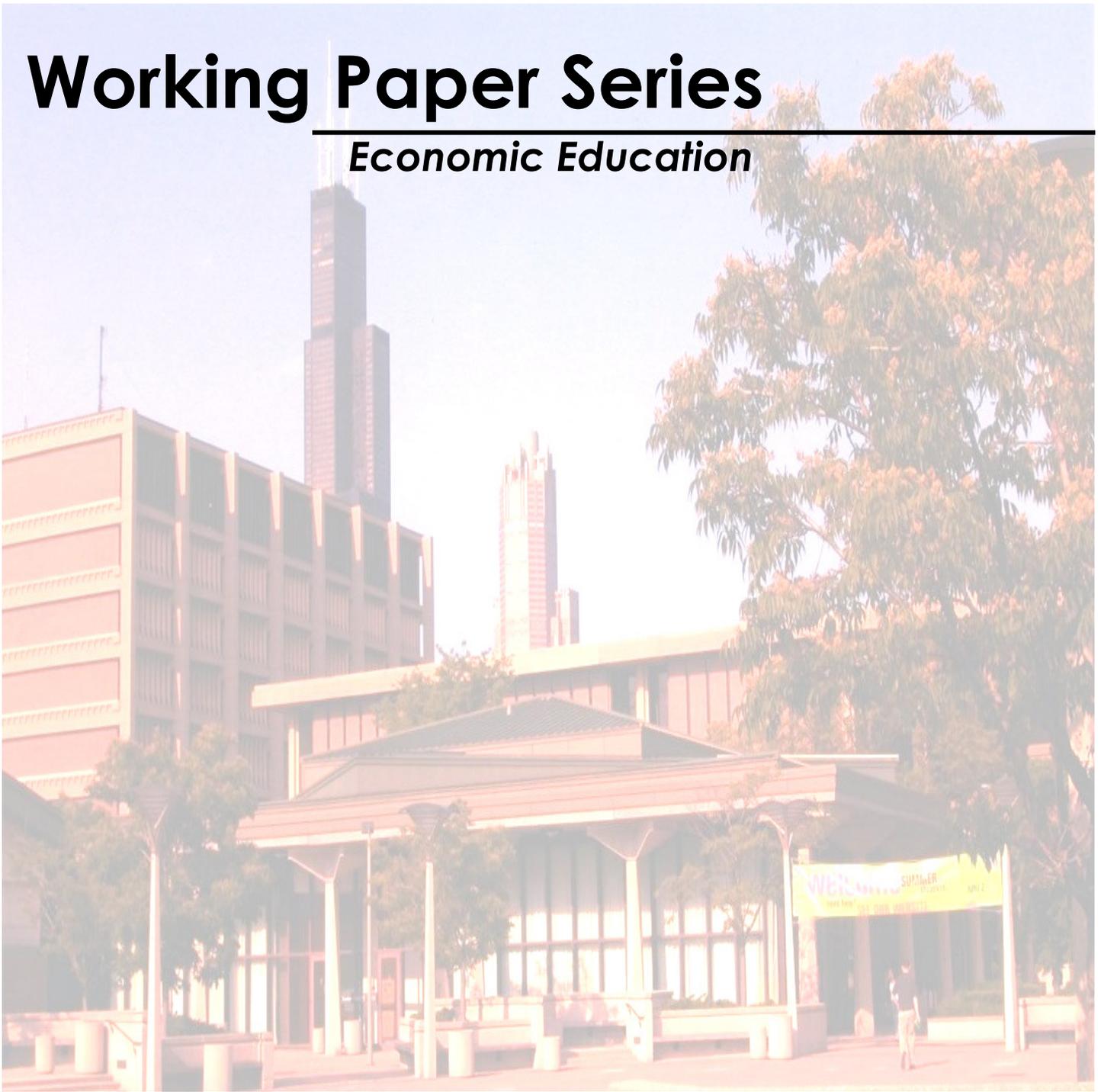


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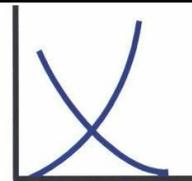


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***Measuring the Effects of the "Financial Fitness for Kids" Program for Early Elementary School Students in Chicago***

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# Measuring the Effects of the *Financial Fitness for Kids* Program for Early Elementary School Students in Chicago

