

# Starting Younger: Evidence Supporting the Effectiveness of Personal Financial Education for Pre-High School Students

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## Where did the program originate?

NTC presented a novel educational programming module, *Mad About Money*, to students in both Chicago, Illinois and Bismarck, North Dakota. The program included educational content for students in grades 5 through 9 and used pre- and post-tests to measure knowledge of and attitudes toward saving money. In North Dakota, the program featured a special experiment involving saving as well.

## What approach was used in implementing this program?

A total of 1,279 students in grades 5 through 9 were given personal finance education in the form of a live play and supporting classroom instruction revolving around the benefits of saving. Students' knowledge and attitudes were tested both before and after the educational intervention with identical

questionnaires in order to examine the magnitude of change and to test for differences by the age (grade) of the students.

The impact of the intervention on actual savings behavior was measured through an experiment that gave each student a dollar bill and promised an additional dollar if the original dollar was brought back after two weeks. The students were randomly divided into a test group, which received the original dollar after the educational intervention, and a control group, which did not receive the education until after the experiment had been completed. The questionnaire results showed that learning and attitude change were inversely related to age,



Live, In-school  
Theatre Performance

**Mad About  
MONEY**

suggesting that earlier education might be more effective. The experiment showed that savings behavior (deferring consumption to earn a second dollar) was related to gender (females did better), directly to financial literacy and inversely to grade. However, the test group was not significantly more likely to return the dollar as the result of the educational intervention.

## What distinguished the North Dakota program from the Illinois program?

Students in grades 5 through 9 in ten schools in North Dakota were given similar education relating to the management of money. Part of this educational intervention involved attendance at a live production of a play entitled *Mad About Money*, put on by The National Theatre for Children. The production focused on the usefulness of savings. Students were also exposed to about a week of related classroom teaching.

This study was similar to the Chicago study in that both used interventions involving an improvisational play put on by the National Theatre for Children. They both also involved identical pre-tests and post-tests which measured their knowledge of and attitudes toward savings and also attempted to measure actual saving behavior.

However, in contrast to the Chicago study, the North Dakota study extended to more grades (5 through 9 rather than 6 through 8), used a much larger group of students who took both the pre- and post-tests, and included an “experiment” to test actual saving behavior. In the experiment, students were given a dollar bill whose serial number had been recorded. They were told that if they brought that identical dollar bill back in two weeks, they would receive a second dollar bill. In order to see whether the educational intervention had an effect on the willingness of the students to forego current consumption to earn interest with an annual rate of several thousand percent (100 percent in two weeks), they were randomly divided into a test group, which received the intervention before receiving the dollar, and a control group, which received the dollar several weeks before the intervention. The hypothesis was that students in the test group would be more likely to save the dollar than those in the control group.



A total of ten schools with students in grades 5 through 9 participated in this pilot study. All of these schools were located in the Bismarck, North Dakota area and included both public and private schools. A total of 1,279 students participated in both the pre- and post-tests and were included in this study. Of that number, 956 were in the test group and 323 were in the random control group.

## What impact did the program have on students?

The questions were based upon the information communicated in the improvisational play and the related class materials. While they were relatively simple, they did tend to test important conceptual relationships such as the relationship between the risk of an investment and its expected return.

The results from this study show that the educational intervention significantly increased student knowledge in the area of savings. Of the eight knowledge questions, five showed significant improvement between the pre- and post-tests. A score was calculated for each student showing the proportion of the 8 questions that they answered correctly. This is shown in Table 1. Overall, they answered 72 percent of the questions correctly on the pre-test and 81.7 percent correctly on the post-test, a difference of 9.2 percentage points, which is equal to an improvement of 13.5 percent from the

base score of the pre-test. Using a paired samples test, this difference was highly significant at the .000 level. In fact, when the sample was divided by grade, gender and whether they had experienced the interventions, all pre- and post-test means were equally significant at this high level.

Looking at percent change in score from the pre-test to the post-test, females improved slightly more than males; those in lower grades appeared to have much larger increases in score than those in higher grades; and those that saw the play and had a module in class also improved.

