

The Impact of “Ideas Can Change the World: Bernie’s Big Idea” on Students’ Understanding of the Principles of Entrepreneurship

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Executive Summary:

This study examines the effectiveness of “Ideas Can Change the World: Bernie’s Big Idea”, published by Felicia Voloschin of Rockin’ Finance, LLC, in conveying the basic ideas of entrepreneurship to a group of k-2 grade students and a group of 3-5 grade students. I first present summaries of teacher and parent surveys concerning their opinions of the material. I then examine student performance on assessment activities designed for the two groups of students. Teachers and parents are in agreement that the topics of personal finance, economics, and entrepreneurship are important and the material presented is useful in providing information about the topics. The students in grades k-2 demonstrate strong mastery of most of the important concepts presented in the book designed for their age group. The students in grades 3-5 demonstrated significant gains in understanding of the material designed for their age group. Very little, if any, of the observed learning can be attributed to the teachers’ previous preparation in economics, personal finance, or entrepreneurship, or their reported opinions about either the subject area or materials.

Introduction:

Entrepreneurship is often thought of as a characteristic that some people have and others do not, rather than a skill that can be developed over time. People often focus on the risk-taking of the entrepreneur and thus create a mythology surrounding the life of the entrepreneur. This mythology can be a barrier to understanding some important and fundamental aspects of entrepreneurship, such as the ability to see new uses for common items or processes, and the ability to bring resources together. The Rockin' Entrepreneur Series attempts to present some of these fundamental characteristics of entrepreneurship to primary school aged children in a relatable way. This study evaluates the impact of the books on two groups of students.

First, I describe the assessment instruments used to determine the effectiveness of the material provided by Rockin' Finance, LLC. There are two different instruments – one for the students in grades kindergarten through second (k-2) and another for the students in grades third through fifth (3-5). I then present survey results for teachers and parents for both age groups involved in the study. Overwhelmingly, both groups have positive reactions to the books and indicate a strong desire to see more of this sort of material in their students' and children's class rooms.

The following section presents a description of how Rockin' Finance, LLC personnel recruited teachers and gathered data for the study.

Then, in the heart of the study, I examine how well a group of 1,370 k-2 grade students perform on a test that asks them to identify pictures of various entrepreneurial activities after their teacher has shared the version of the book appropriate for their grade level. I follow with an examination of the change in test scores for a group of 1,134 3-5 graders, on a test that was administered prior to, and then again, following the class reading the version of the book appropriate to their grade level. The comparison of pre-test scores to post-test scores is generally a more rigorous indication of the impact of a particular educational treatment than a simple post-test. However, in the case of younger students (such as students in grades k-2) one may be reluctant to take up too much time with testing.

Finally, as an added check to ascertain the impact of the "Ideas Can Change the World: Bernie's Big Idea" book, I look for correlations between teacher characteristics as indicated in teacher surveys and assessment scores for k-2 grade students and changes in scores 3-5 grade students. I find little or no indication that teacher characteristics are the cause for the observed

assessment results. This leads me to conclude the book itself is likely to be a significant source of the observed learning.

I present the study as following: In the next section, I describe the two tests that were developed to assess student comprehension in the two age groups. Following the description of the material, I provide a summary of how various charter schools in the Atlanta area were solicited for the study and how the data were gathered. Then I describe the data. After which, I summarize the survey results of the teachers then the parents. I then provide analysis of the testing data meant to assess the impact of the books. I wrap up with my summary and conclusions of the study.

Test Descriptions:

In conjunction with Rockin' Finance, LLC and a volunteer teacher (and lead educational advisor to Rockin' Finance, LLC, Stacey Shapiro, I developed an assessment instrument for each of the two groups of students participating in the study. The two assessment instruments focus on different levels of learning consistent with the age groups under study. While no standardized test for entrepreneurial knowledge exists for young students in grades k-5, I follow, as closely as possible, the approach taken in the development of assessment instruments for economics and personal finance for the same age group.

The assessment instrument for the students in grades k-2 presents the students with a group of pictures (all modeled on the style of pictures in the "Ideas Can Change the World: Bernie's Big Idea" book for younger grade students) from which they are asked to circle the pictures consistent with various aspects of entrepreneurship. Second grade students were given the upper level of the book, but were tested along with the younger students. We felt this grade was the transition year. A copy of the assessment instrument appears in Appendix A along with the instructions provided to teachers. I chose a picture-based approach because I could not assume that this age group students would be reading. The assessment instrument asks five questions each with four options. There may be more than one correct option for each of the five questions. Scoring of the test counts the number of correctly circled items plus the number of items correctly left uncircled, for a potential of 20 points. The intent of the test is to measure the extent to which students show basic knowledge of facets of entrepreneurship. This is consistent with Bloom's Taxonomy Level I knowledge.

Assessment for the students in grades 3-5 incorporated a two-step process and a more rigorous instrument. The students were given a pre-test to determine what knowledge they have before reading the version of the "Ideas Can Change the World: Bernie's Big Idea" book written for their age group. Then, after reading the book in class, they were retested to determine their

gain in knowledge. The assessment instrument (found in Appendix B along with the instructions provided to instructors) incorporates a 10-item matching section to test the students' ability to remember definitions important to discussing entrepreneurship and an 8-item multiple choice section. While the matching section emphasizes Bloom's Taxonomy Level I knowledge, some of the multiple choice questions ask students to show comprehension of ideas – consistent with Bloom's Taxonomy Level II knowledge. This is a more advanced task and was expected to pose a significant challenge to the average student in this age group. The point of this assessment item is to ascertain whether or not the material facilitates a gain in knowledge as opposed to assuring students meet some predetermined level of knowledge.