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*Abstract:* This project researches the effects of a new, sustained, financial literacy curriculum to be taught over multiple years in grades K-5. This program is called “Financial Fitness for Kids” or FFK. The first year of the program was last year, 2005-6. The second year of the program was 2006-7. The program pilot continues one more year, school year 2007-8. We are following schools and children over the 3-year period. One school from each of the 17 areas in the Chicago Public Schools (i.e., schools from all over the city of Chicago) was invited by the Chicago Public Schools administration to participate in the first year, starting either Kindergarten or 3<sup>rd</sup>-grade classes. Additional teachers from each school participated 2006-7 as the next higher grade was added, and additional teachers in the next grade up will participate in 2007-8. The goal of the FFK project is to integrate financial literacy education across the curriculum to reinforce reading and math skills, complement the existing reading and math curriculum, create a sequence for financial literacy that provides progressive and continuing knowledge for students, and to help children become knowledgeable consumers and savvy savers and investors. Pre- and post-tests were given by teachers each year.

JEL Codes: A2, A21

# Measuring the Effects of the Financial Fitness for Kids Program for Early Elementary School Students in Chicago

## Introduction

The goal of the *Financial Fitness for Kids Program* (FFK) is to integrate financial literacy education across the curriculum to reinforce reading and math skills, complement the existing reading and math curriculum, create a sequence for financial literacy that provides progressive and continuing knowledge for students, and to help children become knowledgeable consumers and savvy savers and investors. Previous research has focused mostly on teens and young adults. This project looks at early elementary grades—K-5. The other novel aspect is the duration—up to 3 years in the program for some children. This paper presents some results from the first two years of the 3-year project with students in public elementary schools chosen from 17 districts all over Chicago.

- Elementary school principals and teachers initially, in 2005, made a 3-year commitment to teach the *Financial Fitness for Life* (FFFL) curriculum to all children in the selected grades in their schools (either Kindergarten or 3<sup>rd</sup> grade in the first year of the program, 2005-2006, and adding either first grade teachers or 4<sup>th</sup> grade teachers in the second year, 2006-7 with the first-year teachers repeating their financial literacy instruction in 2006-7), and to continue financial literacy instruction in that grade and also add the next higher grade for the next year (K+1<sup>st</sup> the second year or 3<sup>rd</sup>+4<sup>th</sup> grades the second year, then K, 1<sup>st</sup>, 2<sup>nd</sup> or 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> grades in the third year). This year, 2007-2008, these schools will have a 3-year program in financial literacy starting in either Kindergarten or 3<sup>rd</sup> grade in place for all students in their schools.

- Pre- and post-tests were given by teachers each year before and after they teach the financial literacy lessons. Teachers tested their classes using nationally-normed FFFL tests., with the option to add *EconomicsAmerica* program (economics/social studies) tests developed by the Illinois Council on Economic Education for each grade level. Some teachers infused the consumer economics lessons in social studies classes and requested instruments to test social studies economics concepts.
- Teachers were encouraged (by a grant of \$300 to cover testing costs) if they also recruited a class in the K-5 grades not in the FFK to pre/post test as a control class. A total of 632 students took one or more of the pre-tests in the first year and 542 students took one or more of the post-tests. In the second year, over 800 students took one of the pre-tests and 670 students the post-tests.
- The kindergartners had an average gain of about half a point in the first year. No control kindergarten classes did both pre- and post-testing with the *Financial Fitness for Kids* tests in years 1 or 2. We are recruiting at least one kindergarten control class in year 3, as well as the other missing groups. Test results are in Tables 2. Differences from pre to post tests that are statistically significant at 90% (significance levels below 0.1) have their *p*-values in bold.
- For 3<sup>rd</sup> graders, the results were not only statistically insignificant but in the wrong direction for the control group, meaning students answered fewer questions correctly on the post-tests than on the pre-tests.
- In the first year, some Kindergarten and 3<sup>rd</sup> grade teachers judged the tests were not appropriate for their students. One principal requested we substitute the K-2

FFFL Theme tests for her 3<sup>rd</sup> graders, rather than the nationally-normed grades 3-5 tests. Assessment results support the teachers' assertion that the tests do not measure what teachers are teaching, as 3<sup>rd</sup>-grade students' scores on those K-2 tests did not improve in the post-tests. In the second year, with teachers working on vocabulary lists as spelling and definition curricula along with the financial literacy curriculum, this was not a major issue.

