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DOES FINANCIAL EDUCATION AT SCHOOL WORK? EVIDENCE FROM ITALY

by Angela Romagnoli* and Maurizio Trifilidis *

Abstract

In the 2008-09 school year the Bank of Italy and the Italian Ministry of Education started an experimental program to incorporate financial education into school curricula. This paper describes the experience since then. According to the program, teachers receive training from the Bank on financial topics and then move on to classroom teaching. The effect of classroom teaching on pupils' financial knowledge is measured by tests. The empirical evidence shows that the program proved successful in increasing the financial knowledge of pupils, for longer than one year.

JEL Classification: D14, I22.

Keywords: financial literacy, youth financial education, money, pre-/post-test design.

Contents

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1. Introduction[1]

Individuals' financial decision-making process has been under discussion for decades now. It is widely accepted that the "homo economicus" is an oversimplified representation of the homo sapiens, whose decisions reflect both human nature and the social environment (Thaler, 2000).

Furthermore, globalization and information technology have revolutionized the financial markets, facing present and future generations with more complex and riskier decisions concerning their wellbeing.

Many policy makers believe that the individuals' decision-making process might be improved through financial education, supposing people would put financial literacy to good use. Given that knowledge is developed primarily at school, international institutions, authorities and scholars agree that beginning financial education at school is essential, even if pupils still have a long way to go before making their own financial decisions. According to the OECD, "Financial education should start at school. People should be educated about financial matters as early as possible in their lives." (OECD, 2005).

From this perspective, in 2007 the Bank of Italy and the Italian Ministry of Education started an experimental program to incorporate financial education into school curricula. Since the 2008-09 school year the program has been offered to the Italian school system. Year after year, it has aroused growing interest among teachers and learners and has proved to be effective in improving pupils' financial knowledge. In fact, the empirical findings support the importance of financial education at school and, in particular, of starting as early as possible.

This paper describes the experience acquired throughout the program since the beginning. It is structured as follows. The second section sketches out the rationale for financial education, the third outlines the program and explains the evaluation methods, and

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the fourth offers an overview of the participation. The fifth section describes the effect of the program on pupils' financial knowledge focusing on the 2011-12 school year. Finally, the last section sets out suggestions for further analysis and some remarks on the evolution of financial education at school.

2. The rationale for financial education

The financial crisis has shown the far-reaching consequences of making decisions without adequate tools (Bernanke, 2011). Despite the fact that blaming consumers would be unfair, erroneous financial choices at an individual level nevertheless put a strain on the economy and the society as a whole. For instance, aging and public debt have necessitated drastic reforms of pension systems in the developed countries. Now, individuals need to provide for the elderly more than the post-war generations, so widespread failure by people to accumulate the necessary funds for their retirement, this could put a heavy burden on government assistance. Furthermore, the heterogeneity of financial products and the changing attitudes towards debt and consumption may tempt people to borrow beyond their means, triggering over-indebtedness and bankruptcy and undermining financial stability.

A sound decision-making process needs to be based on individuals' awareness and familiarity with the matter at hand. However, the empirical evidence shows relatively poor financial literacy worldwide, both in developed and developing countries: it is, in fact, widely agreed that consumers lack the skills to make financial decisions in their own best interest (Atkinson et al. 2012).

Many researchers concur on the importance of financial literacy to improve financial decision-making processes. The more financially literate consumers are, the more likely they are to be mindful about borrowing, saving, investment and insurance, as they could be aware of the variety as well as the costs and risks of retail financial services. In other words, financial education could facilitate the optimal allocation of resources and improve social balance. Since financially educated customers have the capability to collect, process and check the information they get from intermediaries, the intermediaries themselves are prompted to adopt proper conducts, thereby reducing the conflict of interest with customers.

To sum it up, financial education could foster financial consumer protection, even if it cannot substitute good regulation (Rutledge 2010).

On the other hand, some scholars contend that financial education is not the best way to improve consumers' financial lives, because the costs outweigh the benefits. In view of the mixed empirical evidence on the effectiveness of financial education programs, they argue that improving regulation is more advantageous (Willis 2010).

Although the benefits of financial education programs are mixed, it is undeniable that people acquire information about personal finance from many sources, such as media advertising or, even worse, dishonest counsellors. Thus it is important to provide correct information in order to save people from relying on bad advice. As many surveys have shown, there is a positive correlation between financial literacy and social background, such as levels of income and education (Behrman et al., 2010).