Survey Descriptions:

As part of the data collection process teachers and parents were asked to fill out brief surveys and turn them in with their students' test sheets. Teachers and parents answered very similar questions, with the only difference being those necessary to indicate that the activity was with students or parents' own children. First, both teachers and parents were asked a little about their training in economics and related fields. Question 1 reads: "Have you had any training that focuses on financial literacy, economics or entrepreneurship topics?" or simply "Training" in the following tables. The answers are: a. No, b. One class, c. Two classes, and d. Three or more classes. The second question reads: "What grade are the children you did the survey with? (circle all that apply)". The options for answers are "Pre-K" through "6th grade and above" with corresponding letters a through h. The following tables do not summarize these responses because they were used to ensure the teacher surveys were correctly matched with the student assessment results and to see if parents were sharing the material with other children at home. Questions 3 through 8 pertain to the teachers' and parents' perceptions of the material in question. Question 3 reads: "How important do you believe it is to teach personal finance, economics and entrepreneurial concepts to students in school?" or "Importance" for short in the following tables. Answers are coded as: a. Very important, b. Somewhat important, c. Slightly important, and d. Not important. Question 4 reads: "Did your students have an interactive/engaging discussion with you while you were reading the book?" or simply "Discussion" in the following tables. Answers were coded as: a. Yes, engaging, b. Yes, somewhat engaging, c. Yes, slightly engaging, or d. No, not engaging. Question 5 reads: "Did you feel the book was a good tool that made it easy to facilitate this introductory lesson?" or "Good Tool" in the tables that follow. Answers were coded as: a. Yes, very easy, b. Yes, somewhat easy, c. Yes, slightly easy, and d. No, not easy. Question 6 reads: "Do you feel the book started discussions you would not have otherwise had with your students?" which is shortened to "Start Discussions" in the following tables. Potential answers are coded as: a. Yes, I would not have engaged in this type of discussion without the book, b. Yes, I would normally have these types of discussions, but the book made it even better, or c. No, I already have these types of discussions. Question 7 reads: "Would you like more books of this type on financial literacy, economics and entrepreneurship?" or "More Books" in the following tables. Possible answers are either a. Yes or b. No. Finally, teachers and parents are provided an opportunity to offer any feedback (not provided for this study).

Copies of both the teacher and parent survey appear in Appendixes C and D respectively.

School Solicitation and Data Gathering:

Rockin' Finance, LLC personnel introduced the project at the GA Charter School Association (GCSA) Annual Conference February 3-5th held at the Marriott Century Center in Atlanta. Leaders from charter schools all over the state attended. 48 Charter Schools were eligible to participate in the program. These schools are both a part of the GA Charter School Association, and they provide education for students in any of the grades PK-5th.

Rockin' Finance, LLC originally planned to distribute books at the conference, but there was insufficient space at the conference to house the books. Therefore, they distributed sample books to the elementary school leaders and collected contact information to discuss book distribution and study implementation. The only school, Dekalb PATH, that had only one grade, 5th that was eligible to participate, received books at the conference itself.

To encourage schools and educators to participate in the study, Rockin' Finance, LLC promised each participating educator a \$15 Home Depot gift certificate and for the school coordinator from each participating school, a \$50 Home Depot gift card for disseminating materials and collecting completed assessments and surveys. At the end of Phase I of the study one participant was randomly selected and was awarded a \$1,000 Home Depot Gift certificate.

After the conference, the GCSA PTO Director sent out emails describing the study to all the school leaders that were eligible to participate, asking them to sign up through an email survey, and to designate a point person, either a teacher or administrator, who would be the contact for all study related facilitation. 11 schools signed up through this email survey and Rockin' Finance, LLC reached out to the point person who was designated at each of these schools. Most of these schools provided a list of teachers, along with a count of students in each teacher's class. Rockin' Finance, LLC pre-counted all books and study materials and arranged with the point person to receive delivery, which was labeled with each teacher's name for easy distribution. The point person was responsible for recruiting the teachers at their school that would participate. Rockin' Finance, LLC reached out to the other 37 schools to recruit for the study. 17 schools signed up and received the books for phase I of the study.

Rockin' Finance, LLC kept in direct communication with the point person of each school. Once teachers turned in their completed study packs, Rockin' Finance, LLC arranged to pick up study envelopes from the point person. Shortly thereafter, Rockin' Finance, LLC arranged to deliver to the point person, their gift card, as well as all the educator gift cards. The point person signed for all the gift cards and then emailed a signed control sheet that each teacher needed to sign that they received their participation reward.

Rockin' Finance, LLC collected envelopes with all of the student assessments, teacher survey, and parent survey. Data was then entered by one GCSA team member and three Rockin' Finance, LLC team members, using the Excel spreadsheet I developed for the project.

13 schools fully completed the study. 4 schools have all the materials, but were unable to complete the study and have asked to be included in Phase II of the study. At the time the material was distributed many of the schools had already completed their lesson plans for Spring classes. These schools requested that they participate in the study in the Fall. The Marcus Foundation has approved a continuation of the study (Phase II) provided there is no increase in the original budget. Phase II of the study is currently being organized and several schools have committed to participating. Rockin' Finance, LLC expects to reach the planned 70-80% of participation by the end of Phase II within the original budget.