- The survey of teachers in June 2006 and 2007: Teachers considered the subject and lessons valuable and the program important and worth expanding. They bemoaned the time commitments for meetings and record-keeping. To enhance communication, and responding to teachers' requests, we added a course-management web site and created external UIC computer accounts so teachers could share materials and communicate with the partners and with each others. In the third year, in response to teacher requests, we also created a course option for participating teachers.

## **II. Methodology and Analysis**

The values of the outcome measures might not be due to the effects of being in financial literacy programs. There are several types of potential bias. First is the selection problem, a fundamental issue. Ideally, we would like to have the same individual once in the program and (erasing that experience) once not in the program to truly gauge the effects of the FFK program. We would like this because we cannot be sure we are observing all the relevant characteristics and because the process of selection into the programs can affect the outcomes. This program starts with either Kindergarten or 3<sup>rd</sup> grade students at each school. Our control group for the kindergartners is kindergarten students at schools where 3<sup>rd</sup> grade is the participating grade in the

first year. Our control group for the 3<sup>rd</sup> graders is 3<sup>rd</sup> grade students at schools where kindergarten is the starting year. These students are already assigned to classes, so they will not be selecting in or out of the program. Principals committed that all teachers for the chosen 3-year band implement the program, so students cannot opt in and out. The schools provide a range similar to the system as a whole of various characteristics. See Table 1. The control group comes from the same schools as the treatment group, to avoid systematic biases.

There are potentially a large number of characteristics that may be important for the outcomes but are not available to the researcher. These include motivation, effects on an individual or others' involvement (or lack thereof) in the program, or other unmeasured differences between those enrolled in the program and those outside that may affect outcomes.

Another issue is what exactly is the alternative to the treatment? For example, compare a person who applied but doesn't get the randomly-assigned pass to enter the program and then alters nothing from the original path of someone with no program available with a person who doesn't get the randomly-assigned pass to enter the program but the rejection alters the coursework and effort. Some teachers have reported that other classes in their schools are also covering financial literacy topics, since students like these real-world and personal applications of math, reading, and social studies. There is a danger that our control groups are also becoming treatment groups. We do not have a way to control for this, but the means over time of the control group students have so far not risen.

### **III. The Data**

During the school year of 2005-2006, teachers from 20 elementary schools, mainly teachers of Kindergarten and 3<sup>rd</sup> grades, in Chicago were trained in the *Financial Fitness for Life* curriculum and directed to pre-test their students, to teach at least 5 lessons (lessons 1-5) from

that curriculum, and to post-test their students. All of the teachers were the regular classroom teachers for their grade and class. The school principal signed a commitment letter to encourage all teachers from the chosen grades to participate and to allow the teachers to attend 6 planning and implementation meetings at UIC during the school year. The schools participating in this program represent the variety of schools in the CPS school system. The average attendance, percent of low income families, percent of limited English proficiency, racial/ethnic background, size, and test scores of the schools in the *Financial Fitness for Kids* program are close to the averages for all CPS elementary schools.

The program trained 50 teachers as planned. Implementation of lessons (student work submitted brought the additional financial reward of \$30 per lesson per teacher up to 5 lessons) and pre/post testing (all schools which tested in the first year received \$300 for testing costs) meant that some schools tested, others implemented, and some did both. Lesson implementation incentives were dropped in the third year because of low submissions.

The teachers were given their choice of 2 potential tests to administer, and required to administer at least one of them, though they were encouraged to administer both. Most gave the *Financial Fitness for Life* tests, either the Grades 3-5 normed tests or the Theme Tests at the end of each theme for grades K-2. Alternatively, they could use *EconomicsAmerica* tests developed several years ago by the Illinois Council on Economic Education for Chicago Public Schools, and available for each grade K through 5<sup>th</sup>. These check general economics understanding and economic literacy, suitable for teachers teaching financial literacy along with economics in the social studies.

Several teachers and principals rejected the *Financial Fitness for Life* grade 3 tests as too difficult for Chicago 3<sup>rd</sup> graders, but wanted to test financial literacy concepts. These classes took the Theme Tests from the K-2 books of used the *EconomicsAmerica* tests.

