

Does the Format of High School Personal Finance Education Influence the Financial Knowledge of College Freshmen?

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Introduction

Financial knowledge and competence in money management have become imperatives for all segments of society. Researchers have pointed to a lack of basic financial knowledge on the part of high school students, college students and young adults alike, and posited that this deficiency may be explained by the absence of personal financial education in school curriculum. As a result, some states have introduced varying forms of mandates requiring personal finance education (Council for Economic Education (CEE), 2016; Walstad, Tharayil, & Wagner, 2016). Georgia, where this research was conducted, requires personal finance topics to be taught in K-12, including in a required high school economics course.

Cude (2017) used a survey of the University of Georgia (UGA) freshmen to examine the influence of the high school personal finance education mandate on the financial knowledge of college freshmen. The current study uses Cude's survey instrument to survey the freshmen population of the University of North Georgia (UNG). The two institutions are similar in that they draw their enrollment primarily from Georgia's public high school system. They are different in that UGA is a research institution in the top rung of the University System of Georgia (USG) while UNG is a state university in the second rung of the USG hierarchy of universities and colleges. Freshmen entering both universities during 2016 and 2017 would have been exposed to some form of financial education if they attended public high schools in Georgia.

Study Objectives

The main objective of the current study was to investigate whether the format in which college freshmen received high school personal finance education influenced their financial knowledge. This study compared the financial knowledge of freshmen who took a standalone course in personal finance in high school with the knowledge of those who received personal finance content embedded in other courses. Further, this study sheds light on whether the number of personal finance topics freshmen recall being taught in high school impacts their financial knowledge scores.

Literature Review

Previous studies addressing the issue of financial literacy among young adults generally, and college students in particular, pointed to serious deficiencies in their financial knowledge and resultant behaviors (Avard et al., 2005; Chen & Volpe, 1998; Cude et al., 2006; Danes & Hira, 1987; Grable, Law & Kaus, 2012; Lusardi, Mitchell & Curto, 2010; Lyons, 2004; Mandell, 2008; Markovich & DeVaney, 1997; Warwick & Mansfield, 2000; Xiao, Noring & Anderson, 1995). Avard et al., for example, surveyed 407 students at a Texas university and, in probably the most stunning of results on a test of financial knowledge of college students, reported an average score of 34.8% with a median of 32.5%.

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The results of these previous studies have prompted some to conclude that very few students entering college are fully prepared to manage their finances effectively (Cude et al., 2006; Grable, Law and Kaus, 2012). Some also have argued that high school may be a good place for financial education because young people often do not understand debit and credit cards, mortgages, banking, investment products, payday lending and other financial services yet may soon use them (CEE, 2016). Others have argued that college may be an opportune time for financial education as it presents the first opportunity for students to make independent financial decisions such as whether to acquire student loan debt, use other financial aid, and make decisions about housing arrangements, work, and expenditure choices (Cude, Danns & Kabaci, 2016; Durband & Britt, 2012; Jobst, 2012).

Significance of Study

This study is significant in that it adds to our understanding of the influence of high school personal finance education on college freshmen financial knowledge. It may help researchers and policy makers alike understand whether the ways in which high schools implement personal finance education mandates should be re-examined.

Method

To answer the research questions, this study used data derived from a survey of freshmen conducted at the University of North Georgia during Spring 2017. An online survey, developed by Cude (2017), was used to collect the data.

With the assistance of the Institutional Effectiveness Office of the University of North Georgia, a total of 4,019 emails with an embedded Qualtrics link to the survey were sent to all enrolled freshmen. Respondents were offered a chance to win one of five \$25 gift cards. A total of 619 responses were received but 99 participants expressed interest only in entering to win a gift card. Therefore, a total of 520 participants contributed to the study. Survey questions included ones measuring financial knowledge, questions about the freshmen's recall and perceptions of their high school personal financial education experience, questions about their financial activities/behaviors, and questions about their majors and gender.

