

# A Collaborative Approach to Financial Literacy in the Chicago Public Schools

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## Abstract

This paper describes an economic and financial education program at the elementary grades involving a coalition of partners in Chicago. We provide a brief overview of the research literature for these grades. Then, we describe how a curriculum was implemented and evaluated in the Chicago Public Schools. An attitude survey was administered to students as a pre- and post-test. Over 2,500 individual tests from 48 schools and 110 librarians were matched. The measured changes, while often modest, were statistically significant and large enough to indicate that the positive changes may be attributed to the curriculum. Anecdotal results are also reported.

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*“Teaching at an inner-city school, with high crime, violence, and poverty demands that we educators do everything within our means to educate students on the importance of managing limited finances. This will hopefully encourage parents to be mindful of it also. This is a topic that should be taught as early as possible in order to curtail the mindset of fast money earned on the streets and gambling being the only way to improve one’s financial circumstances in life.”*

— Chicago Teacher-Librarian (survey response)

## I. Introduction

This paper describes how a coalition of partners identified and implemented a financial literacy program for Chicago public elementary school students. It establishes a wider context within the research literature regarding how children learn principles and

concepts of economics and personal finance. It advances our understanding of how financial education may be successful with younger age groups in large urban environments, and it contributes to our understanding of how to measure children's financial and economic understanding.

## II. Review of Research

There are few studies about teaching basic economic and financial concepts to children, possibly due to the difficulties of measuring economic understanding at young ages. Multiple-choice test questions require that children have a certain level of reading ability. Interviews of young children take time to administer and are difficult to standardize. As a result, there are no nationally normed, readily available knowledge tests or attitude measures to assess a child's knowledge of personal finance and economics.

However, research going back as far as 1969 suggests that young children can learn economics. In 1963, Lawrence Senesh, a pioneer in economic education, developed the instructional materials *Our Working World: Families at Work* for teaching economics at the elementary level (Senesh 1963). Larkins and Shaver's (1969) study used the *Our Working World* series to demonstrate that first-grade students who studied economics consistently performed better on economics tests than those students who did not study economics. Kourilsky (1977) found that children who participated in the Kinder Economy program significantly outperformed students in control groups. Laney's (1989) research used the Mini-Society program and found that young students can learn economic concepts when exposed to carefully designed instruction. He also found that students better retained economic knowledge when they were exposed to real-life examples in the classroom rather than examples heavily dependent on vicarious experiences. Morgan (1991) used a yes or no response test to measure the effectiveness of the video program *Econ and Me*. A sample of 300 students taught in the classroom by teachers trained to use the program demonstrated a statistically significant gain in economic learning from pre-test to post-test.

Sosin, Dick, and Reiser (1997) conducted a study involving control and experimental groups in grades three through six. Teachers in the experimental groups received economics training and used curriculum materials developed primarily by the Council for Economic Education. Teachers in the control group did not receive

the training or curriculum materials. Students in both groups were pre- and post-tested using a standardized test of economic knowledge. In analyzing the results, the research team concluded that students in the experimental group learned significantly more economics than students in the control group. The variable that most significantly explained the difference in learning between the groups was their instruction in economic concepts.

Schug and Hagedorn (2005) studied 300 second- and third-grade students who were taught financial content by teachers trained to use the Money Savvy Kids curriculum. Analysis of the pre- and post-test results for these students showed they had a statistically significant gain in content knowledge and change in attitudes.

Suiter (2006) found that middle-school students taught personal finance and economics content in their mathematics classes performed as well on a mathematics test and better on economics tests than their counterparts not taught economics and personal finance in their mathematics classes.

Harter and Harter (2007) conducted a study to measure the effectiveness of the Financial Fitness for Life (FFFL) curriculum published by the Council for Economic Education. The study focused on the use of FFFL in elementary, middle, and high schools in low- to moderate-income areas in eastern Kentucky. Teachers in the experimental group were trained to use FFFL in their classrooms. Teachers in the control group were not trained and did not use the materials. Students in both groups were given pre- and post-tests carefully designed to match the program's content. Based on pre- and post-test results for the over 300 elementary students in the experimental group and over 600 elementary students in the control group, the study concluded that students in the experimental group showed a statistically significant increase in financial knowledge.

Finally, two important reviews of research provide a good summary of what we know regarding children's economic and financial education. Watts (2005) conducted a review of research on outcomes and effective program delivery in precollege economic education. He noted that research in economics and personal finance shows that students can and do learn economics when their teachers understand the content and when they incorporate the use of high-quality educational materials in the classroom. Miller and VanFossen (2008) reviewed research in economic education and concluded that "children's economic knowledge can be improved via direct,

purposeful instruction” (p. 293). In other words, if we teach children basic economic and financial concepts, they do learn them.

