, exactly \$102, less than \$102?

² 2. Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, would you be able to buy more than, exactly the same as, or *less than today* with the money in this account?

³ 3. Do you think the following is true or *false*? “Buying a single company stock usually provides a safer return than a stock mutual fund.”

school, previous finance courses) explained the gains. The ANOVA analyses revealed significant interactions between gender and other variables that related to how the test and/or education were administered to the students.

Rosacker et al. (2009) used the pre/posttest design to assess knowledge changes after freshman business school majors attended two workshops delivered by upper-level accounting majors one week apart. The 13-item pretest was given one week before the first workshop and the posttest was administered after the training was complete. The authors reported data from two semesters with 41 and 60 observations, respectively. They calculated means and used t-tests to report significant knowledge gains.

Each of these studies had limitations. The sample sizes were small. The pre- and posttests were given within a relatively short period of time; higher scores on the posttests may have resulted from students' remembering the questions from the pretests, especially since the knowledge component in two of the three studies included relatively few (7-13) items. In addition, when Gross et al. (2005) interviewed the students in their study, many reported guessing on many items on the pretest. Only Rosacker et al. (2009) used statistical analysis methods that allowed examination of the interactions among control variables.

Researchers have included a number of control variables when describing variations and/or changes in financial knowledge. Results have not been consistent, however. Knoll and Houts (2012) analyzed data from the National Financial Capability Study and reported a significant relationship between a financial knowledge scale score and being male; increased age, income, and education; self-reported financial knowledge, economic knowledge, math ability, and knowledge of day-to-day matters; and three behavioral variables (save enough to cover three months of expenses; consult a financial planner; and have a savings account, money market account, or CD). Researchers who examined variations in college students' financial knowledge have reported that those with higher scores were nonblack, business majors, with educated parents (Murphy, 2005); white and female (Jones, 2005); male, with work experience and higher incomes as well as less risk averse (Beal & Delpachtra, 2003); and business majors, upper classmen, male, having more work experience, and older (Chen & Volpe, 1998, 2002). As noted above, researchers who have examined changes in college students' financial knowledge using a pre/posttest design have used small sample sizes that limit the ability to examine the impact of demographic and other control variables.

In addition, there has been little research that included the size of the class as a control variable in research on financial literacy education outcomes, although it is widely believed among faculty, administrators, and students that students are better served in smaller rather than larger classes (Finn & Achilles, 2003). Numerous research studies have demonstrated that smaller class size is related to increased student performance in higher education (Jarvis, 2000; Kokkelenberg, Dillon, & Christy, 2008). Several studies examined the impact of class size in disciplines related to financial education -- economics and accounting. Arias and Walker (2004), Asadullah (2005), and Hwang (2011) each found that a small class size had a positive and statistically significant impact on student performance in economics. Other researchers (Hill, 1998; Kennedy & Siegfried, 1997) found little or no significant effect of class size on student achievement in economic education. These inconclusive results motivated the researchers to examine the effect of class size in the current research.

Methodologies to Assess Knowledge Changes

A review of educational assessment literature indicates there are statistical analysis methods other than student t-tests that one can use to more precisely assess knowledge changes in a pre/posttest design. One measure is a knowledge *gain score*, also known as a *change score* or a *difference score*. A gain score, which is, as the name suggests, the difference between post and pretest scores, is calculated for each student enrolled in a course.

The use of gain scores has been criticized in the literature in past decades (Cronbach & Furby, 1970; Kessler, 1977; Linn & Slinde, 1977; Lord, 1967). Two issues noted as foundational problems with the use of gain scores are low reliability and regression toward the mean (Allison, 1990; Cronbach & Furby, 1970; Kessler, 1977). However, more recently there is growing agreement that analysis of gain scores can be quite useful for various research questions (Maxwell & Delaney, 1990; Maxwell & Howard, 1981; Oakes & Feldman, 2001; Zimmerman & Williams, 1982). Rogers (2011) described the current view of the use of gain scores as more balanced. Although gain score analysis previously was viewed as an appropriate method of analysis only for randomized experiments (Campbell & Stanley, 1963; Maris,

1998), more recent literature suggests it can be beneficial in other experimental designs after corresponding adjustments (Dimitrov & Rumrill, 2003; Rogers, 2011).

Common approaches in gain scores analysis are the use of t-tests, paired t-tests, one-way ANOVAs, which have been proven to be “mathematically equivalent” (Anderson, Auquier, Hauck, Oakes, Vandaele, & Weisberg, 1980; Kanji, 1999; Knapp & Schafer, 2009; Winer, 1971),² and repeated measures ANOVAs. Another popular approach to repeated measures design is the analysis of the posttest with the pretest as a covariate, or an analysis of covariance (ANCOVA). ANCOVA is often recommended when the assignment of subjects to an experiment was not strictly random (as in the current study) (Williams, Maresh, & Peebles, 1972).³

Another useful measure when assessing knowledge change in a pre/posttest design is the *effect size*. Effect size is an estimate of the magnitude of an effect or an association between variables (Snyder & Lawson, 1993). Effect size is resistant to sample size influence and is a scale-free measure, which allows one to capture differences between group means (Ferguson, 2009).⁴ It can be considered a measure of practical significance. The effect size computation requires only descriptive statistics (Pastor, Kaliski, & Weiss, 2007).⁵ Another advantage of using effect size is that it places the emphasis on the most important aspect of an intervention -- the size of the effect -- rather than its statistical significance (Coe, 2002). The magnitude of the effect size itself provides the way to interpret practical meaningfulness or importance of the findings (Hill, Bloom, Black, & Lipsey, 2007).