In the first year, 750 tests were given and returned to us, 296 kindergarten and 454 3<sup>rd</sup> grade. 681 students tested were in the FFK program and 69 in the control group. Teachers from 6 of the 20 schools submitted either kindergarten or 3<sup>rd</sup> grade test results, 557 pre-tests and 428 post-tests. We also received some tests for other grades, which will be used to compare with future years. Because of teacher confusion and busy schedules, 209 students took a pre-test and the same test as a post-test.

In the first year:

- Students who did not receive the *Financial Fitness for Kids* program did not improve on the post-test.
- Kindergartners who participated in the *Financial Fitness for Kids* program improved their average scores nearly half a point in the first year, reducing their wrong answers by 25%. Their excellent performance on the pre-test made it particularly difficult for their scores to improve.
- Third-graders who participated in the *Financial Fitness for Kids* program improved their average scores by over 2 points, a 10% increase.

In other words, there is some evidence of learning in the treatment group. Kindergarten students showed stronger results on the tests. There was no change in the mean score of the control groups, but in general, results are not statistically significant.

In the second year:

- Average score for Kindergartners and First-Graders on the financial literacy pre-test was 61% on Income and 69% on Saving. The average score for the post-test was 71% on Income and 82% on Saving.
- Average score of Third- and Fourth-Graders on the financial literacy pre-test was 37%, including all topics (some of which they are not studying yet). The average score on the post-test was 50%, a gain of 13 percentage points.
- The average pre-test scores on the EconomicsAmerica test, which was designed for social studies classes, was 38%. Only a small number of students took the EconomicsAmerica test after the *Financial Fitness for Kids* program, but their average score was 79% .
- As in Year 1, students who did not receive the *Financial Fitness for Kids* program did not improve on the post-test.

#### **IV. Data and Results**

Table 1 compares the schools in the FFK program with the full set of Chicago Public Elementary Schools. The average characteristics for FFK schools are within a standard deviation of the averages for the system as a whole. In the first year, only 7 of the 20 schools submitted tests (fourth graders and sixth-graders were tested at one school), but the characteristics also are not far from the FFK group or CPS averages.

Tables 2 presents average scores for the different tests and the results of t-tests to see if the pre/post test scores differ statistically. Kindergartners scored unexpectedly well in the first year on all tests. This may be due to conscious or unconscious teacher prompting, since kindergartners, who cannot read, will have teacher assistance for each test. Additional teacher assistance is also given when tests are given in English but translated verbally into Spanish. We have added questions on the test submission forms for the second and third years asking whether

the tests were given in English or Spanish and whether or not the teacher read the test questions to the students. Post-tests in Table 2 do not necessarily reflect the performance of the same students. In the first year, some teachers submitted pre-tests only. Some submitted post-tests only. Some submitted both. Understanding of the procedures was much improved in the second year.

Tables 3 and 4 look at students' performance on individual questions and concepts. Students did relatively worse on the producer/production questions in the pre-tests. Economics jargon and concepts unfamiliar to the teachers were reflected in poorer performances by the students, such as human capital or opportunity cost. Students did quite well with scarcity, money, and taxes, however. The questions students scored best on in the pre-tests showed the least average improvement, and sometimes outright declines between pre and post tests. It is not surprising that the questions students scored worst on in the pre-tests showed the greatest improvement in the post-tests (coming off a small base). The test concepts were somewhat surprising to teachers, who told us in the training workshops that they have been used to looking at financial literacy knowledge from the consumer viewpoint but not the producer viewpoint.

## **V. Conclusions and Future Hopes**

Chicago Public School elementary students given the economics and financial literacy tests in previous years have posted very low scores on these tests. The vocabulary and skills of economic decision making are not part of their human capital. This program provides connections of life skills in economic decision making and financial literacy to the state standards and learning goals. Teachers meet school, district, and state goals and follow their guidelines while also providing real-world lessons that help students see the usefulness of academic subjects like reading, mathematics, and social studies.

We expected teacher attitudes, measured by responses to surveys, to grow more positive about economics, business, and their students' life skills.

We measure student learning through pre- and post-test financial literacy results. The tests are required by the FFK program—principals and teachers committed to administering them. In practice, less than half the schools submitted the tests. We are working in the third year to measure the extent of potential bias from this lack of reporting.

