

**An Evaluation of *Learning, Earning and Investing*:
A Model Program for Investor Education**

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To be uninformed about markets and financial management has practical consequences for individuals, especially today when consumers face an increasingly complex array of new financial services and products about which they must try to make wise choices (Greenspan, 2003). There are public consequences as well, since individuals who struggle unsuccessfully to manage their financial affairs may experience debilitating problems such as bankruptcy and divorce. Despite its importance, every published report shows that American young people have an inadequate understanding of economics and personal finance. Walstad & Rebeck (2001), for example, found that high school students who had not studied economics scored 41 percent correct on the *Test of Economic Literacy*. Moreover, economic and financial knowledge has practical as well as academic importance. Courchane and Zorn (2005) found that the financial knowledge is the single largest predictor of responsible financial behavior.

This report focuses on how the lessons from *Learning, Earning and Investing* influence student knowledge and attitudes toward saving and investing when used by teachers trained to use the program. *Learning, Earning and Investing* introduces students to the world of investing, its benefits and risks, and the critical role it plays in fostering capital formation and job creation in our free market system. *Learning, Earning and Investing* is an investor education program focusing on the benefits of and strategies for investing for the long term.

This study used a pre- and post-test design to measure the changes in student financial knowledge and attitudes of 496 secondary students who were taught lessons from the *Learning, Earning and Investing* curriculum. The instruments included a multiple-choice test adapted from items in the curriculum and a financial attitude survey adapted from an earlier study.

After participating in the *Learning, Earning and Investing* curriculum, students' average scores improved by 19 percentage points as measured by a test of financial knowledge developed for the project¹. This change was statistically significant. Similar positive results were found regarding the change in student attitudes toward saving and investing.

Based on these results, it appears that *Learning, Earning and Investing* is a useful tool for financial education at the secondary level when used by teachers who have had training in the program.

Related Research

Earlier studies have examined the relationship between financial knowledge and financial behavior. A 2003 study published by the Federal Reserve suggests that financial knowledge can be linked to financial practices related to money management, credit management, saving and investing (Hilgert, Hogarth, and Beverly, 2003). Knowing about credit, saving, and investment was correlated with reports of successful behavior in these areas. This study concluded that increases in knowledge and experience can lead to improvements in financial practices. A 2002 study by Hogarth and Hilgert reached similar conclusions. Freddie Mac conducted a survey of over 12,000 adults' financial knowledge and behavior. This study concluded that "the

¹ Caution must be applied when interpreting the results of this study. Without a control group, there is no way to determine with certainty what portion of this improvement in test scores can be attributed to the LEI curriculum.

single largest predictor of responsible behaviors is financial knowledge” (Cochrane and Zorn, 2005). In another study, Bernheim, Garrett and Maki (1997) found that financial education encourages saving. Lusardi (2005) concluded that financial seminars have positive effects on savings for people of low income and low education. Based on these studies, it appears that financial knowledge is a key variable that influences financial behavior.

Method

This study used a pre- and post-test design to measure student financial knowledge and attitudes before and after participating in the *Learning, Earning and Investing* curriculum. Unfortunately, a control group was not available to the researchers which weakened the design of the study.

Thirteen Wisconsin economics teachers were recruited to participate in this project. The *Learning, Earning and Investing* curriculum, like the other materials developed by the National Council on Economic Education, was designed to be used by teachers who attend a training program. During a one-day training seminar the teachers were taught how to use the lessons plans and planned how to implement the lessons with their classes. They also learned about the procedures to be followed regarding the pre- and post-testing.

Sample: Thirteen Wisconsin economics teachers participated in the study. The teachers participated in a workshop, administered the pre-tests, taught the curriculum to 496 secondary students and administered the post-tests.

Instrumentation: Two instruments were used in the evaluation. The first was a multiple-choice test adapted from items in the curriculum. Initially, 52 items were selected and modified from the 92 test items in the curriculum. A pilot test was conducted using a sample of 155 students who did not participate in the subsequent pre- and post-testing.

Cronbach's Alpha was used to measure the reliability of the test. With Cronbach's Alpha, a reliability coefficient score of 0.60 – 0.69 is considered to be questionable; a score of 0.70 – 0.79 is considered to be acceptable; a score of 0.80 – 0.89 is to be considered good; and a score of 0.90 – 0.99 is considered to be excellent.

A Cronbach's Alpha of 0.78 was calculated for this test after eliminating three poorly performing test questions. This score is considered statistically acceptable.

The second instrument was a financial attitude survey. The survey statements used were modified from the *Attitudes Toward Money Management* (ATMM) survey used in an earlier study (Schug, Niederjohn and Wood, 2006).

Financial Knowledge Test Results

Table 1 displays descriptive statistics on the pre- and post-test results. Table 1 also shows the results of t-tests conducted to determine whether there was a statistically significant change in the mean scores of students taking this test before and after using the curriculum.

Prior to using the *Learning, Earning and Investing* materials, the 496 students in this study scored an average of 24.91 out of 49 (50.8%) on the *Learning, Earning and Investing* knowledge test. After using the curriculum, the mean score improved to 34.18 out of 49 (69.8%). On average, students scored almost 10 full questions better after using the *Learning, Earning and Investing* curriculum and in the context of a high school economics course.