Responses to three questions were used to identify students who had experienced personal finance education in high school:

1. Did you take a standalone course in high school where all or most of the course was about personal finance/money management? *If no or don't remember*
2. Did you take a course in high school that was not primarily about personal finance/money management but covered some personal finance/money management content? *If no or don't remember*
3. Did you take a course in high school that was at least in part about personal budgeting, credit, insurance or saving and investing?

The three different question wordings were designed to identify as many students as possible who recalled experience with high school personal finance education, including those who might not have recognized the terms "personal finance/money management." The researchers also created a variable to measure the number of personal finance/money management topics covered based on the respondents' recall.

The financial knowledge variable was the number of correct answers to five knowledge questions. The knowledge questions were the "Big Three" Lusardi and Mitchell (2008) questions plus two written by Cude (2017) about credit cards and credit scores. The knowledge questions were scored 1 for the correct answer and 0 for the incorrect answer. The scores were calculated to determine a composite score (the financial knowledge score) between zero and five for each respondent. Cross tabulations were completed and mean scores calculated and analyzed. The researchers used ANOVA and the Bonferroni test for differences of means to investigate if there were significant differences in the mean scores of freshmen who had experienced high school financial education in different formats.

Results

Demographic Variables

Most (94%) of the 520 respondents who provided complete responses to the survey completed high school in the state of Georgia. Almost 88% of respondents graduated from a public high school; 7.3% attended private school; 2.3% and 2.1% attended high school online or were home schooled, respectively, while 3 participants (0.6%) completed the GED. Four hundred and fifty-nine respondents provided demographic information on age, race and sex. Of these, 139 or 30.3% were males and 320 or 69.7% females. The majority of respondents (96%) were between the ages of 18 and 22 and 91.3% were single. Tables 1 to 7 provide other descriptive statistics of respondents.

Table 1. State Where You Completed Most of Your High School Education (n=520)

State	Freq.	%	State	Freq.	%
Alabama	2	0.4	Pennsylvania	2	0.4
Connecticut	1	0.2	South Carolina	1	0.2
Florida	6	1.1	Tennessee	1	0.2
Georgia	489	94.0	Texas	1	0.2
Illinois	1	0.2	Virginia	2	0.4
Indiana	1	0.2	Wisconsin	2	0.4
Mississippi	1	0.2	Other location	8	1.5
North Carolina	2	0.4			

Table 2. Description of High School Education (n=520)

Graduated from:	Freq.	%
Public high school	456	87.7
Private high school	38	7.3
Online high school	12	2.3
Home schooled	11	2.1
Completing GED	3	0.6

Table 3. Age of Participants (n=459)

Age	Freq.	%
18 - 22	440	95.9
23 - 29	12	2.6
30 - 39	6	1.3
40 or older	1	0.2

Table 4. Classification of Participants (n=460)

Year in college	Freq.	%
First year/Freshman	443	96.3
Second year/sophomore	16	3.5
Third year	1	0.2

Table 5. Gender of Participants (n=459)

Gender	Freq.	%
Male	139	30.3
Female	320	69.7

Table 6. Degree Objective (n=460)

Degree objective	Freq.	%
Associate degree	137	29.8
Bachelor's degree	295	64.1
Master's degree	22	4.8
Non-degree program	6	1.3

Table 7. Participants' Marital Status (n=459)

Marital status	Freq.	%
Single	419	91.3
Engaged	13	2.8
Married	13	2.8
Living as a couple	12	2.6
Other	2	0.4

Loans, Savings, Credit and Investments

Tables 8 to 12 provide respondents' answers to questions on loans, savings, credit and investments. Nearly one-third (31.3%) of respondents had student loans for which they had the responsibility to repay; 67.9% had savings or investment accounts to which they personally added money, while 80.8% personally made decisions about where their money is saved or invested. While most of the students had some access to a debit card (95%), the majority (66%) of the students in this survey did not have a credit card.