The importance of promoting financial education has become widely accepted, as it is not socially acceptable for people's financial knowledge to be left to chance. Given social and psychological differences, every financial situation and economic rationality is unique, so that making people familiar with financial concepts is no easy task. It requires financial knowledge as well as teaching skills, the ability to identify learning needs and knowing how to meet them. Educational initiatives are marked by a variety of formats, (i.e. educational games, classroom-teaching, role playing or counselling), different targets (i.e. pupils or adults) and different channels (i.e. school, internet or other media).

Schools may be the ideal channel for delivering financial education. There are many reasons for making financial concepts part of compulsory education. First, it ensures equal access and favours the inclusion of disadvantaged children, who may be the most in need of financial literacy. Second, it addresses financial education to a particular phase of life, when people are most receptive. Third, school is an optimal channel from the organizational and logistical standpoint: costs are lower than through any other channel, because schools do not necessitate a specific framework and capitalize on existing educational resources and management.

Some analysts argue that, since children are too young to make their own decisions, teaching them about financial issues is ineffective, as it is unlikely to affect their behaviour

as adults despite the cost. Yet, because of a combination of social forces, nowadays children are more self-reliant, have their own money to manage and even have a strong influence on household spending. In fact, they are an important segment of the market and the target of a never-ending stream of advertisements from the age of toddlers. The variety of financial supply for youth mimics that of adults, so parents may be unable to give them good advice. And acquiring correct notions is all the more critical for young people, since their decision-making biases are likely to be accentuated by their characteristic self-confidence.

Many institutions, government agencies and authorities have been involved in financial education, and the number of financial education programs for youth has grown worldwide. In Italy, the Central Bank was one of the first institutions to focus on financial education and has undertaken several initiatives in the past decade. In fact, as noted by Ignazio Visco, the current Governor, "[…] while not a panacea, investing in financial education is an important means to perform our institutional duties: protecting savings, ensuring stability and promoting competition.[…]" (Visco, 2010).

In 2007 the Bank of Italy and the Ministry of Education started a joint program meant to incorporate financial education into school curricula, as early as primary school. During the 2008-09 school year a pilot project was carried out and improvements have been made in every subsequent edition of the program. The 2011-12 school year marked a turning point; the information collected is new in the panorama of financial education programs constituting an invaluable asset in investigating the effect of financial education programs that are broad in wider scope.

3. The program

In 2007, the Bank of Italy and the Ministry of Education, University and Research, also known as MIUR, signed a Memorandum of Understanding for an experimental program to incorporate financial education into school curricula, combining the different perspectives and expertise of the two institutions.

As the banking supervisory authority, the Bank of Italy is assigned to ensure the sound and prudent management of intermediaries, the overall stability and efficiency of the financial system and compliance with law and regulations. Consistent with the public nature

of its functions, the Bank promotes financial literacy in order to enable citizens to make informed financial decisions. Thus, the program has benefitted from the synergy between the two institutions. The two bodies bring their different know-how together and play different roles in the program, in accordance with their respective missions: MIUR provides teaching skills; the Bank expertise in banking and finance.

The agreement established several clear methodological points. Financial education is not intended as an additional, stand-alone subject but as a part of various subjects. The current teaching staff should be involved and specifically trained. The aim is to provide students with financial knowledge.

The program involves all schools nationwide. In particular, it is addressed to learners in the last two years of each school level: Grades 4 and 5 in primary school, Grades 7 and 8 in junior high school and Grades 12 and 13 in high school.

A large-scale financial education program was deemed feasible insofar as the Italian schools could define their own curricula within the broad limits set by the Ministry, in terms of general learning objectives for pupils. Participation to the program is voluntary. At the beginning of the school year, MIUR proposes the program, and schools decide whether to participate or not, and which classes could be included. The Bank then supplies teachers with the necessary resources and training. The training, which includes lectures from specialists, is intended to increase the awareness of the importance of financial literacy and instil confidence and willingness to include these notions in their classroom teaching.

International best practices suggest focusing financial education programs on issues related to the specific needs of the target group. The program's main topic is "money and transactions", an important matter that plays a major role in the market and that young people do deal with but know little about (OECD, 2012). Students should learn key financial terms, such as cash, debit and credit cards and fees, and how the different products work. Through a better understanding of the different instruments, the awareness of their rights and obligations and the precautions they should take for appropriate use, pupils can learn how to improve their own finances. The program also includes training on price stability and financial landscape, more advanced topics that are offered as optional modules. In particular,

they are intended for classes whose teachers will continue to provide financial education for a second year.