Data Description:

Data were gathered from 13 different charter schools in and around the Atlanta Metropolitan area. 139 educators participated in the study (115 of whom returned teacher surveys as part of the study). 982 parents returned surveys and 2,513 students participated in the study. Some observations are lost due to incomplete answers or students who failed to take either the pre-test or the post-test. Following are summary tables for the various groups of interest.

Summary of Teacher, Student, and Parent Participation by Grade:

Table 1 presents a count of the number of teachers, students, and parents who participated in the study by grade. These numbers may not match up to the number of surveys or test scores used in the analysis. This discrepancy is due to the fact that some surveys are incomplete and some students (in grades 3-5) missed either the pre-test or the post-test. The parent surveys were organized by the grade of the teacher who returned the parent surveys. Some parents shared the material with other children at home and indicated the grade levels of all of their children. Therefore, the reach of the material went beyond the classrooms in which it was initially presented.

Table 1: Responses by Grade

Grade	Teachers	Students	Parents
K	22	447	114
1	16	376	127
2	25	547	167
3	19	376	173
4	12	228	140
5	21	539	261
Total	115	2513	982

Teacher Survey Results:

I first present the survey results for the teachers of grades k-2 then the teachers of grades 3-5. I separate the two groups because they were given different materials to use in their classrooms. Table 2 presents the survey results for teachers in grades k-2. The number of valid responses for each question appears in parenthesis. Not all teachers responded to all

questions. Overall the response rate for teachers was high. 82% of the teachers of grades k-2 supplied completed surveys and 89% of the teachers of grades 3-5 provided completed surveys.

Table 2: Teacher Survey Results, Grades k-2

Training (n=58)	0 Classes	1 Class	2 Classes	3 + Classes
	46.6% *	19.0%	13.8%	20.7%
Importance (n=58)	Very	Somewhat	Slightly	Not at all
	84.4%	13.8%	1.7%	0%
Discussion (n=58)	Yes	Somewhat	Slightly	No
	43.1%	43.1%	12.1%	1.7%
Good Tool (n=57)	Yes/Easy	Yes/Somewhat	Yes/Slightly	No
	49.1%	31.6%	15.8%	3.5%
Start Discussion (n=57)	Yes/new	Yes/already	No	
	29.8%	54.4%	15.8%	
More Books? (n=57)	Yes	No		
	96.5%	3.5%		

*Note: Numbers in rows may not add to 100% due to rounding.

Most of the teachers have little or no training in personal finance, economics, or entrepreneurship prior to working with the material from Rockin' Finance. 65.6% have had no more than one class while 20.7% have had 3 or more classes prior to the project. Almost all of the teachers (98.2%) believe, however, that personal finance, economics, and entrepreneurship is either very or somewhat important to teach in school. Most found that the material led to either engaging or somewhat engaging conversations in the classroom (86.2%). Only 3.5% of the teachers did not think the book did not lead to an easy facilitation of conversations. Finally, while the majority of the teachers indicated that the book helped start discussions about entrepreneurship more than half (54.4%) indicated they would have had these conversations even without the introduction of the book into their classroom. Finally, 96.5% responded that they would like to see more books like "Ideas Can Change the World: Bernie's Big Idea" for their classroom.

The survey results for the teachers in grades 3-5 were similar to those of the teachers of grades k-2 (see Table 3). 70% of the teachers have had no more than one personal finance, economics, or entrepreneurship class. But, all find the subject matter either very or somewhat important for their students. 88% of the teachers report that their classes had engaging or somewhat engaging discussions about entrepreneurship in their class after the students read the book. All but 6% of the teachers report that the book did a very good or somewhat good job of facilitating the conversation. Just as the k-2 teachers reported, over half (52%) of the 3-5

grade teachers reported that they would normally engage their students with discussions concerning entrepreneurship but the book made the discussion easier. Finally, all of the teachers stated that they would like more books of this type for their classrooms.

Table 3: Teacher Survey Results, Grades 3-5

Training (n=50)	0 Classes	1 Class	2 Classes	3 + Classes
	48.0% *	22.0%	10.0%	20.0%
Importance (n=49)	Very	Somewhat	Slightly	Not at all
	94.0%	6.0%	0.0%	0.0%
Discussion (n=50)	Yes	Somewhat	Slightly	No
	68.0%	20.0%	12.0%	0.0%
Good Tool (n=50)	Yes/Easy	Yes/Somewhat	Yes/Slightly	No
	78.0%	16.0%	6.0%	0.0%
Start Discussion (n=50)	Yes/new	Yes/already	No	
	42.0%	52.0%	6.0%	
More Books? (n=50)	Yes	No		
	100.0%	0.0%		

* Note: Numbers in rows may not add to 100% due to rounding.

Parent Survey Results:

Parents were asked similar questions to those asked of the teachers. A large number of parents returned surveys. While it is difficult to say definitively what proportion of parents returned surveys because there is no information about how many siblings attend the same school, it appears that roughly 39% returned surveys. Table 4 presents a summary of the parent surveys for those parents of children in grades k-2 who returned their surveys. The number of valid responses for each question appears in parenthesis.

Table 4: Parent Survey Results, Grades k-2

Training (n=389)	No	1 Class	2 Classes	3 + Classes
	42.2%*	17.2%	12.3%	28.3%
Importance (n=399)	Very	Somewhat	Slightly	Not
	90.5%	8.0%	1.3%	0.3%
Discussion (n=395)	Yes	Somewhat	Slightly	no
	54.7%	26.8%	15.4%	3.0%
Good Tool (n=393)	Yes/Easy	Yes/ Somewhat	Yes/ Slightly	No

	61.8%	27.0%	9.2%	2.0%
Start Discussion (n=389)	Yes	Yes	No	
	28.3%	51.7%	20.1%	
More Books? (n=390)	Yes	No		
	94.9%	5.1%		

*Note: Numbers in rows may not add to 100% due to rounding.