Research Questions

The goal of this research was to introduce, review, and use several analytical techniques recommended in the literature to assess the effect of a one-credit hour financial literacy course on senior college students' knowledge outcomes. Based on the literature review, this research analyzed four research questions:

1. What was the average knowledge gain among students enrolled in the course, using effect size as the method of assessment?
2. Is the average knowledge gain score different across the five years of instruction? A secondary focus in this research question was the size of the class, as enrollment in Fall Semesters averaged 49 while enrollment in Spring Semesters averaged 104.
3. Are there differences in posttest scores across the five years of instruction after controlling for pretest scores? The specific focus in this research question was differences in students' human capital entering the course, specifically their existing financial knowledge, as measured by pretest scores. In addition, the analysis further explored the interaction between the year and semester the students took the course, after controlling for pretest scores.
4. What are the predictors of student outcomes, measured as knowledge gain scores? Specifically, this research question introduced control variables suggested by previous research, including knowledge on the pretest, a business major, previous financial education, and gender, to examine the impact of a student's self-efficacy (or confidence), engagement in the course, and the existence of a financial commitment (a student loan) on student outcomes.

² A repeated measure ANOVA produces an F statistic, and the F-value is mathematically equivalent to the squared t-value from either t-test approach, producing an identical p-value (Knapp & Schafer, 2009).

³ Analysis of covariance takes into account the correlation between the pretest and the posttest. As an analytical technique it provides the statistical control (statistically subtracts the effects) of an extraneous variable, also called a ‘covariate,’ “concomitant,” or “confound” variable (Leech, Barrett, & Morgan, 2005).

⁴ In addition to group difference indices, effect sizes also can be seen as the strength of association differences, corrected estimates, or risk estimates (Ferguson, 2009; Kline, 2004).

⁵ The statistical formula for the effect size computation reflects the difference between two group outcomes divided by the population standard deviation. For a broad discussion of how the population standard deviation should be represented, see Pastor, Kaliski, and Weiss (2007) and Ferguson (2009).

Methodology

Study Design

Data were collected from 722 college seniors enrolled in a one-credit hour elective course at a southeastern land grant university over a period of nine semesters, beginning in Spring 2008. One of the authors designed the course with assistance from a team of six senior undergraduate students and taught it in each of the nine semesters. Although there have been minor modifications in the course design and delivery over time, none have been significant. Enrollment in the course is restricted to students who have senior standing (have completed at least 90 credit hours) and are not currently nor previously enrolled in a personal finance course at the university. The project was approved by the university's Institutional Review Board.⁶

Two (of eight) graded components in the course are completion of a pretest and a posttest. The pretest consists of 30 multiple choice items assessing financial knowledge and is a paper and pencil exam administered on the first day of class. Students who are absent on the first day are allowed to make up the exam by taking it in the professor's or the teaching assistant's office no later than the second week of class. Students are told they will receive full credit for the first required assignment by answering all of the questions on the exam, regardless of whether they answer the questions correctly, incorrectly, or choose the "don't know" option. To encourage students to do their best, they also are told that if they answer at least 26 of the 30 knowledge items correctly they can earn three extra credit points (only eight extra credit points are available in the course). The combination of incentives was designed to reduce guessing.

The posttest is administered during the last meeting of the class. It includes 50⁷ multiple choice items assessing knowledge and also is a paper and pencil exam. Although "don't know" is an answer option on the post test, the exam grade is based on the number of correct answers. Students are told that if they answer at least 46 of the 50 knowledge items correctly, they can earn three extra credit points.

The tests were tailored to the class material but included items from other knowledge tests. First, the Jump\$tart Coalition exam (Hoffman, 2008) for college students was examined. The ten questions selected for inclusion were those that seemed relevant to college students' ability to understand and use personal financial information (as opposed to knowledge of "textbook" responses or circumstances to which few college students could relate), were devoid of value judgments about what consumers "should" do based on subjective assessments, and were or could be correctly worded given both specific rights under state law and changes in the economic environment and its regulation since 2008. Second, the three Lusardi and Mitchell questions were added to the pre/post tests in Fall 2010. Finally, an additional 17 test items were written and reviewed by a panel of faculty and students in the author's academic department; many were based on concepts represented in the Jump\$tart Coalition exam or other knowledge questions administered to college students but the wording of the stem or answer choices was revised to be more appropriate for the test subjects.

Over the nine semesters the course has been taught, questions have been added to and removed from both tests when evaluation of student responses indicated that changes were needed to better assess knowledge. This paper uses data from the 18 knowledge questions (see the Appendix) that have appeared on every pre- and posttest. The questions are distributed across five different content areas: saving and investing, insurance, taxes, credit report and scores, and credit. There are three to four items in each category, meeting the minimum number of items needed for a meaningful test of a financial concept (Huston, 2010), except in the tax category where there are only two questions. Eight of the 18 items were from the 2008 Jump\$tart Coalition test for college students; a ninth was a modification of a Jump\$tart Coalition question.

In addition to the knowledge questions, other items on the pre- and/or posttest asked about students' credit experiences (responsibility for credit cards, student loans, and car loans); their confidence about their knowledge and ability to manage money in general as well as credit specifically; their engagement in the course outside of class, their gender, age, and college major; and their previous financial management education.

⁶ Over nine semesters all but seven students have agreed to participate.

⁷ In the third semester the course was taught, the number of knowledge items on the posttest was increased from 30 to 50.

Data

A total of 722 students enrolled in the course from Spring 2008 through Spring 2012. The sample for this study was the 632 students for whom pretest and posttest data were matched.⁸ Sample statistics are reported in Table 1. Across the nine semesters, just more than one-third (37%) of the students were male, 25% were College of Business majors, and only 17% reported engaging in previous personal finance education. About one-third reported responsibility for a student loan.⁹ Nearly two-thirds (73%) of the students took the course in a Spring Semester. Nearly one-fourth (22%) scored 40% or lower on the pretest.