Table 8. Responsibility for Student Loans (n=475)

Do you have student loans that will be your responsibility to repay when you graduate?	Freq.	%
Yes	143	31.3
I have student loans but the payment won't be my responsibility when I graduate	17	3.7
I have student loans but I don't know who will repay them	19	4.1
No, I don't have any student loans	278	60.8

Table 9. Savings or Investments (n= 458)

Do you have any savings or investments?	Freq.	%
Yes, and I've personally added money to that account	311	67.9
Yes, but someone else has put all of the money into the account(s)	49	10.7
No, I have no savings and investments	98	21.4

Table 10. Decisions about Savings/Investment Account(s) (n=359)

How would you describe the decisions made about your saving/investment account(s)?	Freq.	%
I've personally made decisions about where that money is saved/invested	290	80.8
Someone else has made all the decisions about where that money is saved/invested	27	7.5
Someone else has made most or all of the decisions but they talk to me about it	42	11.7

Table 11. Have Debit Card (n=458)

Do you have a debit card that you are responsible for?	Freq.	%
No, I don't have a debit card	22	4.8
Yes, and it's my responsibility to manage it	402	87.8
Yes, but it's my parents'(or another adult's) and they manage the card	34	7.4

Table 12. Have Credit Card (n=458)

Do you have a credit card that you are responsible for?	Freq.	%
No, I don't have any credit cards	302	65.9
I have 2 or fewer credit cards	112	24.4
I have 3 or more credit cards	17	3.7
I have 1 or more credit cards but I'm not responsible for the payments	27	5.9

Format of High School Personal Finance and Financial Knowledge

The main objective of this study was to investigate whether the format in which students received high school personal finance education influenced their financial knowledge as college freshmen. The research compared the financial knowledge of freshmen who reported they experienced personal

financial education in a standalone course versus those who said their personal finance education content was embedded in other courses.

Independent Variables. Only 13.6% (71) of the 520 respondents reported taking a standalone course in high school where most or all of the course content was about personal finance/money management. Another 295 (56.2% of respondents) reported receiving personal finance education in a high school course that was not primarily about personal finance/money management but included some personal finance content. Just less than 25% of respondents said they did not experience any personal finance content in high school and nearly 5% said they did not remember or did not answer the question.

Table 13: Format of High School Personal Financial Education

Format in which personal finance(PF)/money management (MM) was delivered	Freq.	%
Standalone course	71	13.6
Course was not primarily about PF/MM but covered some PF/MM content	295	56.7
No course with any personal finance content	129	24.8
Don't remember	17	3.3
No response	8	1.6

Most of the 366 respondents who recalled personal finance education in high school provided the name(s) of the course(s) in which the content was taught. In addition to courses dedicated completely to personal finance/money management, freshmen reported personal finance topics in economics, mathematics, government, advanced mathematics and decision making, family and consumer sciences and business essentials among other courses. The most frequently named course (79%) in which personal finance topics were taught was Economics/AP Economics. This was as anticipated because personal finance is required to be taught in high school economics courses in Georgia. Thirty percent of respondents reported personal finance content taught in more than one of their high school courses; 11% identified the content as in three to five of the courses they took in high school.

Survey respondents were asked about the topics covered in high school personal finance. Financial planning and budgeting (64.7% of respondents) along with savings and investment strategies (65.7%) were the most-named topics. Other popular topics covered in high school personal finance were credit and credit cards (56.8%), banking and financial services (54.1%) and income and taxes (46.2%).

Table 14: Personal Finance/Money Management Topics Covered

Topics included in high school courses that covered personal finance/money management	Freq.	% of Respondents
Financial planning and budgeting	214	64.7%
Saving and investment strategies	217	65.6%
Risk management and insurance	131	39.6%
Credit and credit cards	188	56.8%
Credit report and credit scores	99	29.9%
Banking and financial services	179	54.1%
Income and taxes	153	46.2%
Entrepreneurial skills	123	37.2%
Consumer rights and responsibilities	105	31.7%
Other topics	9	2.7%

Figure 1 and table 15 show the number of personal finance topics covered by respondents. The modal number of topics covered was 3 with 66 respondents reporting that number.