### **III. Methodology**

The Chicago Public Schools (CPS) elementary curriculum, like most around the nation, emphasizes reading and mathematics. There is time for little else. This structure challenges those who are interested in beginning financial and economic literacy in the elementary grades.

The Chicago Office of the City Treasurer worked with the CPS and the Money Savvy Generation Foundation to identify a new curricular path that would recruit CPS teacher-librarians and use library instructional time to integrate financial education into the CPS elementary school curriculum. Ten additional stakeholders provided financial support.

During Chicago’s 2011 Money Smart Week, a public awareness campaign designed to help consumers better manage their personal finances, CPS teacher-librarians at 145 schools volunteered to teach their students financial literacy lessons from level C of the Money Savvy Kids beginning personal finance curriculum. Teachers were recruited via e-mail and registered for the program through a link provided by the CPS Department of Libraries and Information Services.

Money Savvy Kids is a curriculum developed by Money Savvy Generation of Lake Bluff, Illinois. The curriculum includes eight lessons:

- The History of Money
- Where Does Money Come From?
- Kids Can Earn Money Too!
- Saving Money and Bank Field Trip
- Spending Money
- Donating Money
- Investing Money
- Family Money Press Conference

An important part of the curriculum is the Money Savvy Pig, a four-slot piggy bank that gives teachers and parents a new way to introduce children to saving, spending, investing, and donating. Each child participating in the program received a Money Savvy Pig.

During the 2010–11 school year, CPS teacher-librarians taught the Money Savvy Kids curriculum to third graders in 110 elementary school classrooms. Self-study training materials were provided for the

teacher-librarians and included a prerecorded training session available online through CPS's internal training department. The teacher-librarians were asked to implement the program in their classrooms and to administer pre- and post-tests to their students.

To investigate the program's effectiveness, students were pre- and post-tested using an attitude survey. The instrument selected was the Money Savvy Kids Assessment, a ten-item, Likert-scale instrument. A three-point response format was used: "agree" (value 3), "unsure" (value 2), and "disagree" (value 1). The instrument was originally developed by the Center on Economic Education at the University of Wisconsin–Milwaukee as a device to measure student beliefs about savings habits, handling money, the role of business, and so forth. The instrument has subsequently been modified.

Students took the survey before and after completing the curriculum. Over 6,000 pre- and post-tests were administered. More pre-tests were received than post-tests. This outcome is not uncommon in year-long external curriculum projects and may be explained by student absences; students using inconsistent codes, making it impossible to match students' pre- and post-tests; or teachers forgetting to administer or turn in the post-tests. Nevertheless, 2,553 individual pre- and post-tests from 48 distinct schools and 110 individual teachers were matched.

Finally, some anecdotal data were collected. We suspected that the four slot piggy bank—a physical representation of the key concepts being formally taught in the curriculum—was a meaningful program feature but one that was not directly measured by the attitude survey. The Chicago teacher-librarians were asked for their views on the piggy bank's importance. In addition, a follow-up online survey gathered feedback from the participating teacher-librarians regarding their views of the program's success in the classroom.

#### **IV. Overall Results**

Table 1 shows the means and standard deviations for responses to the ten survey items for all students with matched pre- and post-tests ( $N = 2,553$ ). An item sample size less than 2,553 indicates that some students left that item blank. The data for each item differed from normal, with a statistical significance of less than 1 in 1,000, as determined by both the Kolmogorov-Smirnov and Shapiro-Wilk tests. Because of this deviation from normality, it is not appropriate to use the parametric paired samples *t*-test. The non-parametric Wilcoxon signed-ranks test, appropriate for these non-normal data,

was used to determine whether there were any statistically significant changes in student responses from pre-test to post-test.