Financial Attitude Survey Results

Table 2 displays the descriptive statistics for each attitude survey statement. The mean, standard deviation and sample size are presented for surveys conducted before and after the students participated in the curriculum. The statement responses are measured using a Likert scale with "1" representing "Strong Disagreement" and "5" "Strong Agreement".

Table 1: Descriptive Statistics for Learning, Earning and Investing Test

<u>Mean Score Before Training (Standard Deviation)</u>	<u>Mean Score After Training (Standard Deviation)</u>	<u>Change in Predicted Direction?</u>	<u>t-statistic</u>	<u>p-value (2-tailed test)</u>
24.91 (6.574) N=496	34.18 (8.742) N=496	YES	-23.177	0.000

The student responses changed in the expected direction (according to the *Learning, Earning and Investing* curriculum) on 13 of the 15 attitude survey statements. For example, before participating in the program, the mean student response on the statement, “I believe it is important to buy the things I want when I want them.” was 2.53. This mean fell (more students disagreed) to 2.22 after they studied the *Learning, Earning and Investing* materials.

Two statements changed in the wrong direction. Statement 6 refers to the analogy between gambling and investing. Perhaps the widespread use of stock market games that stress short-term gains is giving students a false impression that is hard to shake. Statement 12 refers to the value of private ownership over public ownership. This topic was not explicitly addressed in the curriculum and was not emphasized in the teacher training. Nonetheless, the change in the wrong direction is troubling and sobering.

Table 2: Descriptive Statistics for Learning, Earning and Investing Attitude Survey (Likert scale ranging from 1 = Strong Disagreement, to 5 = Strong Agreement)

<u>Survey Statement</u>	<u>Mean Response Before Training (Standard Deviation)</u>	<u>Mean Response After Training (Standard Deviation)</u>	<u>Predicted Direction/ Change in Predicted Direction?</u>	<u>t-statistic</u>
1. I believe it is important to buy the things I want when I want them.	2.53 (1.025) N=495	2.22 (0.950) N=495	NEGATIVE/YES	6.764*
2. I'd like to start saving money today but my current bills prevent it."	3.03 (1.233) N=495	2.94 (1.213) N=495	NEGATIVE/YES	1.556
3. The thing I enjoy most about making money is spending money.	3.09 (1.221) N=493	2.93 (1.193) N=493	NEGATIVE/YES	2.913*

4. People with more education are likely to earn more money than people with less education.	4.11 (1.083) N=494	4.43 (0.920) N=494	POSITIVE/YES	-6.995*
5. People interested in earning a good income should forget about school and get a good job.	1.53 (0.747) N=494	1.38 (0.640) N=494	NEGATIVE/YES	3.856*
6. Owning stock is similar to gambling in a casino.	3.16 (1.055) N=495	3.35 (1.099) N=495	NEGATIVE/NO	-3.168*
7. "A family has to have a very high income in order to have a million dollars by retirement age."	2.59 (0.947) N=493	2.03 (0.911) N=493	NEGATIVE/YES	11.534*
8. A smart strategy for financial success is to buy stocks early in the day and then sell them in the afternoon.	2.52 (0.844) N=494	1.90 (0.951) N=494	NEGATIVE/YES	13.103*

9. Owning stocks is a riskier form of investment than owning government bonds.	3.56 (0.782) N=490	4.08 (0.918) N=490	POSITIVE/YES	-10.634*
10. A smart strategy for financial success is for families to have five credit cards.	1.77 (0.765) N=494	1.54 (0.762) N=494	NEGATIVE/YES	5.516*
11. There are times when borrowing money is the smartest thing to do.	3.37 (0.942) N=494	3.67 (0.937) N=494	POSITIVE/YES	-6.910*
12. Private ownership of homes and businesses is better for community development than public ownership.	3.31 (0.756) N=491	3.14 (0.819) N=491	POSITIVE/NO	3.931*
13. Market systems overall do more good than harm.	3.30 (0.690) N=463	3.53 (0.874) N=463	POSITIVE/YES	-4.791*

<p>14. The social costs of having corporations typically outweigh the social benefits.</p>	<p>3.03 (0.608) N=463</p>	<p>2.86 (0.786) N=463</p>	<p>NEGATIVE/YES</p>	<p>4.199**</p>
<p>15. "Mom and Pop" shops do more economic good than do large corporations.</p>	<p>2.94 (0.848) N=462</p>	<p>2.83 (0.891) N=462</p>	<p>NEGATIVE/YES</p>	<p>2.198*</p>

* = statistically significant at the 1% level; ** = statistically significant at the 5% level

Conclusion

The change in financial knowledge and attitudes for the students who participated in a high school economics course using the *Learning, Earning and Investing* curriculum suggest that this program is effective when it is used by economics teachers with some formal training in the use of the materials. Specifically, the results of the pre-and post-testing suggest that teachers can influence student understanding of basic concepts related to saving and investing. Similar results were found regarding changes in attitudes toward saving and investing. Twelve of the 15 survey statements changed in the desired direction did so at a statistically significant level.

Based on these results, it appears that *Learning, Earning and Investing* is a useful tool for improving financial understanding at secondary level. This may be an important result. Other studies such as Courchane and Zorn (2005) suggest that financial knowledge changes financial behavior in a positive way. Teachers who use this curriculum may help young people make sound financial decisions and do so at a relatively low cost.

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