Teachers' pedagogical expertise and close relations with their pupils make them the ideal channel for delivering financial knowledge. While the Memorandum provides some guidance for teaching, in terms of number of classroom hours and practical examples tailored to children, teachers can convey the concepts in the way they deem most appropriate, so that their teaching reflects their heterogeneous background, which ranges from arts to science. In addition, teachers are required to conduct the program mainly during regular school hours and they need to develop suitable resources for their pupils based on the material the Bank of Italy offers them.

The cost of implementing such a program is substantial, although it is contained by the direct involvement of experts from the Bank in training teachers and teachers themselves in developing educational resources and providing classroom teaching. From the perspective of the schools, the introduction of new subjects to an already overcrowded compulsory curriculum requires a major effort on the part of the teachers, who have no incentive to participate other than their awareness of the importance of financial literacy. From the perspective of the banking supervisory authority, it is important to exploit its resources effectively in order to perform its institutional task of ensuring the stability and efficiency of the financial system. Given the public nature of their functions, both the Bank and MIUR must be accountable to public opinion.

In accordance with international recommendations, the Bank and MIUR have included a systematic assessment of the program from the start. Evaluation is an essential step to determine whether a program has achieved its goals, to pinpoint shortcomings and to design improvements to enhance effectiveness. Evaluation is a complex process as it takes into account the purpose and context of the program as well as the target audience.

As the program is designed to increase pupils' financial knowledge, individual learning could represent a key yardstick of its effectiveness. Empirical investigation should focus on measuring this learning, exploring its relationship to classroom activities and to the resources used. In order to do so, pencil-and-paper individual multiple choice tests were administered to pupils both before and after classroom teaching. The knowledge acquisition

was defined as the gain in scores or the difference in the percentage of correct answers between the post-classroom teaching testing session (post-tests) and the pre-classroom teaching testing session (pre-tests).

Testing was considered the appropriate way to measure the effectiveness of the program for many reasons. Italian pupils are used to multiple-choice tests: they take national statutory assessments several times during their compulsory education, and multiple-choice tests are included in these evaluations. Quizzes are convenient for collecting information from a large number of individuals and increasing comparability. Finally, the idea of being tested may increase students' sense of competition and interest in the activity.

The tests were based on international best practices and benefitted from the assistance of the National Institute for the Evaluation of the Italian School System (INVALSI). Their main focus was money and transactions, the core subject of the program. The questions had four possible answers with similar sentence structure: one correct, two distractors and a "do not know" item. The right answers could not be deduced from other questions and were placed randomly, avoiding any recognizable pattern. The tests were differentiated by school level for effort and duration: in the latest edition, the number of questions ranged from 24 for primary school to 45 for high school and the testing time went from 35 to 60 minutes.

Given the age of learners and to avoid competition among teachers, the pupils' names were not put on the test sheets. However, they contained individual data, such as date of birth and gender, in order to match each pupil's pre- and post-tests. Participants also provided self-assessments on their school performance in general and in mathematics as well as their attitudes towards money. Finally, the tests were administered by teachers under common rules to ensure the reliability of the evaluation.

In order to evaluate a program's effectiveness via pre-/post-tests, there should ideally be a comparison between intervention and control groups, where each subject should be randomly assigned to one group before the start of the treatment. However, the school environment is not a laboratory setting, and as in any field of social science it is hardly possible to set randomized field experiment as a research design.

For this financial education program, the fact that participation is voluntary prevented the creation of control groups and random assignment: teachers were willing to participate

only if their class was included as a treatment group, and the more highly motivated actively sought this learning opportunity for their pupils.

Given that teachers' involvement was fundamental, it was crucial to understand their perception of the experience. For this purpose, the program had a qualitative approach as part of its evaluation design. Teachers were asked to complete a post-program survey questionnaire, giving their assessments of training and resources, overall impressions of the activity and information concerning classes' characteristics, such as the number of pupils repeating the school year.

Even though the examination of the program constitutes a single case-study, it is one of the first of its kind. This sample permits a thorough analysis of the effectiveness of education in financial literacy and can offer indications for such programs in general.

