DOES PRACTICING LITERACY SKILLS IMPROVE ACADEMIC PERFORMANCE IN FIRST-YEAR UNIVERSITY STUDENTS? RESULTS FROM A RANDOMIZED EXPERIMENT

ESTELLE BELLITY, FABRICE GILLES, YANNICK L'HORTY

Does practicing literacy skills improve academic performance in first-year university students? Results from a randomized experiment

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Estelle Bellity[*], Fabrice Gilles[†], Yannick L'Horty[‡]

Abstract

We evaluate the impact of encouraging students to practice literacy skills, as well as improvement in these skills, on academic performance in first-year university students. Several previous studies have attempted to understand drivers for academic success in university students. To our knowledge, none focus on directly analyzing the relations between such factors and students' academic performance. We used a randomized experiment based on an encouragement design with a group of first-year students in Economics and Management in two French universities. For measuring the effects of encouragement, we included an innovative pedagogical tool for practicing literacy skills via a web platform, called *Projet Voltaire*. This tool also allowed us to get a good measure of the literacy skills of the students, both at the beginning and at the end of the first term of the academic year. During the entire semester, students had the opportunity to practice literacy skills using *Projet Voltaire*. To evaluate the impact of literacy on different final grades or final exam scores, and particularly on first-year grade averages, we distinguished between two randomly selected groups of students: some were encouraged to practice literacy skills, while others were only made aware of the option. As a measure of improvement in literacy skills, we use the difference between scores on the two literacy tests. Estimating intention to treat and local average treatment effect, we show that both encouragement to practice literacy skills and an improvement in literacy test scores over the first term are positively correlated with the academic performance of first-year university students, and in particular the probability that they will complete one or both semesters of the academic year.

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[*] Estelle BELLITY, Université Paris-Est Marne-La-Vallée, FRANCE; ERUDITE and TEPP-CNRS (FR 3435), estelle.bellity@u-pem.fr .

[†]Fabrice GILLES, Université Lille 1, FRANCE; LEM-CNRS (UMR 9221) and TEPP-CNRS (FR 3435), fabrice.gilles@univ-lille1 .

[‡] Yannick L'HORTY, Université Paris-Est, FRANCE; ERUDITE and TEPP-CNRS (FR 3435), yannick.lhorty@u-pem.fr .

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1. Introduction

This paper evaluates the impact of practicing literacy skills and of measured improvement of these skills on the academic performance of first-year university students. Micro-econometric methods for policy, program and treatment effects are widely used to evaluate educational programs (Heckman and Rubinstein, 2001; Rivkin *et al.,* 2005; Heckman and Vytlacil, 2007; Dearden *et al.* 2009). On one hand, several articles already evaluate the impact of literacy on academic achievements. Most of these studies focus on elementary school and deal with the evaluation of educational programs implemented by governments to increase literacy skills, such as "No child behind" in the UK (since 2001), or "Success for All" in the US (since 2003). For instance, Machin and McNally (2008) evaluate the impact on academic achievement of elementary school students who participated in the program "the literacy hour" which is designed to support reading instruction in the UK.

On the other hand, few existing analyses focus on the relation between literacy skills and academic performance at the university level. Despite the limited data available, Delgadova (2015) reports that 40 percent of first-year university students suffer from severe problems in basic literacy skills and that these problems can be linked to their academic failure. The author relies on a qualitative analysis and descriptive statistics, but does not provide any empirical evidence for a causal effect. However, this lack of empirical evidence may deserve more attention in light of studies, such as Calmant and Hallier (2008) for France, reporting that students who leave the higher education system without receiving any degree may be more likely to be unemployed, compared to those who do finish a degree or other certificate of higher education.

In this paper, we evaluate the impact of practicing and improving literacy skills on the academic performance of first-year university students. For this purpose, we implement a randomized encouragement experiment (Duflo, Glennerster and Kremer, 2007) in a group of first-year university students. Our experiment involved all students entering the first year of university in Economics and Management over 2011-2014 at two French universities, Paris-Est Marne-La-Vallée and Lille 1. Each week of the first term of the academic year, half of the students were encouraged to improve their literacy skills through the use of an innovative educational tool, called *Projet Voltaire*, whereas the other half was not encouraged at all, although they also had access to this tool. Moreover, the *Projet Voltaire* allowed us to evaluate the literacy level of students at the beginning and at the end of the first term of the academic year, *i.e.* before and after the literacy training period. We consider a sample of 849 university students, for whom baseline administrative information is available, as well as scores on the two literacy tests, all final exam scores and first year grade averages. We then evaluate the impact both of the encouragement to practice literacy skills and of improving such skills on academic performance. Using local average treatment estimators (Imbens and Angrist, 1994; Angrist and Imbens, 1995; Angrist, Graddy and Imbens, 2000), we show that increasing literacy test scores has a positive impact on first-year academic results, whether we consider language-based disciplines or more scientific disciplines. In particular, depending on the kind of discipline we consider, learning literacy could increase academic test scores by a

half-point to one-and-a-half points. Consequently, it increases the probability of first-year university students to complete the first or the second term, and even the full academic year. Finally, encouragement to practice literacy skills had an increased benefit on students who initially tested at lower levels for literacy skills. These findings hold for both universities, Paris-Est Marne-La-Vallée and Lille 1, although student populations at the two universities are quite different.

To our knowledge, this study is the first to use a randomized experiment to analyze the role played by literacy as a driver of academic success in university students. Our results suggest that public policy goals should include improving literacy skills among university students. In particular, our findings provide additional empirical support for educational programs that have already been implemented in some countries. The remainder of the paper is organized as follows. Section 2 describes the randomized experiment design we implemented to encourage students to practice literacy skills. Section 3 presents the empirical strategy used to identify the effects of improved literacy on academic performance of first-year university students. Section 4 discusses results. Section 5 provides a check on the robustness of the results and Section 6 concludes with recommendations.

2. A randomized encouragement experiment on literacy skills practice

The randomized experiment was first carried out at University Paris-Est Marne-La-Vallée (Paris region, France). It was implemented during tutorial classes whose goal is to teach methodological skills to all first-year university students in Economics and Management. Similar tutorials take place in all French universities. The experiment began at the beginning of the first semester of the academic year, when the instructor would tell the students about an online tool – called *Projet Voltaire* – that they could use to practice literacy skills (orthography, grammar, conjugation and syntax). This tool provides seven ordered levels of exercises for improving literacy skills and includes an application that keeps track of recurring mistakes for a given user profile, thus allowing students who practice to increase their literacy skill level. Once this initial information was given to students, they received differentiated information, according to the tutorial group they belong to.

In half of the tutorial groups, teachers actively encouraged their students to use the *Projet Voltaire* tool more intensively, by following a precise and identical protocol for each of these groups. At each tutorial session, they reminded students about the importance of literacy skills, or spent a few minutes reviewing a few relevant tips and rules. They also gave detailed explanations on how to use the *Projet Voltaire* web platform and reminded students that a test score would be given for this work and would be taken into account to compute final grades for the methodology course unit. We refer to these tutorial groups as the "encouraged" groups. In the other half of tutorial groups, nothing specific was done to encourage students to practice literacy skills via the *Projet Voltaire* web platform following the initial announcement given to all students; we refer to these tutorial groups as "non-encouraged". The students were divided and tutorial groups formed based simply on alphabetical order, and

teachers were randomly assigned to tutorial groups. This assures that the assignment of students to the encouragement condition was random.

This trial was first implemented with first-year students in Economics and Management at University of Paris-Est Marne-La-Vallée for three consecutive academic years between 2011-2012 and 2013-2014. Our final sample includes 526 students entering the literacy skills training experiment for the first year (2011), for whom information from a baseline administrative survey -necessary to the evaluation - is available. The average age of the first-year university student population is 18.5. More than half are male (56.8%) and almost all are of French nationality (94.5%). They are frequently scholarship students (37.6%). In addition, they often hold a baccalaureate with a concentration in Economics and Social Science (58.6%), with a Scientific profile (29.5%), or in Sciences and Technology in Management (8%). Most live in the region around Paris, in one of several administrative departments neighboring the University area, such as Seine-et-Marne (55.6%), Seine-Saint-Denis (24.7%) or Val-de-Marne (15.2%). Moreover, just over half of them passed the baccalaureate school-leaving exam in the Seine-et-Marne department (50.4%).

This random trial was extended in 2013-2014 to first-year university students in Economics and Management at Lille University of Science and Technology (Université Lille 1), with some minor differences in implementation due to the local organization of teaching. In this portion of the study, we retained a final dataset of 323 first-year university students. This complementary random experiment allows us to verify the external validity of the results we obtained through the main experiment at University Paris-Est Marne-La-Vallée.

Our evaluation of the impact of literacy skills training on student academic achievement relies on several types of information. First, we needed access to complete information about the first and second term grades in all disciplines for the entire first-year student group in Economics and Management. The academic performance data were provided by official grade reports for the two semesters by both universities. For every student and course taken, these reports contain final grades as well as grades for the final exam and the in-class assessment component that together make up the overall course grades. In addition to the course grades, they also include the student's overall average in all courses for the semester. Next, we merged this information with data provided by the web platform tool *Projet Voltaire*, specifically extracting the scores from the two literacy tests that all students took before and after the literacy practice period. Table 1 shows that the score of the initial literacy test[4] for first-year students in Economics and Management at UPEM is on average 6.1 points (on a scale of 20). This average level is the same for the two categories of tutorial groups, which also showed no significant differences regarding variables provided by the following baseline administrative information: age, gender, nationality, type of baccalaureate, French administrative department where baccalaureate was awarded, current department of residence,

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[4] The time allowed for each of the two literacy tests is at most 45 minutes. These tests evaluate literacy skills that are supposed to be acquired by students who hold a baccalaureate.

and scholarship status. This table confirms that students were randomly assigned to the groups, independently of the type of encouragement.