Like the teachers, parents have had relatively modest training in personal finance, economics, or entrepreneurship. 59.4% have had one or no classes in the subject matter. 28.3%, however, have had 3 or more classes. This being said, almost all (98.5%) agree that it is either very or somewhat important that the subject be taught. This corresponds closely to the percent of parents who would like to see more books such as “Ideas Can Change the World: Bernie’s Big Idea” in the classroom (94.5%). Most of the parents who responded to the survey

Table 5: Parent Survey Results, Grades 3-5

Training (n=569)	No	1 Class	2 Classes	3 + Classes
	35.7% *	18.3%	11.8%	34.3%
Importance (n=573)	Very	Somewhat	Slightly	Not
	92.3%	6.3%	1.2%	0.2%
Discussion (n=562)	Yes	Somewhat	Slightly	No
	52.0%	30.1%	12.5%	5.5%
Good Tool (n=567)	Yes/Easy	Yes/ Somewhat	Yes/ Slightly	No
	64.0%	27.5%	7.1%	1.4%
Start Discussion (n=567)	Yes	Yes	No	
	24.5%	55.4%	20.1%	
More Books? (n=571)	Yes	No		
	95.4%	4.6%		

*Note: Numbers in rows may not add to 100% due to rounding.

said that they had a discussion about the book with their children while their child was reading the book (97%). Most (81.5%) reported that the conversation was engaging or somewhat engaging. 88.8% of respondents said that the book was a good tool for facilitating the conversation. And, similar to teachers, parents who returned the survey said that they do, generally, have these types of discussions (71.8%). The rest reported that the book sparked a conversation they might not otherwise have had with their children. Parents of the older students had very similar responses compared to the responses of the first set of parents. Table 5 presents a summary of their responses.

In summary, both teacher groups and both parent groups had highly favorable reactions to the “Big Ideas Can Change the World: Bernie’s Big Ida” book. They are in agreement that the subject matter is important and would like to see more material like it in the classroom.

Data Analysis:

The students in the two age groups were given different assessments of their understanding of the material. In this section I describe the results of the assessments. First I present the results of the assessment for the students in grades k-2. Then I turn my attention to the students in grades 3-5.

The students in grades k-2 were asked to circle pictures that correspond to activities or traits common among entrepreneurs. Each of the 5 questions offered 4 possible choices. Sometimes more than one choice was correct. Therefore, there were a possible of 20 correct responses to the task – either correctly circling a correct picture or correctly not circling an incorrect picture. The results of the assessment appear in Table 6.

Table 6: Results of k-2 Assessment

Overall: 83.2 (N=1,370)			
Question 1			
a	b	c	d
76.40%	86.60%	68.10%	91.50%
Question 2			
a	b	c	d
79.30%	90.90%	81.00%	74.20%
Question 3			
a	b	c	d
93.90%	88.30%	89.90%	91.50%
Question 4			
a	b	c	d
74.00%	83.30%	94.10%	86.10%
Question 5			
a	b	c	d
46.40%	95.50%	88.20%	86.10%

After having the book, “Ideas Can Change the World: Bernie’s Big Idea”, read to them the students scored relatively well on average. The average score across the 1,370 valid student tests was an 83.2%. This represents a strong grasp of the basic ideas behind entrepreneurship as presented in the book. Table 5 further examines each individual answer. The two items that seemed to give students difficulty were Question 1: Item c – a picture of blankets being used to build a fort (an example of something being used in a new way) and

Question 5: Item a – a picture of two children playing with blocks together (an example of using people skills that can aid an entrepreneur). These were two examples where activities normally associated with play can develop valuable skills later in life and skills that are important to entrepreneurship. The students seemed hesitant to accept the importance of play in the development of skills. But, taken as a whole, the students demonstrated an impressive mastery of the material.

For the assessment of the students in grades 3-5 I took a different approach. With the more advanced students a pre-test and post-test approach is more desirable. This approach allows for a measure of the growth in knowledge based at least in part on the exposure to the material being studied. It is reasonable to assume that by grades 3-5 some students have already picked up some knowledge that may fall into the areas being studied here. Table 7 presents the pre- and post-test scores for the assessment items given to the 3-5 grade students.

Table 7: 3-5 Student Assessment Pre- and Post-Test Scores

	Item	Pre-Test	Post-Test	Change
Matching	1	71.3	90.9	19.6
	2	82.0	92.5	10.5
	3	65.7	84.2	18.5
	4	89.2	93.6	4.4
	5	74.7	87.6	12.9
	6	57.2	73.9	16.7
	7	51.2	71.9	20.6
	8	72.0	86.9	14.9
	9	51.8	72.3	20.5
	10	72.5	83.5	11.0
Multiple Choice	1	91.4	93.8	2.4
	2	53.1	61.4	8.3
	3	64.9	65.3	0.4
	4	80.3	88.4	8.1
	5	45.3	63.4	18.1
	6	47.9	67.1	19.2
	7	56.8	57.3	0.5
	8	20.4	43.3	22.9
Total		63.8	76.5	12.8

First, overall performance in the test increased by an average of 12.8 percentage points after the students read the book, “Ideas Can Change the World: Bernie’s Big Idea”. On average student scores on the matching section improved by 14.9 percentage points from 68.8% correct to 83.7% correct. Their performance on the multiple choice section improved by 10 percentage points from 57.5% correct to 67.5% correct. Every one of the individual items demonstrated some improvement when averaged across all students. Statistical analysis of all of the differences finds that all of the changes are statistically (at a 5% level of significance) different from zero with the exception of multiple choice questions number 3 and 7. For those two items one can say that the pre-test and post-test averages are statistically the same.