Procedure

Table 1 describes the variables used in the analyses. Specifically, the statistical analyses were:

- To address Research Questions 1 and 2, a knowledge gain score was calculated.
- To address Research Question 2, the effect size was measured as Cohen's *d*, which reports the difference between group means in standard deviation units, not in the unit of the raw score (Morris & DeShon, 2002).
- To address Research Question 4, two indices were created. The Personal Finance Confidence Index (PFCI) was a factor score, created using responses to four questions on both the pre- and posttests about students' confidence in their knowledge and ability to manage money in general and credit specifically. The variable was the difference in the posttest and pretest PFCI for each student. The Course Engagement Index (CEI) also was a factor score, created using student responses on the posttest to questions about activities outside of class (e.g., reviewing materials and podcasts before and after lectures).¹⁰ As described in Table 1, dummy variables also were created to address Research Question 4.

Addressing Research Question 1 required merely inspecting the effect sizes. A four-by-two way ANOVA on knowledge gain scores was used to explore Research Question 2; the year and semester were the two fixed factors. In addition, the Tukey posthoc test was used to test for significant differences in gain scores across years of instruction and by semester. ANCOVA was used to address Research Question 3; following previous research, the posttest score was the dependent variable and the pretest score was a covariate, along with the year and semester as fixed factors. Finally, to investigate Research Question 4, a multiple regression analysis using GLM was conducted. Knowledge gain scores were the dependent variable and the independent variables were the difference in the posttest and pretest PFCI (Personal Finance Confidence Index), the CEI (Course Engagement Index), being male, and having a student loan, a low pretest score, a major in the College of Business, and no previous personal finance education.

Results

Descriptive statistics for pre and posttest scores are reported in Table 2. There was some variability in mean pretest scores across cohorts, with a range from .506 (Spring 2012) to .600 (Spring 2011). Across the period of study, the mean pretest score was .561. Posttest score means also varied from .872 (Fall 2008) to .912 (Fall 2010). The mean posttest score was .887, and it was slightly higher for Fall (.891) than Spring (.886) Semesters. Regarding gain scores, students enrolled in 2009 benefited from the personal finance course less than students enrolled in previous or later years. Students enrolled in the course in Fall Semesters, when class sizes were, on average, smaller by 55 students, benefited more from the instruction ($M=.340$; $SD=.187$) than students enrolled in Spring Semesters ($M=.320$; $SD=.164$).

⁸ Some students who took the pretest dropped the course and never took the posttest; some students added the course late and never took the pretest.

⁹ The question wording asked "Are you responsible for..." rather than "Do you have..." a student loan.

¹⁰ Course attendance was not used to create the CEI as attendance is an important component of the grading scheme for the course. In Spring 2012, for example, the average number of absences among the 93 students enrolled was one; 24% of the students attended every class session.

Table 1

Descriptive Statistics for Variables Used in Analyses.

	Description	Mean	SD
Dependent Variable			
Knowledge Gain Score	Difference between post and pretest scores	.326	.171
Independent Variables			
Change in Personal Finance Confidence Index (PFCI)	PFCI is a factor score calculated using the same four questions on the pre- and the posttest; variable is the difference between PFCIs on post- and pretest. Rescaled to take values from 0 to 1 where 0 is no change.	.372	.229
Course Engagement Index (CEI)	CEI is a factor score calculated using three questions on the posttest. Rescaled to take values from 0 to 1 where 0 is no engagement.	.539	.237
Responsibility for Student Loan	=1, if responsibility for a student loan, 0 otherwise	.320	.468
Low Pretest Score	=1, if pretest score was 40% or lower, 0 otherwise	.222	.416
College of Business Major	=1, if student major is in the College of Business, 0 otherwise	.250	.423
Previous Personal Finance Education	=1, if reported no previous financial education	.834	.372
Gender	=1, if male, 0 otherwise	.371	.479
Year 2008	=1, if year 2008, 0 otherwise	.207	.406
Year 2009	=1, if year 2009, 0 otherwise	.185	.389
Year 2010	=1, if year 2010, 0 otherwise	.207	.406
Year 2011	=1, if year 2011, 0 otherwise	.260	.439
Year 2012 (reference)	=1, if year 2012, 0 otherwise	.141	.348
Academic Semester	=1, if Spring, 0 otherwise	.728	.445

To address Research Question 1, the values of Cohen's *d*, displayed in Table 2, were inspected. They show an achievement gap that ranged from 1.52 (Fall 2009) to 2.36 (Spring 2012) of a standard deviation unit. Cohen's (1969) guidelines, in which an effect size of 0.8 is "grossly perceptible and therefore large" (p. 23), indicate the observed effect of the one-credit hour course in personal finance on knowledge change was very large.

The results of the four-by-two way ANOVA on gain scores, used to investigate Research Question 2, are reported in Table 3. Inspection of the 95% confidence intervals around each mean indicated a significant increase in personal finance knowledge gain scores for participants across all years ($F(4,623)=2.865$, $p=.023$) and academic semesters of instruction ($F(1,623)=3.976$, $p=.047$), reaffirming the positive impact of the course on students' personal finance knowledge. In addition, the interaction between year and academic semester was statistically significant ($F(3,623)=4.326$, $p=.005$). The Tukey posthoc test showed¹¹ statistically significant differences in gain scores between 2009 and 2012 ($p=.048$), 2011 and 2012 ($p=.045$). Students enrolled in the course in 2012 benefited from the instruction, on average, more than students enrolled in all previous years, and significantly more than students enrolled in 2009 and 2011.

¹¹ The Tukey posthoc test results are available from authors upon request.