Table 1. Testing for differences in sample characteristics between tutorial groups that were encouraged to practice literacy skills and those who were not; all are first-year university students in Economics and Management at University Paris-Est Marne-La-Vallée.

Characteristic	Encouraged (1)	Not encouraged (2)	Difference (1)-(2) (significance)
Score on first literacy test [a]	6.5	6.4	0.1
Age [b]	18.6	18.4	0.2
Gender (% male) [c]	56.5	57.3	-0.7
French nationality	94.3	94.7	-0.3
Scholarship student	37.8	37.4	0.4
Type of baccalaureate [c]:			
Bac ES (Economics and Social Science track)	56.8	60.8	-2.0
Bac S (Science track)	30.0	28.6	1.4
Bac STG (Technology in Management track)	9.4	6.2	3.2
Other (Literary track; foreign student)	3.7	4.4	-0.7
French department for baccalaureate [c]:			
Seine et Marne	50.2	50.7	-0.5
Seine-Saint-Denis	29.8	27.3	2.4
Val de Marne	10.4	13.2	-2.8
Other (including in the provinces or abroad)	9.3	0.4	-0.9
French department of residence [c]:			
Seine et Marne	54.5	56.8	-2.3
Seine-Saint-Denis	25.1	24.2	0.9
Val de Marne	15.4	15.0	0.4
Other (including in the provinces or abroad)	5.0	4.0	1.0

Source: randomized experiment implemented at University Paris-Est Marne-La-Vallée (Paris region, France; 2011-2014).
Field: 526 first-year students in Economics and Management entering the university in 2011-2013, for whom information from the baseline administrative survey is available, in addition to scores for the two literacy tests.
Notes: [a] score; [b] years; [c] percentage. *** (respectively ** or *) stands for significance of the difference at a 1% level (5% or 10% respectively).

Third, we consider data provided by the pedagogical tool *Projet Voltaire*. In fact, *Projet Voltaire* provides us the literacy practice time data over the experimental period (between the first and the second literacy tests), as well as the overall connection time to the web platform. These connection times include the time needed to complete the two literacy tests, as well as the time used by students to do training exercises or to read and learn specific rules in orthography, grammar, conjugation or syntax.[5] Consequently, we have two means of measuring time spent practicing literacy skills: time spent on individual training exercises and overall training time, which is the difference between the overall connection time and time spent to complete the two tests.

Such information allows us to test the efficiency of the encouragement device. Whatever the given econometric specification or the considered indicator used to measure literacy skills

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[5] The overall connection time also includes the time during which a student is connected without doing any exercises or studying literacy rules. However, this time is rather short because any user connected to the web-platform is automatically disconnected after more than a few minutes of inactivity.

practice time, Table 2 shows a positive correlation between encouragement and practice time. In other words, students who had benefited from encouragement spent more time practicing - 59 to 79 minutes more over the experimental period - than other students.

Table 2. Measured effect of receiving active encouragement on the literacy practice time for first-year university students in Economics and Management at University Paris-Est Marne-La-Vallée, considering different econometric specifications.

Literacy practice time indicator (specification)/ Explanatory variables	Indicator 1 (1)	Indicator 1 (2)	Indicator 1 (3)	Indicator 2 (1)	Indicator 2 (2)	Indicator 2 (3)
Encouragement	58.397***	58.562***	58.989***	78.801***	78.672***	79.146***
	(11.258)	(11.315)	(11.088)	(15.300)	(15.354)	(14.934)
Score on first literacy test		-1.984	-6.869***		1.555	-5.045
		(2.347)	(2.482)		(3.245)	(3.423)
Age			-0.439			-0.502
			(1.832)			(2.411)
Gender (% male)			-68.015***			-94.006***
			(12.287)			(16.497)
Scholarship student			18.374			26.752
			(12.646)			(17.014)
Scientific Baccalaureate			11.720			18.671
			(11.967)			(16.299)
			-33.831			-43.384
			(22.258)			(26.476)
Other baccalaureate			-55.644**			-67.836**
			(22.798)			(28.668)
Intercept	71.983***	84.816***	157.745***	107.493***	97.437***	193.506***
	(7.095)	(17.262)	(40.886)	(9.982)	(23.341)	(54.727)
Observations	526	526	526	526	526	526
R2	0.045	0.046	0.121	0.045	0.045	0.123
F	26.91	13.50	11.34	26.53	14.18	12.35

Source: randomized experiment implemented at University Paris-Est Marne-La-Vallée (Paris region, France; 2011-2014).
Field: 526 first-year students in Economics and Management entering the university in 2011-2013, for whom information from the baseline administrative survey is available, in addition to scores for the two literacy tests.
Notes: effect of encouragement on time to literacy practice (OLS estimator). Robust standard errors within parentheses. Time to practice literacy: indicator 1 = indicator provided by platform Projet Voltaire; indicator 2 = overall time spent using platform Projet Voltaire - duration of the 1st literacy evaluation - duration of the 2nd literacy evaluation. Explanatory variables: score on the first literacy test, student age; student gender (reference=female); scholarship student; baccalaureate (reference= baccalaureate ES, Economics and Social Science track); baccalaureate with merit (reference= baccalaureate without merit). Robust standard errors. *** (respectively ** or *) stands for significance at a 1% level (respectively a 5% or 10%).
Reading: at a 1 percent level, and considering the first time indicator for literacy training, encouraging students to practice literacy skills implies an increase in literacy practice time of about one hour for first-year students in Economics and Management at University Paris-Est Marne-La-Vallée.

Finally, at the end of the first semester and before final exams took place, the period for practicing literacy skills was closed and a second literacy test was administered to all students. This second literacy test allows us to build an indicator to measure the increase in literacy skills, namely the difference between the scores on the two literacy tests. Tables A1 and A2 in the appendix show a positive correlation between the increase in literacy test scores and the amount of time students spent practicing literacy skills.

3. Identification

We use our randomized experiment to evaluate the impact of literacy skills on the academic performance of first-year university students in Economics and Management.

Using the framework of the Rubin Causal Model (Rubin, 1974), hereafter RCM, we identify the causal effect using an instrumental variable estimation strategy, following Angrist, Imbens and Rubin (1996). Y_i is the outcome variable. It represents the grade for the final exam, the in-class component or the overall course grade for any course taken by student i in the first year of the Economics and Management program; it may also refer to whether student i completes the academic period in question (*i.e.,* the first or second semester or the full academic year). T_i is the treatment, and refers to varying the literacy skill level as measured by the two literacy test scores. We first consider T_i as taking only two values: either there is an increase in the literacy level ($T_i=1$, literacy score is greater for the second than for the first test) or not ($T_i=0$). We then evaluate the impact of increasing the literacy level on first-year students' final exam scores or final grades (for instance) in Economics and Management (*average treatment effect*):

$$ATE=E(Y_{1i} - Y_{0i})$$

Where Y_{1i} (or respectively Y_{0i}) is the final exam score in the discipline in question if there is an increase in literacy test scores (or in absence of any increase, respectively). However, the treatment – increasing literacy skills or not – is endogenous: there are a lot of observed and unobserved variables that affect both the outcome and treatment variables. Hence, T_i is not randomly assigned. One way to identify ATE is to consider instrumental variables estimation. We thus need an instrument Z_i, *i.e.* a variable that is correlated with T_i, but not with the error term of the equation that describes outcome Y_i. Finding such a variable is difficult.

A randomized experiment makes it possible to solve this problem (Duflo *et al.*, 2007). Indeed, the encouragement design that was adopted in our experiment provides a valid instrument for increasing the literacy test score (or not) between the beginning and the end of the first term. In other words, whether a student is encouraged to practice literacy skills ($Z_i=1$) or not ($Z_i=0$) is assigned randomly.

Nevertheless, within the framework of the RCM and as shown in Angrist *et al.* (1996), the instrumental variables estimator identifies the effect of increasing literacy skills only for compliers, *i.e.* the university students whose probability of improving their literacy skill level increases if they are encouraged, in comparison to a situation where they are not encouraged. This refers to the *local average treatment effect* (Imbens and Angrist, 1994):

$$LATE = E(Y_{1i} - Y_{0i}|c_i) = \frac{E(Y_i|Z_i = 1) - E(Y_i|Z_i = 0)}{E(T_i|Z_i = 1) - E(T_i|Z_i = 0)}$$

Where c_i corresponds to students for whom the treatment effect is computed, i.e. those who comply with the encouragement and increase their time practicing literacy skills if they are in the encouraged group, and $\Pr(T_1 - T_0) = E(T_i|Z_i = 1) - E(T_i|Z_i = 0)$ is the percentage of compliers in the whole population (T_1 is the value of treatment if Z=1 and T_0 is that corresponding to Z=0). Finally, $E(Y_i|Z_i = 1) - E(Y_i|Z_i = 0)$ is the effect of encouragement to practice literacy skills on the academic performance of first-year university students in Economics and Management (intention to treat). LATE responds to the following questions: by how many points does a student's final grade for a given course increase if the student's literacy skills improve? What is the impact on the probability for students to complete the first, the second term or the whole academic year if literacy levels are raised?