**Table 1. Descriptive Statistics for Paired-Samples Data for CSD Students**

| Item | <i>N</i> | Pre   | SD     | Post  | SD     | Desired change/achieved? |
|------|----------|-------|--------|-------|--------|--------------------------|
| 1    | 2,553    | 2.715 | 0.5350 | 2.789 | 0.4778 | increase, yes            |
| 2    | 2,544    | 1.368 | 0.6753 | 1.266 | 0.5932 | decrease, yes            |
| 3    | 2,526    | 1.503 | 0.7644 | 1.454 | 0.7489 | decrease, yes            |
| 4    | 2,527    | 2.737 | 0.8480 | 2.806 | 0.5027 | increase, yes            |
| 5    | 2,532    | 1.360 | 0.6911 | 1.265 | 0.5960 | decrease, yes            |
| 6    | 2,515    | 2.428 | 0.8031 | 2.013 | 0.8921 | decrease, yes            |
| 7    | 2,522    | 2.118 | 0.7085 | 1.952 | 0.8137 | decrease, yes            |
| 8    | 2,526    | 2.664 | 0.5960 | 2.796 | 0.4926 | increase, yes            |
| 9    | 2,538    | 2.735 | 0.5871 | 2.796 | 0.5189 | increase, yes            |
| 10   | 2,534    | 1.878 | 0.8419 | 1.694 | 0.8267 | decrease, yes            |

*Note.* *N* is number of responses, “Pre” is the mean item score on the pre-test, “Post” is the mean item score on the post-test, and “SD” is standard deviation.

*Source.* Authors’ data.

Data indicating a significant change from pre-test to post-test were also analyzed using a Cohen effect-size statistic. A statistically significant difference in means from pre-test to post-test indicates a high likelihood that the changes were not a result of chance and can be attributed to the Money Savvy Kids curriculum. The Cohen effect-size statistic addresses the importance—or size—of the change (Cohen 1992; Kirk 1995).

Table 2 shows the results of the Wilcoxon test and the Cohen effect-size analysis. Results for each item are reported in terms of averages based on the ratings scale: 3 (agree), 2 (unsure), and 1 (disagree). Student understanding showed statistically significant improvement for all ten survey items. The Cohen effect-size results suggest, however, that the improvements were modest.

**Table 2. Wilcoxon Z (Indicator of Significant Change) and Cohen Effect-Size Results**

| Item  | Z value | Two-tailed significance | Cohen effect size | Described effect size |
|---|---------|-------------------------|-------------------|-----------------------|
| 1. I know a lot about how to handle my money.                               | -5.871  | 0.000                   | 0.15              | small                 |
| 2. Saving money is greedy.  | -6.055  | 0.000                   | -0.16             | small                 |
| 3. It is important to have the things I want when I want them.              | -2.477  | 0.013                   | -0.06             | small                 |
| 4. It is important to save for the things that I want to buy in the future. | -5.422  | 0.000                   | 0.10              | small                 |
| 5. I want to spend the money I earn right away.                             | -6.445  | 0.000                   | -0.15             | small                 |
| 6. It is best to put the money you save in your room at home.               | -17.748 | 0.000                   | -0.49             | medium                |
| 7. When I invest in stocks, I will always make money and never lose money.  | -8.323  | 0.000                   | -0.22             | small                 |
| 8. Business people help others by providing them with goods and services.   | -8.820  | 0.000                   | 0.24              | small                 |
| 9. It is important for families to keep money in real banks.                | -4.369  | 0.015                   | 0.11              | small                 |
| 10. When I donate money it helps others but doesn't help me.                | -9.191  | 0.000                   | -0.22             | small                 |

*Source:* Authors' data.

## V. Item-by-Item Discussion

Overall, the results reveal modest but positive outcomes regarding movement in student attitudes. Students appear to be more positive about their ability to handle money. Their views toward saving money improved. Their attitudes toward financial institutions such as banks and stock markets became more positive. Their views of businesses' role in providing goods and services improved. Finally, their attitude toward donating to others improved, suggesting that both sides benefit from such actions.

Saving out of current income is an important determinant of family net worth. Establishing saving habits early has obvious advantages. Taken together, items 2, 3, 4, and 5 suggest that more students gained positive views toward saving money. The results suggest that more students gained an improved understanding of the ability to postpone gratification—an understanding that saving money is not all about greed. More students understood that they do not have to have things today, nor do they need to spend their

earnings immediately. They improved their understanding that saving today allows individuals to buy things in the future.

The Federal Deposit Insurance Corporation (2012) reports that over 20 percent of African American households are unbanked and over 33 percent are underbanked. Thus, many inner-city children have little exposure to mainstream economic institutions. The results of items 6, 7, and 9 are encouraging in this context. The responses to item 6 suggest that more students improved their understanding that keeping money at home is a risky option. The responses to item 7 suggest that more students understand some basics about investing in stock markets. The responses to item 9 suggest that more students recognize that banks are a safe place to keep savings.

Inner-city neighborhoods are characterized by large numbers of households that have minimal contact with the private sector. Unemployment rates are high, and households are often dependent on transfer payments. For item 8, the average student response changed from 2.664, leaning toward agreement, to 2.796, leaning more strongly toward agreement. This result suggests that more students agreed that business people help others by providing them with goods and services.