A number of items, however, proved difficult for students even after reading the book. While students on average demonstrated mastery of the vocabulary used in the book as demonstrated by their ability to identify key words and phrases, their level of understanding of more complex ideas is still in its development stages. This is to be expected in grades 3-5. The multiple choice questions were designed to ensure students would have ample room to demonstrate growth in understanding. This meant that many of the multiple choice questions were purposefully difficult. Two questions seemed to stump students equally before and after reading the book. Question 2 of the multiple choice asked students to demonstrate an understanding of the difference between a good and a service. Upon reading “Ideas Can Change the World: Bernie’s Big Idea” the average student score rose to only 65.3% from 64.9%. Question 7 emphasized all the ways entrepreneurs give back to societies. It appears as if the “all of the above” framework of the question confused students as the percent correct stayed about the same at 57.3% (up only 0.5 percentage points from the pre-test). Question 8 was clearly the most difficult question as it asked students to demonstrate an understanding of payment in the form of a commission. The pre-test percent correct was 20.4% -- worse than one would expect with random guessing. The post-test percent correct was 43.3%. While this may seem low, it is a marked improvement for a difficult concept.

Taken as a whole, students improved on all questions when comparing the pre-test to the post-test of ideas covered in the book “Ideas Can Change the World: Bernie’s Big Idea”. They showed mastery of the vocabulary and demonstrated development of more complex ideas in the multiple choice section.

Controlling for Teacher Effects:

One of the facets of examining student performance as it relates to a particular curriculum item such as a book or set of lesson plans is to control for other factors that might confound the study. When enough information is available economists tend to construct what is called an “educational production function” or a mathematical model of the different aspects

that contribute to a student's acquisition of knowledge. Typically present in such a model are characteristics of the student, characteristics of the student's home environment, teacher characteristics, and school characteristics all of which may play a part on the student's learning. In this study such an in-depth examination is not possible (such studies are expensive and time-consuming often taking many years). But, I do have to ability to investigate whether or not teacher characteristics may have influenced the observed learning in the two groups of students.

The teacher surveys provide some information concerning the amount of specific training teachers have had in the areas of personal finance, economics, and entrepreneurship. The surveys also provide insight into how teachers feel about the subject matter and the specific material under study. Because teacher surveys were returned with the test scores of their students the two can be linked. With this information I can see if the teacher answers to any of the survey questions are correlated with the student test scores. A finding of no correlation simply means that one cannot assume that the observed assessment scores can be attributed to observed teacher effects. I cannot do the same thing with parent survey responses as the surveys were anonymous and cannot be linked to specific students.

Table 8 presents the correlations between the survey answers for the teachers of students in grades k-2 and the student test scores. Beside each question is the expected sign of the correlation coefficient (Corr. Coef.). The first correlation coefficient is expected to be positive because increases in teacher training are generally shown to have a positive effect on student learning. The next three correlation coefficients should be negative because the questions were worded in such a way that lower opinions of the topic and materials corresponded to higher numerical valued answers. Finally, there is no clear expectation for the sign of the fifth correlation coefficient. Correlation coefficients that are close to zero in absolute value indicate that there is no systematic relationship between the two variables of interest.

Table 8: k-2 Correlation Coefficients (n=

Question	Corr. Coef.
Training (+)	-0.02
Importance (-)	-0.11
Discussion (-)	-0.28
Good Tool (-)	-0.13
Start Discussion (+/-)	-0.05

Interestingly, most of the survey responses had little or no impact on student scores. Typically, one would expect the teacher training in the subject matter to have some positive impact on student performance. There is no indication in this study of that happening. One potential reason is that with the exception of the question about the number of courses related to the field the teachers had taken, there was little variation among the teachers. As noted above, the majority of teachers thinks the topic is important and generally had good things to say about the material. In fact, the reason why the response concerning the teachers' opinions about whether they would like to see more similar material is missing from the analysis is that there was virtually no variation in the answer.

The one response that does show somewhat of a correlation is the relationship between student assessment scores and how interactive the teachers reported discussions concerning the book to be. Because the coding of the questions was such that higher numerical answers were associated with lower levels of engagement (1 = engaging, 4 = not engaging) the negative value of the correlation implies one would expect low numbers to be associated with higher assessment scores if one believes that student engagement leads to better learning. 86.2% of responding k-2 grade teachers reported the material did a somewhat or good job of facilitating discussion. Therefore, the correlation – no matter how weak it is – demonstrates some evidence that this perceived characteristic may have helped in the students' understanding of the material.

The lack of correlation between the survey answers and student scores (with the one exception) implies that I do not see an alternative explanation of student success on the assessment items other than the material. And the one exception is a perceived quality of the material itself. One caveat, however, is worth noting: because there was no pre-test of student knowledge, I cannot judge how much information the students in this group brought to the exercise prior to the lesson and how much they learned. Implicit is the assumption that at such a young age these students are bringing very little knowledge about the material into the classroom. This is one of the reasons I compare post-test scores to pre-test scores for the students in grades 3-5.