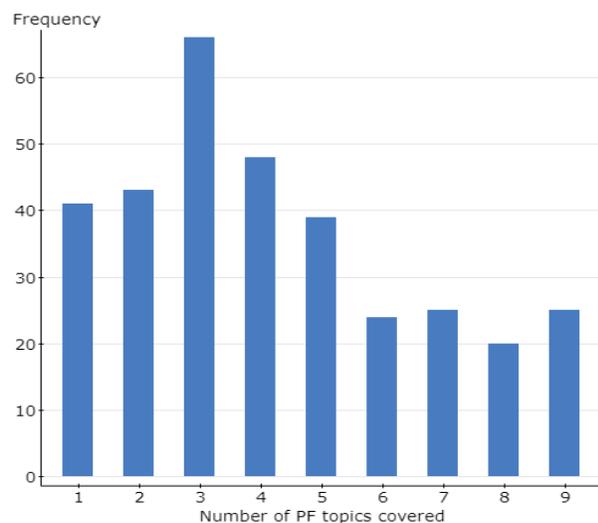


Figure 1: Number of PF topics covered by respondents

Table 15: Number of Personal Finance Topics Covered (n=331)

Number of PF topics covered	Freq.
One	41
Two	43
Three	66
Four	48
Five	39
Six	24
Seven	25
Eight	20
Nine	25

As expected, students who took a standalone course about personal finance/money management reported more topics covered than those who experienced personal financial education embedded in other courses. Those who reported a standalone course covered an average of six topics compared with less than four for those who received personal finance content embedded in other courses. The differences in the mean number of topics covered were statistically significant. (See Table 16).

Table 16: Number of Topics Covered by Format of Personal Financial Education

How PF/MM education was delivered in high school	N	Mean (number of topics)
Course not primarily about PF/MM but covered some PF/MM content	245	3.86
Course was at least in part about budgeting, credit, insurance or saving/investing	23	3.74
Standalone course	63	6.08

Dependent variable. The dependent variable was the number of correct responses to five financial knowledge questions. (See Appendix A for questions).

Among the 462 respondents who answered all of the financial knowledge questions, the overall mean was 3.18 (out of 5 or 63.6%). Only 7.8% correctly answered all five questions but only 3 incorrectly answered all five questions (See table 17 for details). Of note, is that only 20% of respondents correctly answered the credit card balance question.

When cross tabulations and an analysis of variance test were completed between the format of the financial education course and financial knowledge scores, the derived means ranged from 2.99 to 3.43. (See Table 18 and additional results in Appendix B). Based on the Bonferroni test for differences of means, the financial knowledge scores of freshmen who had taken a standalone course in personal finance and those who received personal finance content embedded in other courses were not significantly different. Of interest is that the mean financial knowledge scores for those freshmen who did not recall any personal financial education

Table 17: Financial Knowledge (n=462)

Number of correct answers	Freq.	Percent of Total
Zero	3	0.6
One	24	5.2
Two	83	18.0
Three	162	35.1
Four	154	33.3
Five	36	7.8

in high school were not significantly different from the scores of those who reported experiencing personal financial education in high school.

Table 18: Mean Knowledge Scores by Format of Personal Financial Education in High School

How students received personal finance content	N	Mean financial knowledge scores	Std. Dev.	Std. Error
Standalone course where most of the content was about personal finance/money management	63	3.1746	0.976	0.1229
Course was not primarily about PF/MM but covered some PF/MM content	245	3.2286	1.046	0.0668
Course was at least in part about budgeting, credit, insurance or savings and investment	23	3.4348	0.843	0.1759
No course with personal finance content	115	3.0870	1.064	0.0992
Don't remember taking a standalone course or any course with personal finance content	15	2.9333	0.961	0.24817

Number of topics and financial knowledge. Regression analysis was performed to determine the influence of the number of topics covered in financial education on the respondents' financial knowledge scores. In this analysis, we excluded those who did not report any personal finance content in high school, retaining the 331 respondents who recalled between one and nine personal finance/money management topics. Regression results were statistically significant. See Appendix C for further data.

$$\text{Financial knowledge score} = 2.993 + 0.055978 (\# \text{ Number of topics covered})$$

The F-statistic was significant at the .0001 level, indicating the model was significant. The number of topics covered was significant and positive, indicating that the greater the number of topics covered, the higher the respondents' financial knowledge score.