Up until now, we have considered a binary treatment (i.e., improving literacy skills or not). In practice, however, what we observe is the variation in the two literacy test scores for each student, which means the treatment has a variable intensity. According to Angrist and Imbens (1995) who considered a discrete ordered treatment, the local average treatment effect is still the following:

$$LATE = \frac{E(Y_i|Z_i = 1) - E(Y_i|Z_i = 0)}{E(T_i|Z_i = 1) - E(T_i|Z_i = 0)} = \sum_{j=1}^{J} \omega_j E\left(Y_j - Y_{j-1}|T_1 \geq j > T_0\right)$$

$$\text{with} \quad \omega_j = \frac{\Pr(T_1 \geq j > T_0)}{\sum_{j=1}^{J} \Pr(T_1 \geq j > T_0)}$$

In this case, for the final grade in a given course, the Wald estimator is an average of effects evaluated for different improvement (variation) intensities in the literacy test scores, weighted by the percentage of the relevant population for the given treatment intensity. Angrist, Graddy and Imbens (2000) generalize this result in the case of a continuous treatment. LATE then corresponds to the effect of a variation in literacy skills on academic performance for the university students in our study: by how many points does a final grade for a given course increase if the variation in the literacy test scores increases by 1 point? What is the impact on the probability for students to complete the first or the second semester if literacy levels are raised, and by how many percentage points does this probability increase or decrease?

4. Effects of improving literacy on academic performance in university students

In this section, we begin by presenting results from the randomized experiment that was implemented at University Paris-Est Marne-La-Vallée. Next, we estimate the effects of practicing literacy skills for different subpopulations.

4.1. First results

The main results of our randomized trial are presented in Table 3a and 3b. Effects of both encouragement and measured improvement in literacy skills are reported.[6]

First of all, encouraging students to practice literacy skills raises their scores in several disciplines, ranging from language-based disciplines (e.g., English as a foreign language), to somewhat formalized subjects (introduction to economics or to management), and even very formal subjects (introduction to microeconomics; mathematics or statistics). Final exam scores and final course grades are particularly impacted by literacy encouragement (Table 3a).

Second, the same kinds of results are observed when considering the effect of increased scores on the literacy test. More precisely, improving a student's literacy test score by one additional point implies an increase of 0.5 to 1.0 point (on a scale of 20) in the final exam score, the in-class assessment component or the final grade for a given course. This increase is larger for more scientific or formalized disciplines (0.8-1.0 point) than for other subjects (0.5-0.6 point). For instance, one additional point in the improvement measured between literacy test scores raises the final exam score in mathematics by 0.836 point, and the final grade in microeconomics by 0.769 point, whereas it raises the final exam grade in introduction to economics by 0.552 point and the in-class grade component in management by 0.494 (Table 3a). We obtain similar results if we add baseline administrative variables as explanatory variables, with results that are even more frequently significant.[7]

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[6] Only significant results are displayed in Table 3. Tables A3 to A6 in the appendix include detailed complete results.

[7] This result was expected because adding relevant explanatory variables reduces the residual sum of squares and thus the standard errors of the estimated coefficients. In particular, at a 10 percent level, one additional point in the improvement measured between literacy test scores would increase the average grade for module 1 of semester 2 by 0.499, and increase Semester 2 grade averages by 0.287 point.

Table 3a. Evaluation of the impact of the encouragement to literacy learning, or of varying literacy level on academic performance for first-year university students in Economic and Management at university Paris-Est Marne-La-Vallée.

Discipline	Introduction to economics (FE)	Introduction to management (CA)	Mathematics (FE)	Introduction to Microeconomics (GPA)	Introduction to Microeconomic (CA)	Introduction to Microeconomics (FE)	Financial economics (GPA)	Financial economics (CA)	Statistics and computer science (GPA)	Statistics and computer science (FE)	English (Semester 2) (GPA)
Model	Effect of encouragement to literacy learning (Intention To treat, ITT)										
Without baseline variables	0.708** (0.335)	0.642*** (0.215)	1.067** (0.443)	1.082***(a) (0.406)	0.838** (0.392)	0.665 (0.413)	0.587 (0.385)	0.607 (0.379)	0.875** (0.369)	0.448 (0.396)	0.384* (0.230)
With baseline variables	0.683** (0.313)	0.627*** (0.206)	1.036*** (0.387)	1.048*** (0.367)	0.954*** (0.366)	0.828** (0.396)	0.619* (0.353)	0.728** (0.360)	0.807** (0.324)	0.641* (0.365)	0.477** (0.206)
Modèl	Effect of varying literacy test scores (Local Average Treatment Effect, LATE)										
Without baseline variables	0.581** (0.227)	0.511*** (0.173)	0.879***(b) (0.343)	1.032*** (0.376)	0.845** (0.402)	0.690* (0.420)	0.558* (0.337)	0.578* (0.352)	0.840** (0.335)	0.391 (0.519)	0.600* (0.353)
With baseline variables	0.552** (0.253)	0.494*** (0.167)	0.836*** (0.298)	0.997*** (0.356)	0.867** (0.353)	0.769** (0.368)	0.573* (0.308)	0.640** (0.316)	0.769*** (0.297)	0.607* (0.330)	0.479** (0.231)

Source: randomized experiment implemented in University Paris-Est Marne-La-Vallée (Paris region, France; 2011-2014) and Tables A3 to A6 (appendix).

Field: 526 first-year students in Economics and Management entering the university in 2011-2013, for whom information from the baseline administrative survey is available, in addition to scores for the two literacy tests..

Notes: effect of encouragement to literacy learning (*intention to treat*; OLS estimator) or of varying literacy test score (*local average treatment effect*; Wald estimator). Included explanatory variables: score to the first literacy test; age of the student; the student is a man; scholarship student; kind of baccalaureate (reference= Economics and Social Science stream). Robust standard errors within parentheses. For a considered discipline, FE stands for final exam, CA for continuous assessment, and GPA for grade point average, computed as the average of both the scores obtained to both FE and CA. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.

Reading: *(a)* at a 5 percent level, encouraging to literacy practice increases by 1.082 points the score to the grade point average in introduction to microeconomics for first-year university students in Economics and Management stream at university Paris-Est Marne-La-Vallée (Paris region, France). *(b)* At a 5 percent level, an increase of 1 point in the difference between the second and the first literacy test scores induces a rise of 0.879 point in the score of the final exam in Mathematics for first-year university students in Economics and Management stream at university Paris-Est Marne-La-Vallée (Paris region, France).

Table 3b. Evaluation of the impact of the encouragement to literacy learning, or of increasing literacy level on the probability of achieving semester or academic year for first-year university students in Economic and Management. *Marginal effects.*

Discipline	Academic Year	First Semester	Second Semester
Model	Effect of encouragement to literacy learning (Intention To treat, ITT)		
Without baseline variables	0.070 (0.137)	0.056 (0.214)	0.083* (0.071)
With baseline variables	0.088***(a)* (0.040)	0.062 (0.116)	0.086* (0.051)
Model	Effect of varying literacy test scores (Local Average Treatment Effect, LATE)		
Without baseline variables	0.068** (0.024)	0.045 (0.151)	0.071*** (0.002)
With baseline variables	0.073***(b)* (<0.001)	0.048** (0.041)	0.068*** (0.003)

Source: randomized experiment implemented in University Paris-Est Marne-La-Vallée (Paris region, France; 2011-2014).
Field: 526 first-year university students in Economics and Management, entering the literacy learning device for the first year, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.
Notes: effect of encouragement to literacy learning (*intention to treat*; probit estimator) or of varying literacy test score (*local average treatment effect*; probit instrumental variable estimator). Marginal effects. Included explanatory variables: score to the first literacy test; age of the student; the student is a man; scholarship student; kind of baccalaureate (reference= Economics and Social Science stream). P-value within parentheses. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.
Reading: *(a)* at a 5 percent level, encouraging to literacy practice increases by 8.8 percentage points the probability to achieve first-year university for students in Economics and Management stream at university Paris-Est Marne-La-Vallée (Paris region, France). *(b)* At a 1 percent level, an increase of 1 point in the difference between the second and the first literacy test scores induces a rise of 7.3 percentage points the probability to achieve first-year university for students in Economics and Management stream at university Paris-Est Marne-La-Vallée (Paris region, France)

Finally, the above findings suggest greater chances of students completing the first year of university. As shown in Tables A3-A6 in the appendix, first-year grade averages do not change through the implementation of the encouragement device to practice literacy skills. However, Table 8b shows that encouraging students to practice literacy skills increases the probability of their completing the second term of the first year by 8.5 percentage points, and the full year by 8.8 percentage points, although there is no observable effect on the probability to complete the first term. Further, each additional point in the improvement measured between literacy test scores raises the probability for the students to complete their first year at university by 6.8 to 7.3 percentage points.

4.2 Heterogeneous treatment effects

In Section 4.1, we show that raising literacy skills helps in increasing achievement test scores for first-year university students in Economics and Management stream. These impacts can differ if we consider different subpopulations. In fact, Table 4 shows that initial literacy test score is not the same for some subpopulations of students. In particular, initial literacy test score is on average smaller among male students than among female students (6.0/20 *vs.* 7.2/20). As well, initial literacy test score is on average smaller among students who hold a baccalaureate without any merit, honors or distinction that among other students (6.0/20 *vs.* about 7.4/20). Finally, there seems to be no differences in average initial literacy test scores between students whose mother tongue is the French language and other students. Hence, it may be interesting to see whether or not the encouragement device is more efficient for some subpopulations than for others.

Table 4. Score to the first written literacy test for first-year university students in Economics and Management at university Paris-Est Marne-La-Vallée. *Considering different kinds of populations*.