4. Participation in the program

The program started on a pilot basis in the 2008-09 school year, in three cities (Rome, Padua and Bari) and involved primary, junior high and high schools for a total of 32 classes (Table 1).

Unless entire schools are assigned as either treatment or control groups, it is difficult to have control units uncontaminated by out-of-class conversations with pupils from the treatment classes. Since widening financial knowledge among young people is the very purpose of the program, and since teachers refused to participate as control sample only, it was accepted that all the classes interested would receive classroom teaching.

In subsequent years, the program was broadened nationwide, thanks to the active contribution of the regional branches of the Bank. Teacher training was carried out in the various regions with the strong involvement of local staff, who also had responsibility for collecting the tests. This arrangement helped to foster discussion between trainers and teachers and eased the burden of attendance on the latter.

In the 2009-10 school year, 458 classes were involved (171 primary, 172 junior high and 115 high school). The increase in participants was broadly demand-driven: many schools were eager to have more classes involved than initially planned and informal

networks among teachers favoured the extension of the program to settings not initially involved.

The 2010-11 school year saw a further increase to 774 classes: 228 primary, 219 junior high and the majority, 327, from high school, where the number grew fastest. In the 2011-12 school year 1,152 classes were engaged. The particularly strong interest from high schools was confirmed, with the participation of 639 classes. In the aftermath of the financial crisis young people's financial literacy has become more important to public opinion, and more teachers were motivated to introduce the topic.

The number of pupils involved has risen with the number of classes (Table 2). The pilot exercise in 2008-09 involved 650 pupils, after which participation increased to over 9,000, then 15,000 and, in the 2011-12 school year, to about 23,000 students.

These numbers testify that the interest in the program has exceeded expectations by far. In response to requests from schools, with the 2010-11 school year the program introduced the possibility of continuing the classroom teaching for a second year to deal with more advanced topics. Only a part of the initial sample was involved in the follow-up: teachers whose pupils must take final exams were reluctant, while others preferred to limit the financial education to a single year, in order to allow other initiatives, such as road safety or environmental education. In 2010-11, about half the classes from the previous year pursued financial education, focusing on price stability (Table 3). Then, some teachers, mostly in high schools, have preferred to teach all the modules offered at once, with the benefit of teaching with a broader perspective. Thus, in the 2011-12, the follow-up rate was lower.

The interest in the program was reflected not only in participation, but also in spontaneous drawings and compositions, especially by primary school pupils (Figure 1).

5. The effectiveness of the program

From the beginning, the test results have supported the hypothesis that the financial education program is effective. In the pilot exercise, there were significant average gains at all school levels between pre- and post- tests. The same quizzes were used in the 2009-10

school year, and pupils' performance again exhibited significant gains, similar in magnitude to the previous wave.

Taking advantage of these experiences, in the third edition the tests were enhanced. Some questions that had proved to be too easy or too hard were modified. Also, the tests were adapted to changes in financial regulation, such as the new limits on cheques, cash and bearer passbook savings accounts. The redesigned quizzes again confirmed the significant gains in financial knowledge after classroom teaching.

The information collected in the 2010-11 school year enabled a deeper methodological analysis. The internal consistency of the tests was checked by Cronbach's coefficient alphas and a Rasch analysis. The Cronbach coefficient alpha is a common measurement tool for the internal consistency or reliability of a test score, while the Rasch analysis assesses whether an exam is sufficiently reliable in measuring pupils' achievement and also provides information on how well specific quizzes work. The Cronbach coefficient signalled that the internal consistency of the tests was appropriate, with alphas higher than 0.75 for all school levels, while the Rash analysis confirmed that the tests were appropriate as a whole. These findings, teachers' suggestions and the changes in financial regulation were taken into account to adapt the 2011-12 tests.

The importance of matching individual pre- and post-tests has been clear since the pilot wave. However, reconciling this need with the requirement of anonymity was tricky. A solution was found in the 2011-12 school year, when pupils were asked to provide their gender and day and month of birth, which were enough to match their pre- and post-tests on a one-to-one basis while preserving anonymity.

The 2011-12 tests had 24 quizzes for primary school pupils, 20 on the core module and 4 on the optional ones; junior high school students had 35 questions, 29 of which were on money and transactions; high school students had a total of 50 questions, 41 of which were on the core topic. Every participant took all the quizzes, irrespective of the lessons given, and was asked to provide personal information. In some cases, classes carried out classroom teaching without completing the testing sessions (Table 4).