I also look for teacher effects in the change of scores for the students in grades 3-5. Table 9 focuses on the correlation between the teacher survey responses and the change in test scores from the pre-test to the post-test. The range of potential changes in test scores is from -18 (a student getting 100% on the pre-test and a 0 on the post-test) to +18 (a student getting a 0 on the pre-test and 100% on the post-test). Neither of these extremes is observed in the data, however. This ensures that the range observed is not constrained by the boundaries of the test itself.

Table 9: 3-5 Correlation Coefficients

Question	Corr. Coef.
Training (+)	-0.05
Importance (-)	0.04
Discussion (-)	-0.01
Good Tool (-)	0.13
Start Discussion (+/-)	0.07

None of the survey response items appear to be correlated with the change in student scores whatsoever. That is to say, none of the response items in the survey for teachers of the students in grades 3-5 can be said to explain in any significant and systematic way the observed change in assessment score from the pre-test to the post-test. Again, similar to the examination of survey responses of teachers in grades k-2, there was little variation in the responses. While it does not mean that the book alone is responsible for all of the improvement in assessment scores, it does take one of the more obvious explanations – observable teacher characteristics – off of the table.

As a result of looking at the correlation coefficients between observable teacher characteristics in both the student cohort in grades k-2 and the student cohort in grades 3-5, one is left with two observations: First, students in grades k-2 did a good job of identifying most of the traits consistent with entrepreneurship presented in the book, “Big Ideas Can Change the World: Bernie’s Big Idea”, after reading the book. Second, when looking at the results from the students in grades 3-5 one can see that after reading the book students scored higher on almost all of the items in the assessment. This gain in understanding cannot be explained by observed teacher effects.

Conclusions:

Based on survey results from both teachers and parents there is a strong desire for more classroom material that provide students with information about personal finance, economics, and entrepreneurship. Furthermore, both teachers and parents had a favorable opinion of the “Big Ideas Can Change the World: Bernie’s Big Idea” book. They reported that the book helped facilitate discussions both in the classroom and at home about the subjects. And, among students in k-2 classroom, the level of discussion was positively correlated with performance on the assessment task.

Students in grades k-2 demonstrated mastery of the material presented in the book based on the assessment tool developed for this project. After the teachers read the book to the students they were able to identify with a high level of reliability, characteristics of entrepreneurship. This is likely to help demystify what it is entrepreneurs do.

An examination of the changes in assessment scores from a pre-test to a post-test showed gains in knowledge among students in grades 3-5. All scores rose, and all but two of the changes were statistically significant at a 5% level. Based on an examination of the correlation between teacher survey responses and changes in test scores, one cannot attribute the changes to measured teacher effects. While the final scores did not reveal mastery of all the items, a general increase in knowledge was documented. This change implies the material points students in the right direction when it comes to understanding entrepreneurship.

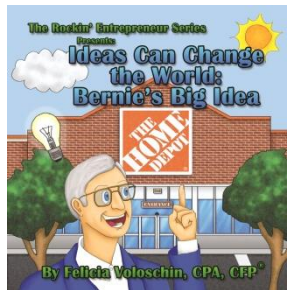
K-1nd Grade Teacher Instruction

Thank you in advance for participating in this activity and study!

The goal is to determine if teachers, like you, believe this book and activity is an easy and fun tool to use to plant the seeds of financial literacy, economics and entrepreneurship in elementary school age children.

It's Easy!

Step 1: Make sure you have the right book! There will be one book for each student in your class. The cover looks like this:



Step 2: Read the book aloud to your class. The book has discussion questions within the text so feel free to discuss the topic and encourage participation.

Step 3: Give each student the home activity sheet and parent evaluation. Assign a due date within a day or two; best would be on a Monday, so they have the weekend. Emphasize children will need to bring the book home and then back to class. After the assignment is complete the book will be theirs to keep.

Step 4: Collect all parent surveys

Step 5: Testing: After the home activity is complete, give the test out to your students. THIS IS NOT A READING TEST. Please read aloud each question and answer choices. The pictures without the description might not make sense to the student. Please go at a pace appropriate for your class. Students may use the book to look at as a resource. Collect all student tests when complete.

Step 5: Fill out your teacher survey. We are interested to know if you would like more of these types of books on financial literacy, economics and entrepreneurship for school year 2016-2017.

Step 6: Hand in your completed Study Envelope to your school's Study Point Person and your \$15 Home Depot® gift card will be on the way. This will also automatically enter you into our drawing for a \$1,000 gift card to The Home Depot® which will take place on May 13, 2016.

If you have any questions or comments, please feel free to reach out!

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THANK YOU for your participation!!!!

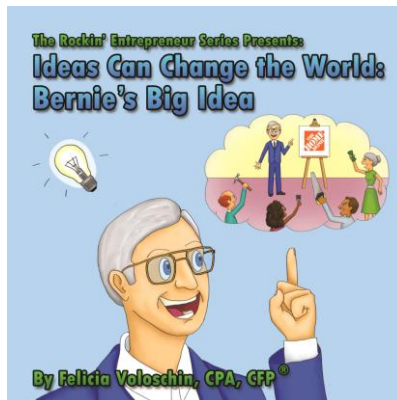
2nd Grade Teacher Instructions

Thank you in advance for participating in this activity and study!

The goal is to determine if teachers, like you, believe this book and activity is an easy and fun tool to use to plant the seeds of financial literacy, economics and entrepreneurship in elementary school age children.