Sub-sample	Number of students	Average	Standard deviation
All students	526	6.5	2.4
Gender:			
Men	299	6.0	2.3
Women	227	7.1	2.5
Origin:			
French	315	6.6	2.4
Foreign	168	6.4	2.5
Baccalauréat:			
With merit, honours or distinction (pass 60%-70%, pass 70%-80%, pass 80% upwards	246	7.4	2.4
Pass 50%-60%	182	6.0	2.1
Repeat session	74	5.6	2.3
Repeat a year	24	6.1	2.6
Pass 50%-60%, repeat session, or repeat a year)	280	5.9	2.2

Source: randomized experiment implemented in University Paris-Est Marne-La-Vallée (Paris region, France; 2011-2014).
Field: 526 first-year university students in Economics and Management, entering the literacy learning device for the first year, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.
Note: score.

First, Tables 5a and 5b show that positive impacts of encouragement and of increasing literacy skills on academic performance are mainly due to improvements among male students. The effects on female students are much smaller.[8] Thus, the encouragement device seems to have preferentially benefited students whose literacy skills were initially weaker, *i.e.* male students.

Second, if we distinguish students according to their native language (French in contrast to any other language), we see that both encouragement and increasing literacy skills have different impacts on these subpopulations. More precisely, positive effects were larger for students whose mother tongue is French; moreover, they do not involve the same disciplines (Tables 6a and 6b).[9]

Third, Tables 7a, 7b, and 7c display results for three different subpopulations of students, depending on whether their baccalaureate was awarded with "merit, honors or distinction", or awarded without any distinction or not awarded. Although students who hold a baccalaureate without honors demonstrate lower initial literacy skills than other students, the increase in literacy test scores has a positive impact on academic performance for the three subpopulations. However, positive effects do not involve the same disciplines and they are somewhat larger for students who earned their baccalaureate without honors than for other students.[10]

Fourth, as Tables 5, 6 and 7 demonstrate, certain effects are actually negative, and may appear counter-intuitive given the overall impacts discussed above. For instance, for female students specifically, benefiting from encouragement negatively impacts grades in Management for example (considering the final exam and the final course grade). This pattern may be interpreted as a lock-in effect: when students spend time practicing literacy skills, they do not

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[8] Regardless of the experimental conditions received by students, female students spent more time practicing literacy skills than male students (161 to 230 minutes *vs.* 105 to 150 minutes, depending on the indicator used to measure practice time). Literacy test scores also increased more for female students than for males (+4.0 *vs.* +2.5 points). However, as a consequence of encouragement, literacy practice time increases more among males than among female students (+65 to +92 minutes vs. +48 to 60 minutes, depending on the indicator used for practice time). Hence, literacy test score increased more among male than among female students (+1.4 *vs.* +1 point) for students assigned to encouragement. Detailed results for male and female students and all disciplines are available on request.

[9] While students whose native language is not French spent more time practicing literacy skills than native French-speaking students when neither benefited from any encouragement, practice time increases more among students whose first language is not French language than among native French-speaking students (+97 to +113 minutes vs. +38 to +60 minutes, depending on the indicator used). In spite of this, the increase in literacy test scores was only slightly larger among students whose first language is not French language (+3.6 vs. +3.1 points). Detailed results for these two types of populations and all disciplines are available on request.

[10] Regardless of the experimental conditions they were assigned to, students who held a baccalaureate with merit, honors or distinction spent more time practicing literacy skills. Thus literacy test score increases more for these students than for others (+3.8 vs. +2.6 points). Nevertheless, time practicing literacy skills increases more among students who earned a baccalaureate without honors than among other students (+68 to 95 minutes vs. +46 to 57 minutes, depending on the indicator used). Hence, when both categories of students are assigned to encouragement , literacy test scores increased more among students who hold a baccalaureate with a lower score than among those holding a baccalaureate with merit, honors or distinction (+1,5 vs. +0,7 point). Detailed results for all disciplines are available on request.

spend the time on their homework in other subjects (like Economics or Management). Thus, for some disciplines, the encouragement device could have led to some negative effects. However, these results are often barely significant (here, at a 10 percent level), particularly when considering ** the effects of improving literacy test scores**. Hence, lock-in effects may have appeared, but their relevance seems to be very limited.

Table 5a. Evaluation of the impact of the encouragement to literacy learning, or of varying literacy level on academic performance for first-year university students in Economic and Management at university Paris-Est Marne-La-Vallée. *Considered sample: male students.*

Discipline	Introduction to Economics (FE)	Introduction to management (GPA)	Introduction to management (CA)	Mathematics (GPA)	Mathematics (FE)	Introduction to Microeconomics(GPA)	Introduction to microeconomics(CA)	Introduction to macroeconomics (GPA)	Economics and Finance (GPA)	Economics and finance (CA)	Economics and finance (FE)	General firm policy (F)	Statistics and computer scie (F)
Model	Effect of encouragement to literacy learning (Intention To treat, ITT)												
Without baseline variables	0.777*	0.803***	1.017***	0.860	1.420***(a)	1.440***	0.870*	0.946*	1.258**	0.950*	0.584	0.859**	1.243**
	(0.335)	(0.304)	(0.287)	(0.542)	(0.406)	(0.525)	(0.510)	(0.500)	(0.519)	(0.488)	(0.487)	(0.429)	(0.529)
With baseline variables	0.727***	0.861***	1.009***	0.920**	1.471***	1.428***	1.014**	0.871**	1.270***	1.000**	0.772*	0.794**	1.100**
	(0.283)	(0.297)	(0.291)	(0.458)	(0.525)	(0.484)	(0.495)	(0.446)	(0.480)	(0.490)	(0.466)	(0.397)	(0.442)
Model	Effect of varying literacy test scores (Local Average Treatment Effect, LATE)												
Without baseline variables	0.585*	0.569***(b)	0.723***	0.618*	1.051**	1.249***	0.832*	0.801**	1.046**	0.828*	0.570	0.731**	1.077**
	(0.342)	(0.211)	(0.228)	(0.365)	(0.425)	(0.451)	(0.484)	(0.393)	(0.423)	(0.427)	(472)	(0.353)	(0.436)
With baseline variables	0.617**	0.591***	0.702***	0.659**	1.072***	1.243***	0.929**	0.750**	1.051***	0.848**	0,716*	0.687**	0.970***
	(0.314)	(0.202)	(0.220)	(0.310)	(0.374)	(0.439)	(0.469)	(0.363)	(0.404)	(0.418)	(0,440)	(0.339)	(0.384)

Source: randomized experiment implemented in University Paris-Est Marne-La-Vallée (Paris region, France; 2011-2014).

Field: 299 first-year university students in Economics and Management, entering the literacy learning device for the first year, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.

Notes: effect of encouragement to literacy learning (*intention to treat*; OLS estimator) or of varying literacy test score (*local average treatment effect*; Wald estimator). Included explanatory variables: score to the first literacy test; age of the student; the student is a man; scholarship student; kind of Economics and Social Science stream). Robust standard errors within parentheses. For a considered discipline, FE stands for final exam, CA for continuous assessment, and GPA for grade point average, computed as the average of both the scores obtained to both FE and CA. *** (respecti significance at 1% (respectively at 5% or 10%) level.

Reading: *(a)* at a 1 percent level, encouraging to literacy practice using platform *Projet Voltaire* increases by 1.420 point the score to the final exam in mathematics for first-year university male students in Economics and Management stream at university Paris-Est Marne-La-Vallée (Paris regi percent level, an increase of 1 point in the difference between the second and the first literacy test scores induces a rise of 0.569 point in the score to the final exam in introduction to management for first-year university students in Economics and Management stream at university Paris-Est Marne-La

Table 5b. Evaluation of the impact of the encouragement to literacy learning, or of varying literacy level on academic performance for first-year university students in Economic and Management at university Paris-Est Marne-La-Vallée. *Considered sample: female students.*

Discipline	Introduction to Management (GPA)	Introduction to Management (FE)	Methodology (CA)	Introduction to Microeconomics (FE)	Statistics and computer science (CA)
Model	Effect of encouragement to literacy learning (Intention To treat, ITT)				
Without baseline variables	-0.666**(a)	-1.437***	0.410	0.827	0.665*
	(0.329)	(0.444)	(0.283)	(598)	(0.397)
With baseline variables	-0.698**	-1.511***	0.450*	1.058*	0.654*
	(0.297)	(0.415)	(0.297)	(0.615)	(0.386)
Model	Effect of varying literacy test scores (Local Average Treatment Effect, LATE)				
Without baseline variables	-0.661	-1.426*(b)	0.394	0.835	0.606
	(0.472)	(0.796)	(0.283)	(0.635)	(0.395)
With baseline variables	-0.669	-1.449*	0.419	0.967	0.553
	(0.433)	(0.752)	(0.260)	(0 .603)	(0.345)

Source: randomized experiment implemented in University Paris-Est Marne-La-Vallée (Paris region, France; 2011-2014).

Field: 227 first-year university students in Economics and Management, entering the literacy learning device for the first year, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.

Notes: effect of encouragement to literacy learning (*intention to treat*; OLS estimator) or of varying literacy test score (*local average treatment effect*; Wald estimator). Included explanatory variables: score to the first literacy test; age of the student; the student is a man; scholarship student; kind of baccalaureate (reference= Economics and Social Science stream). Robust standard errors within parentheses. For a considered discipline, FE stands for final exam, CA for continuous assessment, and GPA for grade point average, computed as the average of both the scores obtained to both FE and CA. *** (respectively ** and *) stands for significance at 1% (respectively at 5% or 10%) level.