Table 2

Pretest and Posttest Descriptive Statistics and Effect Sizes by Cohort and Academic Semester

		Pretest		Posttest		Gain		N	%	Effect Size d
		Mean	SD	Mean	SD	Mean	SD			
2008										
	Spring	.525	.188	.883	.092	.358	.191	92	70.2	1.90
	Fall	.573	.186	.872	.096	.299	.167	39	29.8	1.61
	Total	.539	.188	.880	.093	.341	.186	131	100	1.81
2009										
	Spring	.593	.159	.888	.099	.296	.153	87	74.4	1.86
	Fall	.561	.222	.898	.099	.337	.204	30	25.6	1.52
	Total	.585	.177	.891	.099	.306	.168	117	100	1.73
2010										
	Spring	.599	.147	.885	.102	.285	.198	90	68.7	1.95
	Fall	.526	.192	.912	.076	.386	.146	41	31.3	2.01
	Total	.576	.165	.893	.095	.317	.170	131	100	1.92
2011										
	Spring	.600	.166	.894	.090	.294	.155	102	62.2	1.77
	Fall	.547	.179	.884	.083	.337	.179	62	37.8	1.88
	Total	.580	.172	.891	.087	.310	.165	164	100	1.81
2012										
	Spring	.506	.157	.877	.092	.371	.157	89	100	2.36
Total										
	Spring	.565	.168	.886	.095	.320	.165	460	72.8	1.91
	Fall	.550	.191	.891	.088	.340	.187	172	27.2	1.79
	Total	.561	.174	.887	.093	.326	.171	632	100	1.87

Table 3

Analysis of Variance for Gain Scores.

Source	Sum of Squares	df	Mean Square	F	p
	Between subjects				
Year	.323	4	.081	2.856	.023
Semester	.113	1	.113	3.976	.047
Year*Semester	.367	3	.122	4.326	.005
Error	17.638	623	.028		

The results of the analysis of covariance (ANCOVA), used to address Research Question 3, are reported in Table 4. Before running the ANCOVA, a correlation analyses was conducted on the pre- and posttest scores; the correlation was positive and statistically significant ($R (n=632) = .304, p < .01$). An assumption of ANCOVA is the homogeneity of the regression slope, or in other words, that the relationship between the covariate (pretest) and the dependent variable (posttest) is the same for each of the grouping variables (year and academic semester). This assumption was justified for years of instruction ($F (4, 620) = .483, p = .748$) as well as for academic semester ($F (1, 620) = 1.514, p = .219$).

Table 4

Analysis of Covariance for Posttest Scores.

Source	Sum of Squares	df	Mean Square	F	p
Between subjects					
Pretest	.512	1	.512	65.368	.000
Year	.020	4	.005	.630	.641
Semester	.008	1	.008	1.069	.302
Year*Semester	.053	3	.018	2.234	.083
Error	4.876	622	.008		

The ANCOVA results indicated that the effect of the year of instruction was no longer significant ($F(4, 622)=.630, p=.641$); the year of instruction and pretest score shared enough variance in common with the posttest to reduce the unique contribution of year of instruction. Differences among academic semesters ($F(1, 622)=1.069, p=.302$) and the interaction effect between year of instruction and academic semester ($F(3, 622)=2.234, p=.083$) also were not significant after controlling for pretest scores. The Partial Eta Squared column in Table 5 indicates that the pretest scores accounted for 9.5% ($.095 \times 100$) of the total variance in posttest scores.

To address Research Question 4, multiple regression analysis using GLM was conducted. Results are reported in Table 5. The intercept estimate of .248 is the estimated value of the gain scores when all of the independent variables have a value of zero. This is quite meaningful for the dummy variables, as values of zero stand for groups of subjects. In addition, zero is not outside the range of values observed for the two variables measured as factor scores (Change in PFCI, CEI). The intercept estimate can be interpreted as the estimated value of the knowledge gain for females, those enrolled in Fall 2008, those who scored above 40% on the pretest, those with a major outside the College of Business, those with previous financial education and those with zero values for the CEI and change in the PFCI.

Table 5

Regression Analysis for Variables Predicting the Personal Finance Knowledge Gain Scores.

Dependent variable: Gain scores	B	SE B
Intercept	.248**	.029
Change in Personal Finance Confidence Index	.075***	.022
Course Engagement Index	.047**	.022
Having a student loan	-.014	.010
Low pretest score	.247***	.012
No previous financial education	.016	.014
College of Business major	-.055***	.013
Male	-.021**	.011
Year 2008	-.017	.017
Year 2009	-.012	.018
Year 2010	-.011	.017
Year 2011	-.026	.017
Academic Semester	-.004	.011

** $p < .05$; *** $p < .001$

The remaining regression coefficients indicate the effect on the estimated value of the gain scores of a one-unit increase in each of the independent variables. For example, the coefficient for business major (-0.055) indicates that, on average, students with a major the College of Business benefited from the course less than students with other majors, and that this difference was significant. The value for the change in the PFCI (.075) indicates that, as the change in PFCI increased by one unit, the estimated gain scores increased by 0.075 (adjusted for the other variables). The "low pretest score"

coefficient indicates that, on average, students who scored less than 40% on the pretest benefited more from the course, and the difference was significant.

In sum, the results demonstrated a statistically significant explanation of the variance in the gain scores from the variances in the change in the independent predictors. The two exceptions were having a student loan and no previous personal finance education. Therefore, the hypothesis that having financial responsibilities would be a predictor of students' achievements in the course was not supported. The analysis did confirm the influence of both increased confidence and course engagement in gain scores. As suggested in previous research (Beal & Delpachtra, 2003; Chen & Volpe, 1998, 2002; Murphy, 2005), being male and a business major were negatively related to gain scores. Although those who reported no financial education before the course, on average, benefited more from the course than students with previous financial education (the estimated value of the gain was .016), this difference was not significant. Controlling for differences in pretest scores (the variable "low knowledge at pretest") eliminated the effect of years and semesters of instruction on gain scores.