A one-way analysis of variance showed that the percent change in score was significantly related to grade at the .045 level, which means that the lower the grade, the more they learned. It was very significantly related to whether students saw the play at the .000 level, but was not significantly related to whether students

**TABLE 1: MEAN SCORES**

|                 | PRE-TEST | POST-TEST | PERCENT CHANGE |
|-----------------|----------|-----------|----------------|
| All Students    | 72.0%    | 81.8%     | 13.6%          |
| Male Students   | 73.0%    | 82.1%     | 12.6%          |
| Female Students | 71.0%    | 81.6%     | 14.9%          |
| Grade 5         | 70.3%    | 86.1%     | 22.5%          |
| Grade 6         | 70.8%    | 82.7%     | 16.8%          |
| Grade 7         | 68.2%    | 77.5%     | 13.6%          |
| Grade 8         | 73.6%    | 82.8%     | 12.5%          |
| Grade 9         | 76.3%    | 83.6%     | 9.6%           |
| Saw Play        | 71.3%    | 84.0%     | 17.8%          |
| Module in Class | 70.5%    | 80.7%     | 14.5%          |

had a class module on the topic, which was significant only at the .450 level. Clearly, having seen the play was the largest determinant of improvement in knowledge.

### What were the results of the experiment?

For students in the test group, who received the intervention prior to receiving their dollar, 83.2 percent returned the dollar bill to get another. For those in the control group, who received the intervention only after the dollar was given to them, 81.8 percent returned the

dollar. The difference was 1.4 percentage points or 1.7 percent on the base. This difference was positive, but not significant. However, if we look at the proportion of students who returned their dollar by their score on the post-test (an indicator of knowledge), we see in

| TABLE 2: DOLLAR RETURNED BY POST-TEST SCORE |              |
|---|--------------|
| TEST SCORE                                  |              |
| 0.13  | 40% returned |
| 0.25  | 48% returned |
| 0.38  | 79% returned |
| 0.50  | 65% returned |
| 0.63  | 79% returned |
| 0.75  | 80% returned |
| 0.88  | 80% returned |
| 1.00  | 83% returned |

Table 2 that those who had higher test scores (the horizontal axis) tended to have been more likely to have returned the dollar.

In Table 3, return of the dollar by the student was regressed on gender, grade, post-test knowledge score, and whether they were in the test group that had the educational intervention prior to the experiment with the dollar. The results show clearly that males were significantly less likely than females to return the dollar. In addition, return of the dollar varied inversely with the student’s grade, with younger students significantly more likely to return the dollar than older students. Also, return of the dollar is directly and significantly related to financial knowledge or literacy as measured by scores on the post-test.

| TABLE 3: BINARY LOGIC REGRESSION OF WHO RETURNED THE DOLLAR |             |              |
|---|-------------|--------------|
|   | COEFFICIENT | SIGNIFICANCE |
| Male  | -0.918      | 0.000        |
| Grade   | -0.184      | 0.026        |
| Post-test score   | 2.125       | 0.000        |
| Had intervention before experiment                          | -0.262      | 0.193        |
| Constant  | 1.924       | 0.007        |
| Nagalkerke R Square   | 0.083       |              |





The return of the dollar was not significantly related to whether the student was assigned to the test group, which received the educational intervention before the experiment or to the control group which received the education after the experiment.

### Can this model be replicated and scaled by other organizations?

The National Theatre for Children has over 40 years of experience creating and deploying successful in-school educational theatre programs. It is replicable and scalable for use by many different organizations using varying models. Their unique and proven engagement programs have delivered notable results for various financial organizations across the country.

Any school-based financial literacy program can be successful when it:

- Offers something to schools that they can't get elsewhere (like live theatre)
- Aligns program materials with state educational standards
- Adds proper motivation for schools, teachers and students to influence parents

### What lessons did we learn from implementation of this program?

The purpose of this study was to measure the impact of financial education in the form of a live play, *Mad about Money*, and a week's worth of classroom instruction on savings knowledge, attitudes and behavior of students in grades 5 through 9. The results showed that the intervention increased knowledge by more than 13 percent, which was highly significant. In a manner similar to the earlier study of *Googolplex* in Chicago, gains in knowledge were inversely related to the grade of the student, demonstrating again that financial education appears to work better with younger children. However, the degree of improvement of knowledge was most closely related to whether the students had seen the play.



The educational intervention also had a favorable and significant impact on attitudes toward savings. Students were more likely to have favorable views of those who save.

It was interesting to note, however, that females were significantly more likely than males to return their dollar and that return of the dollar was strongly related to financial knowledge as measured by post-test results. This type of favorable behavior also appeared to be inversely related to the student's grade level, indicating that younger students are more savings-oriented.

This second pilot test of the effectiveness of providing financial education to younger students continues to suggest its efficacy in imparting financial knowledge, improving attitudes and perhaps even modifying behavior.



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