In the classes that went through both testing sessions, there were incomplete observations for some pupils, presumably due to illness or having moved to a different

school. Finally, a few pupils, mainly in high schools, were uncooperative, either refusing to provide their data or giving deliberately false data. All things considered, the matched pre-/post-tests sample was large, with more than 16,000 observations, half for high school students and the rest evenly shared between primary and junior high school classes (Table5).

Focusing on the questions on money and transactions in the 2011-12 school year, comparison between the pre-test and post-test scores for the matched sample showed that the training did increase financial knowledge at every school level. In particular, all the gains were positive and significantly different from zero at high levels of confidence, supporting the hypothesis that the program had improved the financial literacy of pupils of all ages (Table 6).

In the post-testing session, the core set of questions showed internal reliability, with Cronbach coefficients greater than 0.75 for all school levels. That is, the tests were reliable gauges of pupils' financial knowledge. In addition, the increase in correct responses in the post-test matched a decrease in wrong answers, not only in non-answers and "do not know" items, except among high school students, who registered only a marginal decrease in wrong answers. This could be related to the characteristics of the sub-sample: high school classes are strongly heterogeneous in curricula and some students showed lack of concern.

The program only looks at the group of individuals who receive the treatment. This type of experiment is called a one-group pre-/post-test design and is termed pre-experimental. The design requires collecting data on participants' levels of performance before and after the treatment. Inferences on the effect of the treatment are drawn from the difference between pre- and post- results on the assumption that changes are the consequence of the treatment. However, this design cannot rule out that the changes observed would have occurred even without the application of the independent variable as it does not control for alternative extraneous causal variables. It is in fact often difficult to completely dismiss rival hypotheses or explanations. The interpretation of the changes between pre-test and post-test results due to the intervention is thus subject to the caveat that it may not be causally related to it. The internal validity of any experiment may be threatened by many factors, such as testing, maturation and history. Generally, taking one test affects subsequent test results. Pupils' performance at the end of the program may differ from that at the beginning, not because of the program itself but because pupils have

acquired familiarity with the tool. Given that the Bank of Italy – MIUR program uses the same test for retesting, there is the possibility that results may be affected by a simple learning mechanism. In addition, biological and psychological changes in the students themselves could affect their performance: mere maturation could cause the variation in test scores rather than the program itself. Furthermore, events other than classroom teaching, known as history threat, could affect the participants' performance. Also, social interaction might affect the tests, such as contamination among pupils and teachers and individuals' motivation to do their best when they are part of an experiment. As noted by Cook and Campbell, "The more open the system, the more fallible will be casual inferences" (Cook and Campbell, 1979).

Although the Bank of Italy-MIUR program lacked a formal control group, the choice of administering quizzes on money and transactions to all participants created specific sub-samples to examine the robustness of the findings.

First, the sample allowed for the evaluation of longer-term retention of financial knowledge. In fact, the 2011-12 participants could be split into two subsamples: those involved during the first year and those involved in the follow-up. Since the latter had covered the core issue during the previous school year, pre-testing results on the core topic that were different from those of the peer group might highlight the retention of knowledge acquired the previous year. Focusing on the pre-testing session, the continuing pupils showed significantly higher levels of knowledge than their coevals on money and transactions (Table 6). As the tests were different from those of the previous edition, this was consistent with the fact that some of the information learned was retained after one year and it supported the effectiveness of the program.

Also, in the classes taking both tests, students could be split into three subsamples: those taking both tests, those taking only the pre-test and those taking only the post-test. Absences might be supposed random and independent of the testing, and all the students, the attendees and the absentees alike, may be supposed to have benefitted equally from classroom teaching.

For students who started the program in the 2011-12 school year, at all school levels, the post-test results of absentees from the pre-test were significantly better than the pre-test

performance of their classmates (Table 7). Because this sub-group did the test once, the score could not be due to the fact that the same tests were administered twice and the different number of correct answers strongly supported the hypothesis that the gain scores could depend mainly on classroom teaching and only marginally on the design protocol.