Conclusions and Implications

This paper examined the impact of a one-credit hour personal finance course on the financial knowledge of the enrolled students, who were all college seniors. A pre/posttest design was used to assess knowledge change on 18 multiple-choice items. The mean pretest and posttest scores were .561 and .887, respectively. Analysis of Cohen's *d* as well as a four-by-two way ANOVA on gain scores confirmed a significant increase in students' personal finance knowledge gain scores. In addition, the ANOVA indicated there was a class size effect, with significantly greater gain scores in smaller classes. However, the class size effect disappeared when the data were analyzed using ANCOVA and after controlling for pretest scores. Multiple regression analysis confirmed the positive and significant influence of an increase in students' confidence in their knowledge and ability to manage money and credit along with greater engagement in the course on gain scores, after controlling for pretest scores, previous financial education, majoring in business, having financial responsibilities, gender, year, and semester of instruction.

This research has several limitations. A primary one is the lack of a control group as well as the likely existence of a self-selection bias that influenced the composition of the sample. In addition, the analyses used posttest results collected immediately after the course ended. A stronger assessment of knowledge gain would result if posttests were administered after more time had elapsed. Despite the limitations, the use of the pre/posttest design allowed greater confidence in attributing the observed knowledge change to the course (Pastor, Kaliski, & Weiss, 2007). The results confirmed most but not all of the researchers' expectations. Having an existing financial commitment was not a significant predictor of knowledge gain. However, the measure, responsibility for a student loan, may have been flawed. As undergraduate students, few are actively making student loan payments; most will not begin repayment until required to, which is six months after leaving college. They also likely see that their greatest need to make loan payments is income, not knowledge. A more realistic measure of financial responsibility for college students may be housing or credit card costs.

In addition, having had previous financial education was not a significant financial predictor of knowledge gain. Again, the problem may have been with the measure, not the concept, especially as the pretest score was a significant predictor. Respondents may have answered "yes" to the question about previous financial education if they took a course in high school (or even earlier), recently attended a one-hour workshop, or any number of other possibilities. The influence of participating in previous financial education is likely through knowledge gained, and that effect may have been assessed through the pretest score.

A predictable result was that those who scored above 40% on the pretest (the mean was 56%) demonstrated lower knowledge gains than those who scored lower. As educators, we can find great satisfaction in demonstrated knowledge gains among those who began a course knowing little; and, this research suggests that they do in fact appear to have the greatest potential to benefit from the course. The challenge may be to recruit those students who have little to no personal finance knowledge to enroll in such courses. They may never consider the possibility if they find the prospect intimidating. On-campus marketing for the course described in this paper emphasizes the involvement of undergraduate students in designing the course, with the hope that it makes the course seem more approachable. Another potential barrier is removed by recommending popular books related to personal finance instead of a

traditional textbook. How one challenges students who come into a course with vastly different amounts of knowledge is a dilemma many professors face, especially if one recruits students with admittedly little knowledge on the topic. One approach used in the course described in this paper is to allow students discretion in choosing (from a predefined list) at least some of the assignments completed. This allows students to match work with areas of deficiency. Students also may find personal finance courses less intimidating if there are informal opportunities to learn about personal finance on campus through, for example, workshops, websites, and blogs.

Finally, it is encouraging to see the positive influence of both course engagement and confidence in improving students' knowledge outcomes. As professors, we *tell* students that using the additional resources we provide can improve their knowledge; it is rewarding to demonstrate that relationship through research. In addition, it is an explicit objective of the course described in this research to make learning about personal finance a positive experience, increase (appropriately) students' confidence related to personal finance, and encourage them to consider learning about personal finance a lifelong task that continues after the semester ends. Thus, the positive influence of confidence on knowledge gains is noteworthy.

References

- Allison, P. D. (1990) Change scores as dependent variables in regression analysis. In C. C. Clogg (Ed.), *Sociological Methodology* (Vol 20, pp. 93-114). Oxford, UK: Blackwell.
- Anderson, S., Auquier, A., Hauck, W., Oakes, D., Vandaele, W., & Weisberg, H. (1980). *Statistical methods for comparative studies*. New York: John Wiley & Sons.
- Arias, J. J., & Walker, D. M. (2004). Additional evidence on the relationship between class size and student performance. *Journal of Economic Education*, 35, 311-29.
- Asadullah, M. N. (2005). The effect of class size on student achievement: Evidence from Bangladesh. *Applied Economics*, 12(4), 217-222.
- Avard, S., Manton, E., English, D., & Walker, J. (2005). The financial knowledge of college freshmen. *College Student Journal*, 39(2), 321-338.
- Beal, D. J., & Delpachtra, S. B. (2003). Financial literacy among Australian university students. *Economic Papers*, 22(1), 65-78.
- Borden, L. M., Lee, S. A., Serido, J., & Collins, D. (2008). Changing college students' financial knowledge, attitudes, and behavior through seminar participation. *Journal of Family and Economic Issues*, 29(1), 23-40.
- Campbell, D. T., & Stanley, J. C. (1963). *Experimental and quasi-experimental designs for research*. Chicago: Rand McNally.
- Chen, H., & Volpe, R. (2002). Gender differences in personal financial literacy among college students. *Financial Services Review*, 11(4), 289-307.
- Chen, H., & Volpe, R. P. (1998). An analysis of personal financial literacy among college students. *Financial Services Review*, 7(2), 107-128.
- Coe, R. (2002). *It's the effect size, stupid. What effect size is and why it is important*. Presentation to the Annual Conference of the British Educational Research Association, England. Retrieved from <http://www.leeds.ac.uk/educol/documents/00002182.htm>
- Cohen J. (1969): *Statistical power analysis for the behavioral sciences*. Academic Press, New York, London.
- Dimitrov, D. M., & Rumrill, P. D. (2003). Pretest–posttest designs and measurement of change. *Journal of Prevention, Assessment & Rehabilitation*, 20, 159–165.
- Ferguson, C. (2009). An effect size primer: A guide for clinicians and researchers. *Professional Psychology: Research and Practice*, 40(5), 532-538.
- Finn, J. D., & Achilles, C. M. (2003). Class size: Counting students can count. *American Educational Research*, 1(2), 1-4.
- Fox, J., Bartholomae, S., & Lee, J. (2005). Building the case for financial education. *Journal of Consumer Affairs*, 39(1), 195-214.
- Goldsmith, R. E., & Goldsmith, E. B. (2006). The effects of investment education on gender differences in financial knowledge. *Journal of Personal Finance*, 5(2), 55-69