We expected students' financial literacy test scores to rise significantly—large increases and statistically significant increases—in the post-tests relative to the pre-tests, especially as their years with the curriculum accumulate, and the tests support this result. We expected higher improvements in the students experiencing *Financial Literacy for Life* lessons than in the control group of same-grade students not receiving those lessons—e.g., teachers are pre- and post-testing the control group also, and this also occurred. We also expected attitudes toward economics, financial literacy topics, and business to become more positive on the part of teachers and students after the FFK lessons. Pre-program training workshop evaluations and the end-of-year surveys indicated attitudes by teachers toward teaching economics also improved.

**Table 1. Financial Fitness for Kids Schools**

Attendance Rate	% Low Income	% Limited English Proficiency	% Mobility	Racial/Ethnic Background			Membership (# Students)	ITBS Read	ITBS Math
				% White	% Black	% Hispanic			
<b>Average for FFK Schools</b>									
94.5	83.5	18.7	22.7	7.9	46.6	43.1	590	47.2	49.2
<b>Standard Deviations for FFK Schools</b>									
1.7	22.9	19.0	13.9	16.6	43.2	40.5	287	16.7	17.0
<b>Range for FFK Schools</b>									
90.3	21.8	0.0	0.9	0.0	0.1	0.0	231	29.0	23.9
97.0	99.8	60.9	49.2	71.2	100.0	99.5	1121	99.4	98.2
<b>All CPS Elementary Schools: Averages</b>									
94.0	85.6	13.7	24.8	35.7	43.9	17.4	642	44.2	47.0
<b>All CPS Elementary Schools: Standard Deviations</b>									
2.2	19.7	16.5	16.2	N/A	N/A	N/A	323	18.2	20.3
<b>All CPS Elementary Schools: Range</b>									
82.1	6.9	0	0.8	N/A	N/A	N/A	89	12.5	10
98.5	100	67.6	204	N/A	N/A	N/A	1906	100	100

**Table 2a: Test Results, Grades K-2**

Grade (Year)	Test	Pre-Test Mean (Percent Correct)	Post-Test Mean (Percent Correct)	t-statistic: H0 no pre/post difference	Significance
K (2005-6)*	FFL Themes 1-2 Test 1	83.3	86.2	1.37	<b>0.087</b>
K (2006-7)	FFL Themes 1-2 Test 1	65.2	92.9	8.55	<b>0.000</b>
K(2005-6)*	EconomicsAmerica	33.7	30.6	-1.48	0.071
1 (2006-7)	FFL Themes 1-2 Test 1	75.3	81.0	0.93	0.179
2 (2006-7)	FFL Theme 2 Test 1	N/A	91.8	N/A	N/A

**Table 2b: Test Results, Grades 3-5**

Grade (Year)	Test	Pre-Test Mean (Percent Correct)	Post-Test Mean (Percent Correct)	t-statistic: H0 no pre/post difference	Significance
3 2005-6*	EconomicsAmerica	70.4	78.4	2.41	<b>0.01</b>
3 (2005-6)*	FFL K-2 Test 1	91.4	91.2	0.12	0.45
3 (2006-7)	FFL 3-5 Q1-40	30.8	33.1	1.14	0.13
3 (2006-7)	EconomicsAmerica	24.3	N/A	N/A	N/A
4 (2006-7)	FFL 3-5 Q1-40	33.5	43.6	6.97	<b>0.00</b>
4 (2006-7)*	EconomicsAmerica	51.2	79.0	4.40	<b>0.00</b>
5 (2006-7)	FFL 3-5 Q1-40	44.7	54.8	2.58	<b>0.01</b>

**Table 2c: Test Results, Control Classes**

Grade	Test	Pre-Test Mean (Percent Correct)	Post-Test Mean (Percent Correct)	t-statistic: H0 no pre/post difference	Significance
1	FFL	72.0	N/A	N/A	N/A
2	FFL	70.4	N/A	N/A	N/A
3 (2005-6)*	FFL K-2	92.4	85.6	-2.24	<b>0.015</b>
3 (2005-6)*	FFL 3-5 Q1-24 (Themes 1-2.5)	57.0	57.0	0.00	0.500
3 (2006-7)*	FFL 3-5 Q1-10 (Theme 1)	27.9	27.0	-0.25	0.403
3 (2006-7)	FFL 3-5 All Themes	29.5	N/A	N/A	N/A
5 (2006-7)	FFL 3-5 All Themes	31.2	N/A	N/A	N/A

\*Results for Pre/Post Tests on same students

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