Reading: *(a)* at a 5 percent level, encouraging to literacy practice using platform *Projet Voltaire* decreases by 0.666 point the score to the final exam in introduction to management first-year university female students in Economics and Management stream at university Paris-Est Marne-La-Vallée (Paris region, France). *(b)* At a 10 percent level, an increase of 1 point in the difference between the second and the first literacy test scores induces a decrease of 1.426 point in the score to the final exam of introduction to management for first-year university female students in Economics and Management stream at university Paris-Est Marne-La-Vallée (Paris region, France).

Table 6a. Evaluation of the impact of the encouragement to literacy learning, or of varying literacy level on academic performance for first-year university students in Economic and Management at university Paris-Est Marne-La-Vallée. *Considered sample: students whose country of origin is France.*

Discipline	Introduction to Management (CA)	Mathematics (FE)	Dissertation	Introduction to Microeconomics(GPA)	Introduction to Microeconomics(CC)	Introduction to Microeconomics(FE)	Financial economics (CA)	Principles Of law	English language (Semester 2)
Modèl	Effect of encouragement to literacy learning (Intention To treat, ITT)								
Without baseline variables	0.730** (0.267)	1.084*(a) (0.570)	-0.463* (0.255)	1.001* (0.510)	0.831* (0.490)	0.619 (0.504)	0.630 (0.472)	0.279 (0.294)	0.252 (0.278)
With baseline variables	0.738*** (0.263)	1.186** (0.498)	-0.370* (0.207)	1.138*** (0.453)	1.155*** (0.456)	0.954** (0.476)	0.894** (0.448)	0.548* (0.301)	0.419* (0.254)
Modèl	Effect of varying literacy test scores (Local Average Treatment Effect, LATE)								
Without baseline variables	0.790***(b) (0.354)	1.245* (0.652)	-0.530 (0.404)	1.269* (0.671)	1.105 (0.722)	0.843 (0.704)	0.752 (0.568)	0.409 (0.434)	0.362 (0.416)
With baseline variables	0.727*** (0.305)	1.197** (0.522)	-0.380 (0.270)	1.249** (0.557)	1.185** (0.561)	0.968* (0.536)	0.881* (0.472)	0.590* (0.347)	0.461 (0.312)

Source: randomized experiment implemented in University Paris-Est Marne-La-Vallée (Paris region, France; 2011-2014).
Field: 315 first-year university students in Economics and Management entering the literacy learning device for the first year, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.
Notes: effect of encouragement to literacy learning (*intention to treat*; OLS estimator) or of varying literacy test score (*local average treatment effect*; Wald estimator). Included explanatory variables: score to the first literacy test; age of the student; the student is a man; scholarship student; kind of baccalaureate (reference= Economics and Social Science stream). Robust standard errors within parentheses. For a considered discipline, FE stands for final exam, CA for continuous assessment, and GPA for grade point average, computed as the average of both the scores obtained to both FE and CA. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.
Reading: *(a)* at a 10 percent level, encouraging to literacy practice increases by 1.084 point the score to the final exam in Mathematics microeconomics for (originating from France) first-year university students in Economics and Management stream at university Paris-Est Marne-La-Vallée (Paris region, France). *(b)* At a 5 percent level, an increase of 1 point in the difference between the second and the first literacy test scores induces a rise of 0.790 point in the score to continuous assessment in introduction to management for (originating from France) first-year university students in Economics and Management stream at university Paris-Est Marne-La-Vallée (Paris region, France).

Table 6b. Evaluation of the impact of the encouragement to literacy learning, or of varying literacy level on academic performance for first-year university students in Economic and Management at university Paris-Est Marne-La-Vallée. *Considered sample: students whose country of origin is NOT France.*

Discipline	Introduction to Economics (FE)	Introduction to Microeconomics (GPA)	Statistics and Computer science(GPA)	Statistics and Computer science(FE)	Principles of law	English language (Semester 2)
Model	Effect of encouragement to literacy learning (Intention To treat, ITT)					
Without baseline variables	1.643**(a) (0.606)	1.068 (0.725)	1.413** (0.638)	1.355** (0.684)	-0.811* (0.349)	0.704* (0.422)
With baseline variables	1.503*** (0.568)	0.692 (0.661)	1.064* (0.553)	1.313** (0.626)	-0.792* (0.351)	0.801** (0.345)
Model	Effect of varying literacy test scores (Local Average Treatment Effect, LATE)					
Without baseline variables	0.966*** (0.367)	0.653* (0.392)	0.868** (0.349)	0.932**(b) (0.430)	-0.576* (0.309)	0.528 (0.334)
With baseline variables	0.959*** (0.383)	0.462 (0.397)	0.705** (0.334)	0.908** (0.402)	-0.580* (0.307)	0.624* (0.327)

Source: randomized experiment implemented in University Paris-Est Marne-La-Vallée (Paris region, France; 2011-2014).
Field: 168 first-year university students in Economics and Management, entering the literacy learning device for the first year, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.
Notes: effect of encouragement to literacy learning (*intention to treat*; OLS estimator) or of varying literacy test score (*local average treatment effect*; Wald estimator). Included explanatory variables: score to the first literacy test; age of the student; the student is a man; scholarship student; kind of baccalaureate (reference= Economics and Social Science stream). Robust standard errors within parentheses. For a considered discipline, FE stands for final exam, CA for continuous assessment, and GPA for grade point average, computed as the average of both the scores obtained to both FE and CA. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.
Reading: *(a)* at a 5 percent level, encouraging to literacy practice using platform *Projet Voltaire* increases by 1.643 point in the score of the final exam in introduction to economics for first-year university students (not originating from France) in Economics and Management stream at university Paris-Est Marne-La-Vallée (Paris region, France). *(b)* At a 5

Table 7a. Evaluation of the impact of the encouragement to literacy learning, or of varying literacy level on academic performance for first-year university students in Economic and Management at university Paris-Est Marne-La-Vallée. *Considered sample: students who hold a baccalaureate with merit, honors or distinction.*

Discipline	Introduction to Management (CA)	Mathematics (FE)	Methodology (CA)	Introduction to Microeconomics (GPA)	Introduction to Microeconomics (CA)	Introduction to Microeconomics (CT)	Statistics and computer science(GPA)	Statistics and computer science (CA)	Statistics and computer science (FE)	English language (Semester 2)
Model	Effect of encouragement to literacy learning (Intention To treat, ITT)									
Without baseline variables	0.557*	1.070*	0.471*	1.512**	1.459**	1.533**(a)	1.246**	0.828*	1.023*	0.652**
	(0.297)	(0.643)	(0.277)	(0.607)	(0.568)	(0.624)	(0.525)	(0.426)	(0.588)	(0.299)
With baseline variables	0.569**	0.923*	0.542**	1.515***	1.376***	1.581***	1.106**	0.721*	1.023*	0.649**
	(0.282)	(0.571)	(0.262)	(0.569)	(0.540)	(0.615)	(0.485)	(0.397)	(0.551)	(0.271)
Model	Effect of varying literacy test scores (Local Average Treatment Effect, LATE)									
With baseline variables	0.594*(b)	1.153	0.493*	2.305	2.054	2.461	1.919	1.174	1.676	1.072
	(0.339)	(0.718)	(0.296)	(1.406)	(1.266)	(1.646)	(1.193)	(0.837)	(1.261)	(1.876)
Avec variables baseline	0.589*	0.955*	0.533**	2.245*	1.782*	2.159*	1.650*	0.901	1.373	0.956
	(0.321)	(0.586)	(0.274)	(1.286)	(1.011)	(1.214)	(0.953)	(0.596)	(0.851)	(0.684)

Source: randomized experiment implemented in University Paris-Est Marne-La-Vallée (Paris region, France; 2011-2014). .
Field: 246 first-year university students in Economics and Management, entering the literacy learning device for the first year, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.
Notes: effect of encouragement to literacy learning (*intention to treat*; OLS estimator) or of varying literacy test score (*local average treatment effect*; Wald estimator). Included explanatory variables: score to the first literacy test; age of the student; the student is a man; scholarship student; kind of baccalaureate (reference= Economics and Social Science stream). Robust standard errors within parentheses. For a considered discipline, FE stands for final exam, CA for continuous assessment, and GPA for grade point average, computed as the average of both the scores obtained to both FE and CA. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.
Reading: *(a)* at a 5 percent level, encouraging to literacy practice increases by 1.533 point the score to the final exam in introduction to microeconomics for first-year university students in Economics and Management stream at university Paris-Est Marne-La-Vallée (Paris region, France). *(b)* At a 10 percent level, an increase of 1 point in the difference between the second and the first literacy test scores induces a rise of 0.594 point in the score of the continuous assessment in introduction to management for first-year university students in Economics and Management stream at university Paris-Est Marne-La-Vallée (Paris region, France).