- Gross, K., Ingham, J., & Matasar, R. (2005). Strong palliative, but not a panacea: Results of an experiment teaching students about financial literacy. *Journal of Student Financial Aid*, 35(2), 7-26.
- Hastings, J. S., Madrian, B. C., & Skimmyhorn, W. L. (2012). *Financial literacy, financial education and economic outcomes*. *Annual Review of Economics*, 5: Submitted. doi:10.1146/annurev-economics-082312-125807.
- Hill, M. C. (1998). Class size and student performance in introductory accounting courses: Further evidence. *Issues in Accounting Education*, 13(1):47-64.
- Hill, C., Bloom, H., Black, A., & Lipsey, M. (2007). *Empirical benchmarks for interpreting effect sizes in research*. MDRC Working Papers on Research Methodology. New York, NY: MDRC. Retrieved from <http://www.mdrc.org/publications/459/full.pdf>
- Hoffman, E. (2008). Financial literacy still declining among high school seniors, JumpStart coalition's 2008 survey shows. [Press release]. JumpStart Coalition for Personal Financial Literacy.
- Hung, A. A., Parker, A. M., & Yoong, J. K. (2009). *Defining and measuring financial literacy*. RAND Labor and Population Working Paper WR-708.
- Huston, S. J. (2010). Measuring financial literacy. *The Journal of Consumer Affairs*, 44(2), 296-316.
- Hwang, J-K. (2011). *Employment and student performance in principles of economics*. SSRN Working Paper 1846651. Retrieved from <http://dx.doi.org/10.2139/ssrn.1846651>
- Jarvis, T. J. (2000). Class size and teacher effects on student achievement and dropout rates in university-level calculus. Preprint. Retrieved from <http://www.math.byu.edu/~jarvis/class-size/class-size.html>
- Jones, J. E. (2005). College students' knowledge and use of credit. *Financial Counseling and Planning*, 16(2), 9-16.
- Jorgensen, B. L. (2007). *Financial literacy of college students: Parental and peer influences*. Master's Thesis, Virginia Polytechnic Institute and State University.
- Kanji, G. K. (1999). *100 statistical tests* (New ed.). Thousand Oaks, CA: Sage.
- Kokkelenberg, E. C., Dillon, M., & Christy, S. M. (2008). The effects of class size on student grades at a public university. *Economics of Education Review*, 27(2), 221-233.
- Kennedy, P. E., & Siegfried, J. J. (1997). Class size and achievement in introductory economics: Evidence from the TUCE III data. *Economics of Education Review*, 16(4), 385-94.
- Kessler, R.C. (1977). Use of change scores as criteria in longitudinal survey research. *Quality and Quantity*, 11, 43-66.
- Kline, R. B. (2004). *Beyond significance testing: Reforming data analysis methods in behavioral research*. APA: Washington, DC.
- Knapp, T. R., & Schafer, W. D. (2009). From gain score t to ANCOVA F (and vice versa). *Practical Assessment, Research & Evaluation*, 14(6), 1-7. Retrieved from <http://pareonline.net/getvn.asp?v=14&n=6>
- Knoll, M. A. Z., & Houts, C. R. (2012). The financial knowledge scale: An application of Item Response Theory to the assessment of financial literacy. *Journal of Consumer Affairs*, 46(3), 381-410.
- Leech, N. L., Barrett, K. C., & Morgan, G. A. (2005). *SPSS for Intermediate statistics: Use and interpretation* (2nd ed.). Mahwah, NJ: Lawrence Erlbaum Associates.
- Linn, R. L., & Slinde, J. A. (1977). The determination of the significance of change between pre- and posttesting periods. *Review of Educational Research*, 49, 121-150.
- Lord, F. M. (1967). A paradox in the interpretation of group comparisons. *Psychological Bulletin*, 72, 304-305.
- Lucey, T. A. (2005). Assessing the reliability and validity of the JumpStart Survey of Financial Literacy. *Journal of Family and Economic Issues*, 26, 283-294. DOI: 10.1007/s10834-005-3526-8.
- Lusardi, A., & Mitchell, O. S. (2005). *Financial literacy and planning: Implications for retirement wellbeing*. Working Paper 2005-108. Ann Arbor: University of Michigan Retirement Research Center. Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=881847
- Makela, C. J., Punjvat, T., & Olson, G. I. (1993). Consumers' credit cards and international students. *International Journal of Consumer Studies*, 17(2), 173-186.
- Manton, E. J., English, D. A., & Walker, J. (2006). What college freshmen admit to not knowing about personal finance. *Journal of College Teaching & Learning*, 3(1), 43-54.
- Maris, E. (1998). Covariance adjustment versus gain scores – Revisited. *Psychological Methods*, 3, 309-327.