Finally, it is difficult for an individual to help others if he or she is struggling financially. Donating to others is an important part of this curriculum. The students' responses to item 10 indicate that more students understand that donating money does not only help the recipient. Their responses imply that more students understand that both sides benefit from charitable giving.

## **VI. Anecdotal Results**

Chicago teacher-librarians were invited to comment on the importance of the piggy bank used in the program. Here are a few of their responses.

- I have participated for the last four years and my students still stop me in the hall to tell me how they use their bank, what they are saving for, what charities they contribute to and how they are more aware of how they spend their money. As long as I can contribute to another generation of money managers I will take that opportunity.  
(Sawyer Elementary)
- The best feature of this program is that after teaching all aspects . . . the students get a piggy bank that reinforces what was just taught! As my students received their piggy

banks . . . older students saw them and commented that they still have their piggy banks! I keep one piggy bank in the classroom. As a class community, we decide how we want to spend, donate and save our money.

(Franklin Fine Arts Academy)

- The best features of this program were [that] the teaching materials were easy to follow and, of course, the piggy banks were fantastic! The kids were so excited and serious about learning how to use them properly.
- The best feature of this program was that the third graders loved the bank. Even students who were taught the program last year still are using the bank.

(Durkin Park School)

A follow-up online survey also gathered feedback from the participating teacher-librarians on the program's success in the classroom. The results suggest that the teachers were extremely supportive of the program and wish to continue to present these lessons to their students. A few noteworthy survey results follow:

- 100 percent believe that it is important to teach personal financial literacy at the elementary and middle-school levels.
- 98.1 percent feel the lessons effectively address key financial concepts and skills.
- 86 percent believe the program has changed their students' attitudes about money in a positive way.
- 96.3 percent would recommend this program to others.

## VII. Limitations

This study has several limitations. It would be stronger if we had been able to use a nationally normed and validated instrument to measure knowledge and attitudes at the elementary grade levels. Conducting a retention study would also instill more confidence in teaching these concepts to young children.

Separately, we are conducting additional research on an instrument that refines the existing survey items and adds new ones. Our hope is that an improved survey would be a step toward developing a general measure of financial understanding for elementary students. We have conducted additional statistical analyses (factor analysis, Cronbach alpha reliability, and item-total statistics) of the student responses in this study. We suspect that

some items may have confused the participants, adding another reason to revise the instrument.

These and other revisions should improve the psychometric quality of the instrument. We are currently piloting these changes. We hope to offer researchers a general survey that can be used with other programs.

In addition, we could improve the current study in the following ways:

- Develop a knowledge test to accompany a revised attitudes survey.
- Conduct focus groups with teacher-librarians to assist us in developing knowledge and attitude items that students comprehend.
- Add control groups to the design to strengthen confidence in the results.
- Improve the training of the participating teacher-librarians. We suspect that a more robust teacher-training program might increase the size of the knowledge gains thus increase the effect sizes.
- Expand the program to include more grade levels. A well-developed economics and financial program would include opportunities for students to continue to learn and develop their understanding as they move through the grades. The work is not over at grade three: it has just begun.

## **VIII. Conclusions**

This report has focused on the actions of a coalition of partners—the Chicago Public Schools, Chicago’s Office of the City Treasurer, the Money Savvy Generation Foundation, and a group of CPS teacher-librarians. These groups joined forces to implement a large-scale financial literacy program for Chicago’s elementary school children using the Money Savvy Kids program. The program involved over 6,000 students in over 110 elementary school classrooms. Teachers taught a six-hour curriculum to CPS third graders who were pre- and post-tested to measure the program’s impact.

The results are encouraging for two reasons. First, the aggregate data indicate that the Money Savvy Kids program positively affected students’ attitudes and knowledge about spending, saving, and investing money. The matched-samples data for the students indicate

statistically significant improvements in average responses to all ten survey items.

Second, the program's organizers agreed to include evaluation in the process. Most financial-education programs either fail to include formal evaluation, possibly due to funding limitations. Unlike most other efforts, the results here help us understand the strengths and weaknesses of the Money Savvy Kids program.

Finally, and most importantly, this effort reveals that children can make progress toward becoming financially literate. This finding is important. We would never expect adults to be competent at reading or mathematics if those subjects were not introduced early and repeated regularly in the school curriculum. In the same way, like a good savings program, economic and financial education ought to start early and be repeated often. In fact, we have evidence (Butt, Haessler, and Schug 2009) that children across grades K–8 can make gains in their economic and financial understanding. All we need to do is teach them.

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