Gender gap in financial knowledge. One result that is of some note here is that the financial knowledge scores of the male respondents (3.57) were higher than the scores for the female respondents (3.03). An analysis of variance indicated the difference was statistically significant. See Appendix B for further data.

Table 19: Mean Financial Knowledge Score by Gender

Gender	N	Mean	Std. Dev.	Std. Error
Female	320	3.03125	1.0379741	0.058024518
Male	139	3.5683453	0.89321403	0.075761425

Conclusions/Relevance

As in the Cude (2017) study, the college freshmen in this study had financial knowledge scores that were higher than those in previous studies among college student populations. On the one hand, this is positive, although it is difficult to directly compare scores because every study, including this one, has used a unique set of questions. However, from another perspective, the mean score of 63.6% is a failing grade, and one would hope that students who had been exposed to personal finance throughout their public school years would earn a passing grade. In addition, males still scored higher than females. And, there was no statistically significant difference in the financial knowledge scores of students who did not recall any personal finance education in high school and those who took a standalone course in personal finance.

There was a significant and positive influence of the number of personal finance topics covered in high school course(s) on financial knowledge scores. Perhaps this is an indication that all personal

finance courses are not created equal. It is somewhat surprising that one-third of students who recalled personal finance education in high school reported they did not recall any content about either financial planning/budgeting or saving and investing. These two topics seem fundamental to any personal finance content. However, perhaps the content was taught and students did not recall it. By itself, this would suggest the content made little impact on the students.

Almost 80% of respondents who reported learning about personal finance in high school named Economics/AP Economics as a course in which they learned this content. The Georgia Council on Economic Education actively invests in in-service education for teachers in both economics and personal finance. More research is needed to determine what the return on that investment is.

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Appendix A

Financial Knowledge Questions used in survey

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

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 today with the money in this account
- Exactly the same as today with the money in this account
- Less than today with the money in this account

Do you think the following statement is true or false? "Buying a single company stock usually provides a safer return than a stock mutual fund."

- True; False

Last month you had a \$0 balance on your credit card. This month you charged \$300 to your credit card, which has an 18% APR. When the statement comes, to pay what you owe in full, would you pay:

- More than \$300; \$300 ; Less than \$300

Do you think the following statement is true or false? "Earning a higher salary increases your credit score.

- True ; False

Appendix B

Analysis of Variance results (Means are reported in the text)

Responses: Combined Score on Financial knowledge Questions (# of correct answers)

Factors: How students received Personal Finance Content

ANOVA

Source	DF	SS	MS	F-Stat	P-value
How students received personal finance content	4	3.9613089	0.99032724	0.93304462	0.4445
Error	456	483.99531	1.0613932		
Total	460	487.95662			

Analysis of Variance results: (Means are reported in text)

Responses: Combined Score on Financial knowledge Questions (# of correct answers)

Factors: Gender

ANOVA table

Source	DF	SS	MS	F-Stat	P-value
Gender	1	27.9547	27.9547	28.152555	<0.0001
Error	457	453.788220	.99297203		
Total	458	481.74292			

Appendix C

Simple linear regression results:

Dependent Variable: Total correct

Independent Variable: Number of PF topics covered
 Total correct = 2.9931583 + 0.055977822 Number of PF topics covered
 Sample size: 331
 R (correlation coefficient) = 0.1312604
 R-sq = 0.017229292
 Estimate of error standard deviation: 1.01235

Parameter estimates:

Parameter	Estimate	Std. Err.	Alternative	DF	T-Stat	P-value
Intercept	2.9931583	0.11418684	≠ 0	329	26.212813	<0.0001
Slope	0.055977822	0.023308291	≠ 0	329	2.401627	0.0169

Analysis of variance table for regression model:

Source	DF	SS	MS	F-stat	P-value
Model	1	5.9111566	5.9111566	5.7678123	0.0169
Error	329	337.17646	1.0248525		
Total	330	343.08761			