- Markovich, C. A., & DeVaney, S. A. (1997). College seniors' personal finance knowledge and practices. *Journal of Family and Consumer Sciences*, 89, 61-65.
- Maxwell, S. E., & Delaney, H. D. (1990). *Designing experiments and analyzing data: A model comparison perspective*. Belmont, CA: Wadsworth.
- Maxwell, S., & Howard, G. (1981). Change scores – necessarily anathema? *Educational and Psychological Measurement*, 41, 747-756.
- Micomonaco, J. P. (2003). *Borrowing against the future: Practices, attitudes and knowledge of financial management among college students*. Master's Thesis, Virginia Polytechnic Institute and State University.
- Morris, S. B., & DeShon, R. P. (2002). Combining effect size estimates in meta-analysis with repeated measures and independent-groups designs. *Psychological Methods*, 7, 105 -125.
- Murphy, A. J. (2005). Money, money, money: An exploratory study on the financial literacy of black college students. *College Student Journal*, 39(3), 478-488.
- Oakes, J. M., & Feldman, H. A. (2001). Statistical power for non-equivalent pretest–posttest designs: The impact of change-score versus ANCOVA models. *Evaluation Review*, 25, 3–28.
- Pastor, D., Kaliski, P., & Weiss, B. (2007). Examining college students' gains in general education. *Research & Practice in Assessment*, 1(2), 4-17.
- Remund, D. L. (2010). Financial literacy explicated: The case for a clearer definition in an increasingly complex economy. *The Journal of Consumer Affairs*, 44(2), 276-295.
- Robb, C. A. (2007). *College students and credit card use: The effect of personal financial knowledge on debt behavior*. University of Missouri, Columbia, MO.
- Rogers, J. (2011). *A comparison of multivariate methods for measuring change from pretest to posttest*. PhD. Dissertation, University of Northern Colorado.
- Rosacker, K. M., Ragothaman, S., & Gillispie, M. (2009). Financial literacy of freshmen business school students. *College Student Journal*, 43(2), 391-400.
- Sanders, C. K., Weaver, T. L., & Schnabel, M. (2007). Economic education for battered women: An evaluation of outcomes. *Journal of Women and Social Work*, 22(3), 240-254.
- Snyder, P., & Lawson, S. (1993). Evaluating results using corrected and uncorrected effect size estimates. *Journal of Experimental Education*, 61, 334–349.
- Varcoe, K. P., Martin, A., Devitto, Z., & Go, C. (2005). Using a financial education curriculum for teens. *Financial Counseling and Planning*, 16(1), 63-71.
- Walstad, W. B., Rebeck, K., & MacDonald, R. A. (2010). The effects of financial education on the financial knowledge of high school students. *Journal of Consumer Affairs*, 44(2), 336-357.
- Wiener, R. L., Baron-Donovan, C., Gross, K., & Block-Lieb, S. (2005). Debtor education, financial literacy, and pending bankruptcy legislation. *Behavioral Sciences and the Law*, 23, 347-366.
- Williams, J. D., Maresh, R. T., & Peebles, J. D. (1972, April). *A comparison of raw gain scores, residual gain scores, and the analysis of covariance with two modes of teaching reading*. Paper presented at the Annual Meeting of the American Educational Research Association, Chicago, Illinois. Retrieved from <http://eric.ed.gov/>
- Winer, B.J. (1971). *Statistical principles in experimental design* (2nd ed.). New York: McGraw-Hill.
- Zhan, M., Anderson, S.G., & Scott, J. (2006). Financial knowledge of the low-income population: Effects of a financial education program. *Journal of Sociology and Social Welfare*, 33(1), 53-73.
- Zimmerman, D. W., & Williams, R. H. (1982). Gain scores in research can be highly reliable. *Journal of Educational Measurement*, 19, 149-154.

Appendix 1

Personal Finance Knowledge Questions Used on Pre/Posttest

	Questions	Knowledge Concept
	Content Area: Retirement Planning	
1.	<p>Your take-home pay from your job is less than the total amount you earn. Which of the following best describes what employers in most states must take out of your total pay?</p> <ol style="list-style-type: none"> Federal income tax, state sales tax, and Social Security contributions. Federal and state income tax, Social Security and Medicare contributions. Deductions to fund your IRA. Federal income tax, property tax, and Medicare and Social Security contributions. Don't know. 	Employer deductions
2.	<p>Luis' employer offers a 401(k) plan in which the employer will match 25% of the first \$4,000 Luis contributes to the plan. This means that:</p> <ol style="list-style-type: none"> If Luis opens a 401(k) plan, it will earn 25%. If Luis invests in his 401(k) plan, the employer will pay his health insurance premium. If Luis invests in his 401(k) plan, he will be vested in Social Security. If Luis invests \$4,000 in his 401(k) plan, the employer will contribute \$1,000 to his plan. Don't know. 	Employer's Match to 401(k)
3.	<p>Jacob is looking for an investment that will reduce his taxable income when he retires. Melissa wants an investment to reduce her taxable income now. Which statement is the most correct?</p> <ol style="list-style-type: none"> Both should invest in mutual funds. Jacob should consider a Roth IRA while Melissa should open a traditional IRA. Both Jacob and Melissa should put their money in a traditional IRA. Jacob should invest in a stock fund and Melissa in a bond fund. Don't know. 	Traditional v. Roth IRA
	Content Area: Insurance	
4.	<p>If each of the following persons had the same amount of take-home pay, who would need the greatest amount of life insurance?</p> <ol style="list-style-type: none"> A young single woman without children. An elderly retired man, whose wife is also retired. A young married man without children. A young single woman who has two young children. Don't know. 	Life Insurance Needs
5.	<p>In May, Justin's auto insurance bill arrived – it was \$400! The same week he had an accident. The damage estimate to repair the vehicle was \$2,500. The insurer said Justin's policy required him to pay \$1,000 plus 20% of the difference (or another \$300). Which of the following statements is correct?</p> <ol style="list-style-type: none"> Justin's premium is \$1,000, his deductible is \$300, and his co-insurance is 20%. Justin's co-insurance is \$1,000, his premium is 20%, and his deductible is \$1,000. Justin's premium is \$400, his deductible is \$1,000, and his co- 	Deductibles and Co-Insurance