Several empirical studies have pointed to gender differences in financial literacy, with women showing lower levels of knowledge than men, the presumed causes ranging from cultural and social norms to self-confidence. In addition, some researchers have pointed out that males generally have better mathematical skills, which may be positively correlated with financial literacy. For Italy, studies on young learners have shown significant gender differences in attitudes towards money but not in financial literacy among preadolescents. Scholars have hypothesized that gender differences in financial literacy may emerge during high school (Rinaldi et al., 2012). A recent survey on high school students found a lower level of financial literacy among girls, but the gap tended to narrow as a result of financial education programs (Becchetti et al., 2011). As the Bank of Italy – MIUR survey included data on gender, it was possible to explore the gender gap and to investigate this hypothesis (Table 8).

The empirical evidence showed that before any training, at all school levels, boys had slightly higher levels of financial knowledge than girls and for primary and junior high school, the differences were statistically significant. After classroom teaching, however, the gender gap was significant only among junior high school students and girls actually outperformed boys. This might be interpreted as greater receptiveness to instruction on the part of preadolescent females. These findings support the importance of starting financial education in primary school, because the gender gap is already rooted in quite young children and financial education programs help to reduce the differences.

6. Conclusion

The intent of this paper was to present the Bank of Italy – MIUR financial education program, which started in the 2008-09 school year, involves students from primary, junior high and high schools and aims at increasing participants' financial knowledge through classroom teaching.

While focusing on arguments in favour of young learners' financial education, the study traces the development of the program over the years. After a brief description of participation, the study analyses the gains in financial knowledge achieved by the pupils and students involved. The empirical evidence strongly supports the effectiveness of the program: financial knowledge scores were significantly higher after the lessons than before. Since the program has been running for years, some classes repeated the tests a number of times, making it possible to gauge the retention of knowledge. The results showed that the notions acquired were retained, at least partly, over time. Finally, the empirical findings showed the existence of a gender gap in financial knowledge, which financial education programs might be able to close. Overall, the program has succeeded in increasing students' financial knowledge, even if the recipients are too young to make their own financial decisions.

The paper focuses only on scores on core set questions and it should be seen as a first, exploratory analysis. Given the lack of a control group, fully fledged causal inferences cannot be drawn. However, deeper investigations might be carried out. Further checks on the robustness of the results might be conducted taking into account the collected background variables, such as the rural or urban area where the schools are located. In addition, students also provided a self-assessment of their performance at school and this information might help shed light on the relationship between financial literacy and general scholastic skills. Furthermore, the teachers' survey might give insight into the most effective methods of financial instruction. Moreover, a multivariate approach to the analysis of gains in knowledge might be pursued; a transition matrix for each of the multiple choice questions could be a useful tool. A further step could be to investigate the extent to which the program changes learners' attitudes as regards money management, while assessing whether it succeeded in increasing financial knowledge without making students overconfident in their own skills.

Nevertheless, the evidence gathered is more than sufficient to demonstrate that classroom instruction is an effective channel for spreading financial knowledge among students. With regard to the involvement of the school system, it has emerged that providing stimulating resources and training for all participants is essential. Pupils, especially the youngest ones, need to be confronted with novel concepts; interactive and visual approaches

could facilitate learning. Investment is needed to train teachers, not only to improve their financial knowledge but also to make them self-confident as financial educators. To achieve true proficiency, however, learners need repeated sequential exposure to a discipline, and financial knowledge is no exception: financial subjects should become a permanent part of compulsory education curricula.

In conclusion, while people cannot be expected to be their own personal financial advisers, there is no doubt that young people need to have the financial literacy to cope with everyday financial matters; nor, is there any question that financial education programs at school can serve this purpose. So, it is essential to make financial education universally available in schools. In Italy, financial education has gained attention only recently, and financial education programs for young people remain a novelty. However, an increasing number of programs are being offered. Now, it is crucial to develop common strategies among policymakers and private institutions to combine efforts, enhance cooperation and coordinate future financial education programmes.

Tables and figures

Table 1

NUMBER OF CLASSES PARTICIPATING IN THE PROGRAM

Year	Primary School	Junior High School	High School	Total
2008-09	13	9	10	32
2009-10	171	172	115	458
2010-11	228	219	327	774
2011-12	245	268	639	1,152

Table 2

NUMBER OF PUPILS PARTICIPATING IN THE PROGRAM

Year	Primary School	Junior High School	High School	Total
2008-09	239	182	210	631
2009-10	3,224	3,526	2,151	8,901
2010-11	4,316	4,644	6,240	15,200
2011-12	4,899	5,681	12,287	22,867