Table 7b. Evaluation of the impact of the encouragement to literacy learning, or of varying literacy level on academic performance for first-year university students in Economic and Management at university Paris-Est Marne-La-Vallée. *Considered sample: students who hold a baccalaureate without merit, honors or distinction.*

Note	Introduction to Economics (FE)	Introduction to Management (CA)	Mathematics (GPA)	Mathematics (FE)	Introduction to Microeconomics(GPA)	Financial economics (GPA)	Financial economics (CA)
Model	Effect of encouragement to literacy learning (Intention To treat, ITT)						
Without baseline variables	1.159***(a)	0.723**	1.098*	1.098*	0.777	0.818*	0.712
	(0.423)	(0.287)	(0.571)	(0.571)	(0.493)	(0.470)	(0.460)
With baseline variables	1.117***	0.700***	0.727*	1.167**	0.823*	0.848*	0.758*
	(0.397)	(0.288)	(0.436)	(0.502)	(0.443)	(0.442)	(0.463)
Model	Effect of varying literacy test scores (Local Average Treatment Effect, LATE)						
Without baseline variables	0.788***	0.468**	0.457	0.741**(b)	0.559*	0.596*	0.528
	(0.319)	(0.193)	(0.320)	(0.358)	(0.336)	(0.331)	(343)
With baseline variables	0.736***	0.449**	0.469*	0.760**	0.585*	0.600**	0.545*
	(0.285)	(0.188)	(0.267)	(0.311)	(0.310)	(0.307)	(0.333)

Source: randomized experiment implemented in University Paris-Est Marne-La-Vallée (Paris region, France; 2011-2014).
Field: 280 first-year university students in Economics and Management, entering the literacy learning device for the first year, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.
Notes: effect of encouragement to literacy learning (*intention to treat*; OLS estimator) or of varying literacy test score (*local average treatment effect*; Wald estimator). Included explanatory variables: score to the first literacy test; age of the student; the student is a man; scholarship student; kind of baccalaureate (reference= Economics and Social Science stream). Robust standard errors within parentheses. For a considered discipline, FE stands for final exam, CA for continuous assessment, and GPA for grade point average, computed as the average of both the scores obtained to both FE and CA. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.
Reading: *(a)* at a 1 percent level, encouraging to literacy practice increases by 1.159 point the score to the final exam in introduction in economics for first-year university students in Economics and Management stream at university Paris-Est

Table 7c. Evaluation of the impact of the encouragement to literacy learning, or of varying literacy level on academic performance for first-year university students in Economic and Management at university Paris-Est Marne-La-Vallée. *Considered sample: students who hold a baccalaureate with pass 50%-60%.*

Discipline	Introduction to Economics (GPA)	Introduction to Economics (FE)	Introduction to Management (GPA)	Introduction to Management (CA)	Mathematics (FE)	Introduction to Microeconomics (GPA)	Introduction to Macroeconomics (F)	Financial Economics (F)	Entrepreneurship (F)
Model	Effect of encouragement to literacy learning (Intention To treat, ITT)								
Without baseline variables	0.600 (0.400)	1.033** (0.502)	0.517 (0.371)	0.708**(a) (0.354)	0.665 (0.704)	0.748 (0.624)	0.718 (0.557)	0.935* (0.549)	0.758 (0.465)
With baseline variables	0.717 (0.374)	1.076** (0.476)	0.578* (0.354)	0.725** (0.353)	1.008* (0.615)	0.946* (0.549)	0.955* (0.498)	1.121** (0.524)	0.825 (0.450)
Model	Effect of varying literacy test scores (Local Average Treatment Effect, LATE)								
Without baseline variables	0.312 (0.202)	0.552**(b) (0.277)	0.268 (0.180)	0.370** (0.184)	0.355 (0.352)	0.422 (0.324)	0.404 (0.294)	0.525* (0.287)	0.423* (0.246)
With baseline variables	0.366** (0.186)	0.553** (0.257)	0.294* (0.171)	0.375** (0.180)	0.517* (0.292)	0.530* (0.290)	0.533** (0.270)	0.617** (0.276)	0.459* (0.243)

Source: randomized experiment implemented in University Paris-Est Marne-La-Vallée (Paris region, France; 2011-2014).

Field: 182 first-year university students in Economics and Management, entering the literacy learning device for the first year, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.

Notes: effect of encouragement to literacy learning (*intention to treat*; OLS estimator) or of varying literacy test score (*local average treatment effect*; Wald estimator). Robust standard errors within parentheses. For a considered discipline, FE stands for final exam, CA for continuous assessment, and GPA for grade point average, computed as the average of both the scores obtained to both FE and CA. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.

Reading: *(a)* at a 5 percent level, encouraging to literacy practice increases by 1.033 point the score to the final exam in introduction to economics for first-year university students in Economics and Management stream at university Paris-Est Marne-La-Vallée (Paris region, France). *(b)* At a 10 percent level, an increase of 1 point in the difference between the second and the first literacy test scores induces a rise of 0.525 point in the score of continuous assessment in financial economics for first-year university students in Economics and Management stream at university Paris-Est Marne-La-Vallée (Paris region, France).

Finally, the encouragement device and the increase in literacy test scores imply an increased probability of completing a given academic term for first-year university students who are initially characterized by low literacy skills (Tables 8a and 8b; Tables 9a and 9b; and Tables 10a to 10c).

Table 8a. Evaluation of the impact of the encouragement to literacy learning, or of increasing literacy level on the probability of achieving semester or academic year for first-year university students in Economic and Management. *Male students.*

Discipline	Academic Year	First Semester	Second Semester
Model	Effect of encouragement to literacy learning (Intention To treat, ITT)		
Without baseline variables	0.149** (0.019)	0.104* (0.081)	0.089 (0.155)
With baseline variables	0.159***(a) (0.009)	0.119** (0.033)	0.090 (0.119)
Model	Effect of varying literacy test scores (Local Average Treatment Effect, LATE)		
Without baseline variables	0.100*** (<0.001)	0.068** (0.011)	0.075** (0.028)
With baseline variables	0.099***(b) (<0.001)	0.074** (<0.001)	0.074** (0.013)

Source: randomized experiment implemented in University Paris-Est Marne-La-Vallée (Paris region, France; 2011-2014).
Field: 299 first-year university students in Economics and Management, entering the literacy learning device for the first year, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.
Notes: effect of encouragement to literacy learning (*intention to treat*; probit estimator) or of varying literacy test score (*local average treatment effect*; probit instrumental variable estimator). Marginal effects. Included explanatory variables: score to the first literacy test; age of the student; the student is a man; scholarship student; kind of baccalaureate (reference= Economics and Social Science stream). P-value within parentheses. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.
Reading: *(a)* at a 1 percent level, encouraging to literacy practice increases by 15.9 percentage points the probability to achieve first-year university for male students in Economics and Management stream at university Paris-Est Marne-La-Vallée (Paris region, France). *(b)* At a 1 percent level, an increase of 1 point in the difference between the second and the first literacy test scores induces a rise of 9.9 percentage points the probability to achieve first-year university for male students in Economics and Management stream at university Paris-Est Marne-La-Vallée (Paris region, France)

Table 8b. Evaluation of the impact of the encouragement to literacy learning, or of increasing literacy level on the probability of achieving semester or academic year for first-year university students in Economic and Management. *Female students.*

Discipline	Academic Year	First Semester	Second Semester
Model	Effect of encouragement to literacy learning (Intention To treat, ITT)		
Without baseline variables	-0.002 (0.971)	0.008 (0.898)	0.078 (0.253)
With baseline variables	0.012 (0.836)	0.004 (0.945)	0.090(a) (0.173)
Model	Effect of varying literacy test scores (Local Average Treatment Effect, LATE)		
Without baseline variables	0.004 (0.951)	0.012 (0.827)	0.066* (0.060)
With baseline variables	0.016 (0.759)	0.008 (0.868)	0.067**(b) (0.025)

Source: randomized experiment implemented in University Paris-Est Marne-La-Vallée (Paris region, France; 2011-2014).
Field: 227 first-year university students in Economics and Management, entering the literacy learning device for the first year, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.
Notes: effect of encouragement to literacy learning (*intention to treat*; probit estimator) or of varying literacy test score (*local average treatment effect*; probit instrumental variable estimator). Marginal effects. Included explanatory variables: score to the first literacy test; age of the student; the student is a man; scholarship student; kind of baccalaureate (reference= Economics and Social Science stream). P-value within parentheses. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.
Reading: *(a)* at any level, encouraging to literacy practice does not change the probability to achieve second term of first-year university for female students in Economics and Management stream at university Paris-Est Marne-La-Vallée (Paris region, France). *(b)* At a 5 percent level, an increase of 1 point in the difference between the second and the first literacy test scores induces a rise of 6.7 percentage points the probability to achieve second term of first term university for female students in Economics and Management stream at university Paris-Est Marne-La-Vallée (Paris region, Fran

In particular, encouragement increases the probability for males students to complete the first year of university by 15.9 percentage points, and increases the probability for students whose country of origin is not France to complete the first term by 15.4 percentage points.[11] Further, improving the literacy test score by 1 point increases the probability for male students to complete their first year of university by 10 percentage points. Also, for students from countries outside of France, one additional point in the improvement measured between literacy test scores increases the probability of completing the first semester by 8.2 percentage points. For students who **repeat the baccalaureate exam before successfully passing it**, the probability of completing their second semester of the first year of university is increased by 7.1 percentage points.[12]

Table 9a. Evaluation of the impact of the encouragement to literacy learning, or of increasing literacy level on the probability of achieving semester or academic year for first-year university students in Economic and Management. *Considered sample: students whose country of origin is France.*

Discipline	Academic Year	First Semester	Second Semester
Model	Effect of encouragement to literacy learning (Intention To treat, ITT)		
Without baseline variables	0.046 (0.431)	0.027 (0.638)	0.075 (0.201)
With baseline variables	0.085*(a)* (0.112)	0.032 (0.538)	0.076 (0.159)
Model	Effect of varying literacy test scores (Local Average Treatment Effect, LATE)		
Without baseline variables	0.059 (0.287)	0.035 (0.564)	0.078*** (0.006)
With baseline variables	0.078***(b)* (0.002)	0.041 (0.371)	0.071** (0.017)

Source: randomized experiment implemented in University Paris-Est Marne-La-Vallée (Paris region, France; 2011-2014).
Field: 315 first-year university students in Economics and Management, entering the literacy learning device for the first year, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.
Notes: effect of encouragement to literacy learning (*intention to treat*; probit estimator) or of varying literacy test score (*local average treatment effect*; probit instrumental variable estimator). Marginal effects. Included explanatory variables: score to the first literacy test; age of the student; the student is a man; scholarship student; kind of baccalaureate (reference= Economics and Social Science stream). P-value within parentheses. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.
Reading: *(a)* at any level, encouraging to literacy practice let unchanged the probability to achieve first-year university for students (whose country of origin is France) in Economics and Management stream at university Paris-Est Marne-La-Vallée (Paris region, France). *(b)* At a 1 percent level, an increase of 1 point in the difference between the second and the first literacy test scores induces a rise of 7.8 percentage points in the probability to achieve first-year university for students (whose country of origin is France) in Economics and Management stream at university Paris-Est Marne-La-Vallée (Paris region, France)

To conclude, we have provided new empirical evidence that encouraging university students to practice literacy skills and increasing their literacy skill levels may help them in completing their first year at university.