It's Easy!

Step 1: Make sure you have the right book! There will be one book for each student in your class. The cover looks like this:



Step 2: Read the book aloud to your class. The book has discussion questions within the text, so feel free to discuss the topic and encourage participation.

Step 3: Give each student the home activity sheet and parent evaluation. Assign a due date within a day or two; best would be on a Monday, so they have the weekend. Emphasize children will need to bring the book home and then back to class. After the assignment is complete the book will be theirs to keep.

Step 4: Collect all parent surveys

Step 5: Testing: After the home activity is complete, give the test out to your students. THIS IS NOT A READING TEST. Please read aloud each question and answer choices. The pictures without the description might not make sense if you have students that are struggling readers. Please go at a pace appropriate for your class. Students may use the book to look at as a resource. Collect all student tests when complete.

Step 5: Fill out your teacher survey. We are interested to know if you would like more of these types of books on financial literacy, economics and entrepreneurship for school year 2016-2017.

Step 6: Hand in your completed Study Envelope to your school's Study Point Person and your \$15 Home Depot® gift card will be on the way. This will also automatically enter you into our drawing for a \$1,000 gift card to The Home Depot® which will take place on May 13, 2016.

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THANK YOU for your participation!!!!

Name: _____

1. Circle ALL the pictures that show using something in a new way? There may be more than one picture to circle.



A hammer hitting a nail



A toy car delivering pizza



Using a blanket to make a hiding place



Watching TV

2. What does an entrepreneur do?



Stops traffic so children can cross street



Buys things from a store



Comes up with new ideas and new ways to use things



Puts supplies on shelves so customers can buy them

3. Circle ALL the ways a business helps the community. There may be more than one picture to circle.



Watching TV with a friend



Giving people a place to work



Giving people a place to shop for things they need



Playing basketball with a friend

4. Circle ALL the ways entrepreneurs can help change the world. There may be more than one picture to circle.



Building a fun place people can visit, like an aquarium, to learn about sea animals



Helping people after a storm



Building blocks with friends

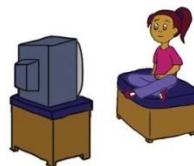


Building hospitals to help sick children

5. Circle ALL the types of skills that make someone a great entrepreneur. There may be more than one picture to circle.



By using good people skills like getting along with friends



Watching TV



Learning at school



Math skills like counting money

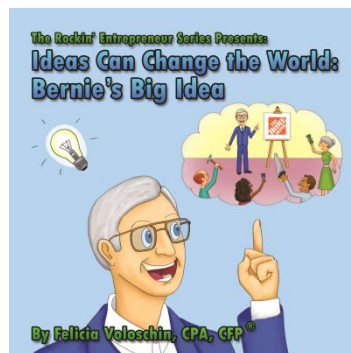
3rd-5th Grade Teacher Instructions

Thank you in advance for participating in this activity and study!

The goal is to determine if teachers, like you, believe this book and activity is an easy and fun tool to use to plant the seeds of financial literacy, economics and entrepreneurship in elementary school age children.

It's Easy!

Step 1: Make sure you have the right book! There will be one book for each student in your class. The cover looks like this:



Step 2: Before any contact with the book, please give your students the Pre-Test. Make sure they say Pre-Test in the upper right hand corner.

Step 3: Read the book aloud in your class as you normal would for other activities. The book has discussion questions within the text so feel free to discuss the topic and encourage participation.

Step 4: Give each student the home activity sheet and parent evaluation. Assign a due date within a day or two; best would be on a Monday, so they have the weekend. Emphasize children will need to bring the book home and

then back to class. They will need it for the post-test. After the assignment is complete the book will be theirs to keep.

Step 5: After the home activity is complete, collect all parent surveys.

Step 6: Testing: On the due date, when the children have their book with them, give the Post-Test out to your students. THIS IS NOT A READING TEST. Please use your judgment in facilitating the test. If you have struggling readers, please read aloud each question and answer choices. Please go at a pace appropriate for your class. Students should use the book to look at as a resource. Collect all student tests when complete.

Step 7: Staple each child's Pre-Test and Post-Test together. This is VERY IMPORTANT, as all the student's names will be removed and we need each student's Pre and Post Test to be together.

Step 8: Fill out your teacher survey. We are interested to know if you would like more of these types of books on financial literacy, economics and entrepreneurship for school year 2016-2017.

Step 9: Hand in your completed Study Envelope to your school's Study Point Person and your \$15 Home Depot® gift card will be on the way. This will also automatically enter you into our drawing for a \$1,000 gift card to The Home Depot® which will take place on May 13, 2016.

If you have any questions or comments, please feel free to reach out!

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THANK YOU for your participation!!!!

NAME _____

Grade _____

PRE-TEST

Match the following word or phrase with the definition that best matches.

1. ____ Someone who builds a business
 2. ____ A place that sells products or services
 3. ____ A person or business that hires people to work on jobs that need to be done
 4. ____ People who shop at a business
 5. ____ People who work for a business
 6. ____ Money collected by a store when a customer buys something. This money goes to the government to pay for things the community needs like police and firefighters.
 7. ____ The things a business owner must pay for in order to run a business, like computers, telephones and supplies
 8. ____ Taking care of customers
 9. ____ The money left over from the sales of goods or services after all expenses are paid
 10. ____ The potential that a business owner might lose money if things do not go well in the business
- | | |
|---------------------|-----------------|
| a. Business | f. Entrepreneur |
| b. Customer | g. Expenses |
| c. Customer Service | h. Profit |
| d. Employee | i. Risk |
| e. Employer | j. Sales Tax |

Multiple Choice: Select the BEST answer for each question

1. An employer decides how much to pay an employee based on:
 - a. How much the employer likes the employee.
 - b. The skills, experience, and education the employee has.
 - c. How many children the employee has.
 - d. The type of car the employee drives.
2. Which of the following is an example of a business that sells a service?
 - a. A dry cleaner.
 - b. A toy store.
 - c. An ice-cream shop.
 - d. A grocery store.