Table 3

NUMBER OF CLASSES PARTICIPATING IN THE FOLLOW-UP

Year		Primary School	Junior High School	High School	Total
2009-10	Total	171	172	115	458
2010-11	Total	228	219	327	774
	2nd participation	85	80	73	238
2011-12	Total	245	268	639	1,152
	2nd participation	35	49	46	130

Table 4

NUMBER OF CLASSES AND PUPILS COMPLETING THE PROGRAM IN THE 2011-12 SCHOOL YEAR

	Year	Primary School	Junior High School	High School	Total
Classes	Total	245	268	639	1,152
	Pre-/post-test sessions	224	246	523	993
Pupils	Total	4,899	5,681	12,287	22,867
	Pre-/post-test sessions	4,489	5,319	10,234	20,042

Table 5

NUMBER OF PUPILS COMPLETING THE PROGRAM IN THE 2011-12 SCHOOL YEAR

	Primary School	Junior High School	High School	Total
Total	4,489	5,319	10,234	20,042
Pre-/post-tests	3,941	4,614	8,132	16,687
Only pre-test	333	417	1,330	2,080
Only post-test	215	288	772	1,275

Table 6

THE 2011-2012 TESTS ON MONEY AND TRANSACTIONS: GAINS IN FINANCIAL LITERACY

	No. obs.	Pre-test score	Post-test score	*Gain*
Primary School	3,865	38.2	63.5	25.2 ***
Pupils educated in 2011-12 (1st participation)	3,321	36.1	63.0	26.9 ***
Pupils educated in 2010-11 (2nd participation)	544	51.0	66.2	15.1 ***
Diff(1st- 2nd participation)		-14.9 ***	-3.1 ***	
Junior High School	4,530	43.0	57.5	14.5 ***
Pupils educated in 2011-12 (1st participation)	3,727	41.8	57.3	15.5 ***
Pupils educated in 2010-11 (2nd participation)	803	48.6	58.2	9.6 ***
Diff(1st- 2nd participation)		-6.8 ***	-0.9	
High School	7,885	39.4	54.6	15.2 ***
Pupils educated in 2011-12 (1st participation)	7,272	38.8	54.6	15.8 ***
Pupils educated in 2010-11 (2nd participation)	613	46.2	53.9	7.7 ***
Diff(1st- 2nd participation)		-7.4 ***	0.8	

The test for equality of means assumes unequal standard deviation between the two groups. ***, ** and * denote significance at the 1, 5 and 10 % level.

Table 7

THE 2011-2012 TESTS ON MONEY AND TRANSACTIONS: GAINS IN FINANCIAL LITERACY BY ATTENDANCE

		No. obs.	Pre-test score	Post-test score	*Gain*
Primary School	Pre-/post-tests	3,321	36.1	63.0	26.9
	Only pre-test	289	33.9	-	-
	Only post-test	178	-	60.0	-
Junior High School	Pre-/post-tests	3,727	41.8	57.3	15.5
	Only pre-test	344	40.6	-	-
	Only post-test	221	-	56.7	-
High School	Pre-/post-tests	7,272	38.8	54.6	15.8
	Only pre-test	1,152	38.7	-	-
	Only post-test	638	-	48.9	-

Table 8

THE 2011-2012 TESTS ON MONEY AND TRANSACTIONS: GAINS IN FINANCIAL LITERACY BY GENDER

	No. obs.	Pre-test score	Post-test score	*Gain*
Primary School	3,321	36.1	63.0	26.9 ***
Male	1,711	36.7	63.3	26.6 ***
Female	1,610	35.5	62.7	27.2 ***
Missing	0	-	-	-
Diff(Male-Female)		1.3 **	0.6	
Junior High School	3,727	41.8	57.3	15.5 ***
Male	1,899	42.2	56.5	14.3 ***
Female	1,826	41.4	58.2	16.8 ***
Missing	2	-	-	-
Diff(Male-Female)		0.7 *	-1.7 ***	
High School	7,272	38.8	54.6	15.8 ***
Male	3,478	38.9	54.7	15.8 ***
Female	3,783	38.7	54.6	15.8 ***
Missing	11	-	-	-
Diff(Male-Female)		0.2	0.1	

The test for equality of means assumes unequal standard deviation between the two groups. ***, ** and * denote significance at the 1, 5 and 10 % level.

Figure 1

THE GRAPHIC ARTS FROM PRIMARY SCHOOLS

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