	<p>insurance is 20%.</p> <p>d. Justin’s deductible is 50%, his co-insurance is \$1,000, and his premium is \$400.</p> <p>e. Don’t know</p>	
6.	<p>If you caused an accident, which type of automobile insurance would cover damage to your own car?</p> <p>a. Collision.</p> <p>b. Term.</p> <p>c. Comprehensive.</p> <p>d. Liability.</p> <p>e. Don’t know.</p>	Auto Insurance Coverage
Content Area: Investment		
7.	<p>Tom and Will are the same age. Tom put \$50 a month into a mutual fund from age 21 to age 65. Will put \$100 a month into the same fund from age 30 to age 65. Over the years the fund averaged a 7% annual return. Which statement is true?</p> <p>a. At age 65, there’s no way that Tom can have more money than Will because Will invested more each month.</p> <p>b. At age 65, Tom will have more money than Will because Tom started investing earlier.</p> <p>c. At age 65, Tom will have 63% less money than Will.</p> <p>d. At age 65, Tom will have 7% less money than Will.</p> <p>e. Don’t know.</p>	Time Value of Money
8.	<p>Jessica bought stock while Ariel bought a corporate bond. Lindsey has \$12,000 in a bank savings account. Which statement is true?</p> <p>a. Of all of the places where Lindsey could put her money, the safest place is in a stock mutual fund.</p> <p>b. Jessica bought shares of a company while Ariel loaned money to a company.</p> <p>c. All three have diversified their investments.</p> <p>d. None of them could lose all of the money they invested.</p> <p>e. Don’t know.</p>	Different Investment Types
9.	<p>Ryan and Ariel just had a baby. They received money as baby gifts and want to put it away for the baby’s education. Which of the following traditionally has had the highest growth over periods of time as long as 18 years?</p> <p>a. A U.S. government savings bond.</p> <p>b. A savings account.</p> <p>c. A checking account.</p> <p>d. Stocks.</p> <p>e. Don’t know.</p>	Investment Rates of Returns
10.	<p>Many savings programs are protected by the Federal government against loss. Which of the following is not?</p> <p>a. A U.S. treasury bond.</p> <p>b. A U.S. savings bond.</p> <p>c. A certificate of deposit at a credit union.</p> <p>d. A stock mutual fund.</p> <p>e. Don’t know.</p>	Saving and Investing
Content Area: Taxes		
11.	<p>Susan is single with no dependents. She earned \$28,345 last year. Withholding from her paychecks was: \$2,707 for federal income tax, \$1,757 for Social Security, and \$411 for Medicare contributions. Which of the following is true?</p> <p>a. Susan has already paid \$4,878 toward the federal income tax she owes for last year.</p>	Federal Income Tax Withholding

	<ul style="list-style-type: none"> b. Susan can file a 1040EZ online at no cost and may get a refund that would total no more than \$2,707. c. Susan can file a 1040 through a tax preparer and may be able to get back the full \$4,878 withheld from her paycheck. d. There's no reason for Susan to file a federal income tax return. e. Don't know 	
12.	<p>Suppose Congress is considering legislation to give those who owe student loan payments a break on their income taxes. As one who owes student loans and wants the biggest break possible, what would you lobby Congress to do?</p> <ul style="list-style-type: none"> a. Vote for an income tax deduction for student loan payments. b. Amortize your student loan debt over 30 years. c. Apply the time value of money to reduce your overall debt. d. Vote for an income tax credit for student loan payments. e. Don't know. 	Income Tax Deductions v. Credits
	Content Area: Credit History/Score	
13.	<p>Which of the following statements is true?</p> <ul style="list-style-type: none"> a. No one can see your credit history unless you've completed an application or otherwise given your permission. b. Your credit reports from the three major credit bureaus are likely identical so there's no reason to check all three. c. The federal government manages the collection of credit information about you and the production of credit reports. d. If you visit a dealership to look at cars, the sales staff can view your credit history without your permission. e. Don't know. 	Use of Credit Reports
14.	<p>Which of the following statements is true?</p> <ul style="list-style-type: none"> a. Your bad loan payment record with one bank will not be considered if you apply to another bank for a loan. b. If you missed a payment more than two years ago, it can't be considered in a loan decision. c. People have so many loans it's very unlikely that one financial institution will know your history with another financial institution. d. Banks and other lenders share the credit histories of their borrowers with each other and are likely to know of any loan payments you have missed. e. Don't know. 	Use of Credit Reports
15.	<p>Which of the following statements best describes your right to check your credit history for accuracy?</p> <ul style="list-style-type: none"> a. All credit records are the property of the U.S. government and access is only available to the FBI and lenders. b. The only way you can check your credit report for free is if you're turned down for credit based on a credit report. c. Georgia residents can see their credit reports as often as they need to at no charge. d. All U.S. residents can check their credit report once a year for free but there's no legal right to see your credit score for free. e. Don't know. 	Rights to Review Credit Report
	Content Area: Credit Cards	
16.	<p>Credit Card A has an 18% APR and a \$50 annual fee. Credit Card B has a 22% APR and no annual fee. Tom charges an average of \$1,500 a month to a credit card and many months can make only the minimum payment. Phil charges \$2,000 a month on average but never more than he can pay off in full each month. Which statement is true?</p>	Comparing Credit Card Terms

	<ul style="list-style-type: none"> a. Phil should take Credit Card A and Tom should take Credit Card B. b. Both should take Credit Card A. c. Both should take Credit Card B. d. Tom should take Credit Card A and Phil should take Credit Card B. e. Don't know. 	
17.	<p>Rebecca charged \$1,200 to her credit card last month. The most she can afford to pay this month is \$50. The minimum payment is \$48 and the interest rate is 29%. Which of the following will save Rebecca the most money?</p> <ul style="list-style-type: none"> a. Pay the credit card company \$48. b. Don't pay anything this month and put \$50 in a savings account. Use that money plus the interest earned to pay next month's bill. c. Pay nothing this month and \$100 next month. d. Pay the credit card company \$50 this month. e. Don't know. 	Credit Card Minimum Payments
18.	<p>If your credit card is stolen and the thief charges \$1,000 but you notify the credit card issuer as soon as you discover it is missing, what is the maximum amount that you can be forced to pay according to Federal law?</p> <ul style="list-style-type: none"> a. \$50. b. \$500. c. \$1,000. d. Nothing. e. Don't know. 	Liability for Lost or Stolen Credit Card