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[11] It also increases the probability of completing the first term by 10 percentage points for first-year university students holding a baccalaureate with distinction, honors or merit.
[12] Improving literacy performance by 1 point also increases the probability of completing the academic year (or at least one semester) for other types of students, namely those who hold the baccalaureate with honors or merit are more likely to complete the full year, while students of French nationality are more likely to complete the first term and female students are more likely to complete the second term.

Table 9b. Evaluation of the impact of the encouragement to literacy learning, or of increasing literacy level on the probability of achieving semester or academic year for first-year university students in Economic and Management. *Considered sample: students whose country of origin is NOT France.*

Discipline	Academic Year	First Semester	Second Semester
Model	Effect of encouragement to literacy learning (Intention To treat, ITT)		
Without baseline variables	0.087 (0.290)	0.154**(a) (0.046)	0.092 (0.244)
With baseline variables	0.095 (0.208)	0.150** (0.036)	0.087 (0.252)
Model	Effect of varying literacy test scores (Local Average Treatment Effect, LATE)		
Without baseline variables	0.062 (0.181)	0.082***(b) (0.001)	0.058 (0.142)
With baseline variables	0.058 (0.153)	0.076*** (0.001)	0.052(b) (0.220)

Source: randomized experiment implemented in University Paris-Est Marne-La-Vallée (Paris region, France; 2011-2014).
Field: 168 first-year university students in Economics and Management, entering the literacy learning device for the first year, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.
Notes: effect of encouragement to literacy learning (*intention to treat*; probit estimator) or of varying literacy test score (*local average treatment effect*; probit instrumental variable estimator). Marginal effects. Included explanatory variables: score to the first literacy test; age of the student; the student is a man; scholarship student; kind of baccalaureate (reference= Economics and Social Science stream). P-value within parentheses. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.
Reading: *(a)* at a 5 level, encouraging to literacy practice increases by 15.4 the probability to achieve the first term in first-year university for students in Economics and Management stream at university Paris-Est Marne-La-Vallée (Paris region, France). *(b)* At a 5 percent level, an increase of 1 point in the difference between the second and the first literacy test scores induces a rise of 8.2 percentage points the probability to achieve the first-term of first-year university for students in Economics and Management stream at university Paris-Est Marne-La-Vallée (Paris region, Fran

Table 10a. Evaluation of the impact of the encouragement to literacy learning, or of increasing literacy level on the probability of achieving semester or academic year for first-year university students in Economic and Management. *Considered sample: students who hold a baccalaureate with merit, honors or distinction.*

Discipline	Academic Year	First Semester	Second Semester
Model	Effect of encouragement to literacy learning (Intention To treat, ITT)		
Without baseline variables	0.100* (0.068)	0.063 (0.288)	0.137*** (0.032)
With baseline variables	0.108**(a) (0.027)	0.070 (0.167)	0.140*** (0.024)
Model	Effect of varying literacy test scores (Local Average Treatment Effect, LATE)		
Without baseline variables	0.096*** (<0.001)	0.059 (0.168)	0.091*** (<0.001)
With baseline variables	0.098***(b) (<0.001)	0.062** (0.037)	0.095*** (<0.001)

Source: randomized experiment implemented in University Paris-Est Marne-La-Vallée (Paris region, France; 2011-2014).
Field: 246 first-year university students in Economics and Management, entering the literacy learning device for the first year, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.
Notes: effect of encouragement to literacy learning (*intention to treat*; probit estimator) or of varying literacy test score (*local average treatment effect*; probit instrumental variable estimator). Marginal effects. Included explanatory variables: score to the first literacy test; age of the student; the student is a man; scholarship student; kind of baccalaureate (reference= Economics and Social Science stream). P-value within parentheses. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.
Reading: *(a)* at a 5 percent level, encouraging to literacy practice increase by 10.8 percentage points the probability to achieve first-year university for students (who hold a baccalaureate with merit, honors or distinction) in Economics and Management stream at university Paris-Est Marne-La-Vallée (Paris region, France). *(b)* At a 1 percent level, an increase of 1 point in the difference between the second and the first literacy test scores induces a rise of 9.8 percentage points in the probability to achieve first-year university for students (who hold a baccalaureate with merit, honors or distinction) in Economics and Management stream at university Paris-Est Marne-La-Vallée (Paris region, France).

Table 10b. Evaluation of the impact of the encouragement to literacy learning, or of increasing literacy level on the probability of achieving semester or academic year for first-year university students in Economic and Management. *Considered sample: students who got a baccalaureate without merit, honors or distinction.*

Discipline	Academic Year	First Semester	Second Semester
Model	Effect of encouragement to literacy learning (Intention To treat, ITT)		
Without baseline variables	0.060 (0.348)	0.050 (0.415)	0.048 (0.411)
With baseline variables	0.083*(a)* (0.150)	0.061 (0.287)	0.050 (0.374)
Model	Effect of varying literacy test scores (Local Average Treatment Effect, LATE)		
Without baseline variables	0.042 (0.302)	0.033*(b)* (0.396)	0.035 (0.396)
With baseline variables	0.052*(b) (0.076)	0.039 (0.235)	0.032*(b)* (0.398)

Source: randomized experiment implemented in University Paris-Est Marne-La-Vallée (Paris region, France; 2011-2014).
Field: 280 first-year university students in Economics and Management, entering the literacy learning device for the first year, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.
Notes: effect of encouragement to literacy learning (*intention to treat*; probit estimator) or of varying literacy test score (*local average treatment effect*; probit instrumental variable estimator). Marginal effects. Included explanatory variables: score to the first literacy test; age of the student; the student is a man; scholarship student; kind of baccalaureate (reference= Economics and Social Science stream). P-value within parentheses. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.
Reading: *(a)* at any level, encouraging to literacy practice let unchanged the probability to achieve the first term in first-year university for students (who hold a baccalaureate without any merit, honors or distinction) in Economics and Management stream at university Paris-Est Marne-La-Vallée (Paris region, France). *(b)* At a 10 percent level, an increase of 1 point in the difference between the second and the first literacy test scores induces a rise of 5.2 percentage points the probability to achieve the first-term of first-year university for students in Economics and Management stream at university Paris-Est Marne-La-Vallée (Paris region, France).

Table 10c. Evaluation of the impact of the encouragement to literacy learning, or of increasing literacy level on the probability of achieving semester or academic year for first-year university students in Economic and Management. *Considered sample: students who got a baccalaureate with pass 50%-60%.*

Discipline	Academic Year	First Semester	Second Semester
Model	Effect of encouragement to literacy learning (Intention To treat, ITT)		
Without baseline variables	0.035 (0.660)	0.023*(a)* (0.077)	0.058 (0.430)
With baseline variables	0.088 (0.232)	0.056 (0.431)	0.081 (0.249)
Model	Effect of varying literacy test scores (Local Average Treatment Effect, LATE)		
Without baseline variables	0.020 (0.670)	0.012*(b)* (0.772)	0.033 (0.418)
With baseline variables	0.047 (0.173)	0.029 (0.424)	0.042*(b)* (0.230)

Source: randomized experiment implemented in University Paris-Est Marne-La-Vallée (Paris region, France; 2011-2014).
Field: 182 first-year university students in Economics and Management, entering the literacy learning device for the first year, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.
Notes: effect of encouragement to literacy learning (*intention to treat*; probit estimator) or of varying literacy test score (*local average treatment effect*; probit instrumental variable estimator). Marginal effects. Included explanatory variables: score to the first literacy test; age of the student; the student is a man; scholarship student; kind of baccalaureate (reference= Economics and Social Science stream). P-value within parentheses. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.
Reading: *(a)* at any level, encouraging to literacy practice let unchanged the probability to achieve the first term in first-year university for students (who got a baccalaureate with pass 50%-60%) in Economics and Management stream at university Paris-Est Marne-La-Vallée (Paris region, France). *(b)* At any level, an increase of 1 point in the difference between the second and the first literacy test scores let unchanged the probability to achieve the first-term of first-year university for students (who got a baccalaureate with pass 50%-60%) in Economics and Management stream at university Paris-Est Marne-La-Vallée (Paris region, France).

5. Robustness: external validity

The results discussed above were obtained through a randomized controlled experiment and are therefore characterized by a high degree of internal validity. The increase in literacy skills often leads to a significant improvement in academic performances of first-year university students in Economics and Management. However, these results might somehow be specific to the University Paris-Est Marne-La-Vallée, where we carried out the experiment. For instance, they could be related to local characteristics, like the way courses are organized, or the socio-demographic characteristics of students. In order to establish the external validity of our results, we implemented the same kind of encouragement device over the academic year 2013-2014 at another French university, University Lille 1, again with first-year students in Economics and Management. This parallel experiment may help us to generalize the findings we obtained at the University Paris-Est Marne-la-Vallée.