NAME _____

Grade _____

PRE-TEST

-
3. Which of the following is an example of a business that sells a good?
 - a. A post office.
 - b. A dentist's office.
 - c. A car dealership.
 - d. A hair salon.
 4. Having a good work ethic means
 - a. Working hard and taking pride in the work you do.
 - b. Getting paid a lot of money for the work you do.
 - c. Having a lot of friends at work.
 - d. Being in charge of others at work.
 5. A business will earn a profit if
 - a. The business does things to help the community.
 - b. There is money left over after all expenses are paid.
 - c. The employees in the business work hard.
 - d. People think the products are cool.
 6. Which of the following is an example of using People Skills at work
 - a. Keeping the store clean for customers.
 - b. Making products your customers like.
 - c. Ignoring customers waiting in line.
 - d. Listening to customers questions.
 7. Which of the following best describes how businesses give back to communities?
 - a. Businesses just provide places for people to work for communities.
 - b. Businesses just provide places for people to shop in communities.
 - c. Businesses just provide sales tax dollars for goods and services communities need to provide.
 - d. Businesses provide jobs, goods and services, as well as sales tax dollars for to pay for goods and services communities need to provide.
 8. If an employee is paid a commission she gets paid:
 - a. The same amount every week no matter how much work is done.
 - b. A certain amount of money every hour she works.
 - c. More when she has more responsibilities.
 - d. An amount of money when a particular job is done or product sold.

Appendix C: Educator Survey

Educator Survey

Thank you for taking part in this pilot study. This book was designed to teach financial literacy, economics and entrepreneurship to your elementary school students. Please take a few minutes to answer this survey, it will help us improve future books and let us know if you want your school to have more books of this type.

1. Have you had any training that focuses on financial literacy, economics or entrepreneurship topics?
 - a. No
 - b. One class
 - c. Two classes
 - d. Three or more classes
2. What grade are the children you did this activity with? (circle all that apply)
 - a. Pre-K
 - b. Kindergarten
 - c. 1st Grade
 - d. 2nd Grade
 - e. 3rd Grade
 - f. 4th Grade
 - g. 5th Grade
 - h. 6th Grade or above
3. How important do you believe it is to teach personal finance, economics and entrepreneurial concepts to students in school?
 - a. Very important
 - b. Somewhat important
 - c. Slightly important
 - d. Not important
4. Did your students have an interactive/engaging discussion with you while you were reading the book?
 - a. Yes, engaging
 - b. Yes, somewhat engaging
 - c. Yes, slightly engaging
 - d. No, not engaging
5. Did you feel the book was a good tool that made it easy to facilitate this introductory lesson?
 - a. Yes, very easy
 - b. Yes, somewhat easy
 - C. Yes, slightly easy
 - D. No, not easy
6. Do you feel the book started discussions you would not have otherwise had with your students?
 - a. Yes, I would not have engaged in this type of discussion without the book
 - b. Yes, I would normally have these types of discussions, but the book made it even better
 - c. No, I already have these types of discussions
7. Would you like more books of this type on financial literacy, economics and entrepreneurship?
 - a. Yes
 - b. No
8. Please provide any other feedback you would like us to have:

Thank you for completing this survey!

Appendix D: Parent Survey

Parent Survey

Thank you for taking part in this pilot study. This book was designed to teach financial literacy, economics and entrepreneurship to your elementary school student. Please take a few minutes to answer this survey, it will help us improve future books and let us know if you want your school to have more books of this type.

1. Have you had any training that focuses on financial literacy, economics or entrepreneurship topics?
 - a. No
 - b. One class
 - c. Two classes
 - d. Three or more classes
2. What grade are the children you did this home activity with? (circle all that apply)
 - a. Pre-K
 - b. Kindergarten
 - c. 1st Grade
 - d. 2nd Grade
 - e. 3rd Grade
 - f. 4th Grade
 - g. 5th Grade
 - h. 6th Grade or above
3. How important do you believe it is to teach personal finance, economics and entrepreneurial concepts to students in school?
 - a. Very important
 - b. Somewhat important
 - c. Slightly important
 - d. Not important
4. Did you have an interactive discussion with your child/children while you were reading the book?
 - a. Yes, engaging
 - b. Yes, somewhat engaging
 - c. Yes, slightly engaging
 - d. No, not engaging
5. Did you feel the book was a good tool that made it easy to discuss these topics?
 - a. Yes, very easy
 - b. Yes, somewhat easy
 - c. Yes, slightly easy
 - d. No, not easy
6. Do you feel the book started a discussion you would not have otherwise had with your child/children?
 - a. Yes, we do not usually engage in this type of discussion
 - b. Yes, we do have these types of discussions, but this made it even better
 - c. No, we always have these types of discussions
7. Would you like more books of this type on financial literacy, economics and entrepreneurship?
 - a. Yes
 - b. No
8. Please provide any other feedback you would like us to have:

Thank you for completing this survey!