5.1 A second randomized experiment at University Lille 1

As in the experiment at the University Paris-Est Marne-La-Vallée, the randomized trial was implemented at University Lille 1 over the first term of the academic year. During the meeting with students before the beginning of the academic year 2013-2014, students were informed that they would have access to the web platform Projet Voltaire to practice and improve their skills in orthography, grammar, conjugation and syntax. They were also told that their work would be evaluated through a final literacy test score that would be taken into account to compute their overall academic average for the first year in Economics and Management. Just as we did at the University Paris-Est Marne-La-Vallée, we evaluated initial literacy skills of students through an initial literacy test at the beginning of the academic year.

We also distinguished two categories of tutorial groups. In half of them, students were assigned to receive encouragement to practice literacy skills using Projet Voltaire, while the students of other groups were not encouraged. In the encouraged tutorial groups, e-mails were sent every week to the students, to remind them that they could use the Projet Voltaire platform and how to access this online tool. They were also reminded of the importance of using the platform to practice and increase their skills in orthography, grammar, conjugation and syntax. Finally, they were told that their work would be evaluated through a second literacy test that will be written at the end of the first term of the academic year, i.e. before final exams took place.

In the "non-encouraged" tutorial groups, nothing was said to students after the very first meeting at the beginning of the academic year, where they quickly heard about the Projet Voltaire. As with UPEM, tutorial groups were assigned randomly to the encouragement condition, and we confirmed this through t-tests to see whether or not there are any differences in baseline administrative variables (see Table A7 in appendix). Finally, as with UPEM, the difference between the two literacy test scores is used as a measure for the

increase in literacy skills of the students over the first term, i.e. between before and after the literacy practice period.[13]

Our final sample includes 323 first-year students at University Lille 1, for whom we have the information needed to evaluate the effects of encouragement and of improving literacy skills (variables provided by baseline administrative information, the two literacy test scores and time practicing literacy skills, and final exam scores in first-year university). First-year students in Economics and Management at University Lille 1 are older (on average 19.5 years) than those who study at UPEM. In comparison with UPEM, they are also more frequently male students (65.8%) and less frequently of French nationality (80.8%). More of them are also scholarship students (51.1%). In addition, 50.3% of first-year university students at University Lille 1 hold a baccalaureate in Economics and Social sciences, 31.3% a baccalaureate in Sciences and 9.6% a baccalaureate in sciences and technology in Management. Not surprisingly, almost all students live in the Northern region of France, where the university is located (96.9 %). Despite these demographic differences, the average initial literacy test score is 6.1/20, which is identical to the average score for first-year university students in Economics and Management at UPEM.

5.2 Results

In Tables 11a and 11b, we present the main significant results of the effect of encouragement and of the increase in literacy test scores on academic performance for first-year students in Economics and Management at University Lille 1.[14]

Table 11a. Evaluation of the impact of the encouragement to literacy learning, or of varying literacy level on academic performance for first-year university students in Economic and Management in university Lille 1.

Discipline	Introduction to Economics (GPA)	Introduction to Economics (CA)	Introduction to Management	Defining career objectives	Economic History	English language Semester 1 (CA)	Mathematics (CA)
Model	Effect of encouragement to literacy learning (Intention To treat, ITT)						
Without baseline variables	0.751* (0.388)	0.665 (0.432)	0.998* (0.529)	1.606*** (0.310)	1.118* (0.575)	1.705* (0.990)	2.008*** (0.732)
With baseline variables	0.747** **(0.359)**	0.693* **(0.399)**	0.938* (0.521)	1.533*** (0.305)	1.225** (0.532)	1.701* (0.946)	2.486*** (0.698)
Model	Effect of varying literacy test scores (Local Average Treatment Effect, LATE)						
Without baseline variables	0.460** (0.226)	0.414 (0.258)	0.568* (0.294)	0.974*** (0.234)	0.674** (0.333)	0.993* (0.551)	1.419** (0.561)
With baseline variables	0.486** (0.220)	0.454* **(0.248)**	0.563* (0.307)	0.984*** (0.247)	0.780** (0.327)	1.057* (0.560)	1.789*** (0.577)

Source: randomized experiment implemented in University Lille 1 (Northern France; 2013-2014) and Tables A9 to A11 (appendix).
Field: 323 first-year university students in Economics and Management, who participate in the literacy learning device, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests
Notes: effect of encouragement to literacy learning (*intention to treat*; OLS estimator) or of varying literacy test score (*local average treatment effect*; Wald estimator). Included explanatory variables: score to the first literacy test; age of the student; the student is a man; scholarship student; kind of baccalaureate (reference= Economics and Social Science stream). Robust standard errors within parentheses. For a considered discipline, FE stands for final exam, CA for continuous assessment, and GPA for grade point average, computed as the average of both the scores obtained to both FE and CA. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.
Reading: *(a)* at a 5 percent level, encouraging to literacy practice increases by 1.225 point the score to the final exam in economic history for first-year university students in Economics and Management stream at university Lille 1 (Northern France). *(b)* At a 5 percent level, an increase of 1 point in the difference between the second and the first literacy test scores induces a rise of 0,486 point in the GPA in economic history for first-year university students in Economics and Management stream at university Lille 1 (Northern France).

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[13] We verify that students who were encouraged spent more time practicing literacy skills. Furthermore, there is a positive correlation between the increase in literacy test scores and time spent on literacy skills training. Corresponding tables are available on request.

[14] Complete detailed results are found in the appendix (Tables A8 to A11).

Table 11b. Evaluation of the impact of the encouragement to literacy learning, or of increasing literacy level on the probability of achieving semester or academic year for first-year university students in Economic and Management. *Marginal effects.*

Discipline	Academic Year	First Semester	Second Semester
Model	Effect of encouragement to literacy learning (Intention To treat, ITT)		
Without baseline variables	0.039 (0.490)	0.096* (0.085)	0.009 (0.865)
With baseline variables	0.048 (0.351)	0.100*(a) (0.052)	0.016 (0.748)
Model	Effect of varying literacy test scores (Local Average Treatment Effect, LATE)		
Without baseline variables	0.022 (0.554)	0.060** (0.042)	-0.001 (0.976)
With baseline variables	0.028 (0.412)	0.065**(b) (0.022)	0.004 (0.914

Source: randomized experiment implemented in University Lille 1 (Northern from France; 2013-2014).
Field: 323 first-year university students in Economics and Management, who participate in the literacy learning device, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.
Notes: effect of encouragement to literacy learning (*intention to treat*; probit estimator) or of varying literacy test score (*local average treatment effect*; probit instrumental variable estimator). Marginal effects. Included explanatory variables: score to the first literacy test; age of the student; the student is a man; scholarship student; kind of baccalaureate (reference= Economics and Social Science stream). P-value within parentheses. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.
Reading: *(a)* at a 10 percent level, encouraging to literacy practice increases by 10.0 percentage points the probability to achieve the first term of the first-year university for students in Economics and Management stream at university Lille 1 (Northern from France). *(b)* At a 5 percent level, an increase of 1 point in the difference between the second and the first literacy test scores induces a rise of 7.3 percentage points the probability to achieve first-year university for students in Economics and Management stream at university Lille 1 (Northern from France)

First, improving a student's literacy test score by one additional point between the beginning and the end of the first term implies an increase of 0.5 to 1.5 points in the grade for a given discipline (Table 8a).

Second, as with UPEM, the measured increase in literacy skills affects scores in a range of different disciplines, whether more literary or linguistic (e.g., English language, economic history, the "defining career objectives" workshop), or more technical (introduction to economics, introduction to management), and even in mathematics. Thus, one additional point in the improvement measured between literacy test scores induces an increase of 0.486 point in the final exam score in introduction to economics, or an increase of 0.454 point in the in-class assessment grade in introduction to management. The increase in grades is the largest for the mathematics in-class component (+1.789 points – Table 11a), followed by "defining career objectives" (+0.984 points).

Third, as in the case of University Paris-Est Marne-La-Vallée, our initial results for University Lille 1 suggest that practicing literacy through this encouragement device results in greater chances for students to complete the first year of university, or at least one of the semesters (Table 11b). In fact, encouraging first-year students to practice literacy during the first semester increases their probability of completing the first semester by 10 percentage points (at a 5.2 percent level). Moreover, improving literacy test scores by one additional point raises the probability of students completing their first semester by 6.5 percentage points.

Fourth, when we focus on different subpopulations (Tables 12 to 14), we see that the encouragement device does not provide the same level of benefit to all students.[15] In particular, as with UPEM, our findings for the whole population of first-year students are mainly similar to those we get for male students (Tables 12a and 12b). Then, the encouragement device showed an increased benefit on students whose first language is French (Tables 13a and 13b), as was the case at UPEM. Finally, the experiment device appears to provide more benefit to students who hold a baccalaureate without honors (Tables 14a to 14c).

Fifth, for some disciplines, we observe a negative impact of the encouragement device, again for female students who demonstrate higher initial literacy skills than male students (Table 12b). This result suggests a lock-in effect: their time is diverted from other disciplines, although their literacy skills do not require intervention. We observe the same qualitative results as seen at UPEM.

Finally, these findings may be applied to help certain specific populations of students to complete their first year at university (or at least one of the semesters), in particular those students who initially have lower literacy skill levels.

As reported in Tables A12 to A14 in the appendix, encouraging students to practice literacy increases the probability that they will complete the first term of the academic year, by about 13 percentage points for male students, and by about 14 percentage points for university students who hold a baccalaureate without honors. Further, measurable improvements in literacy skills show similar benefits for these kind of students. In particular, a difference of one additional point in the measured improvement in scores on the literacy test increases the probability of completing the first term at university: by 9 percentage points for male students, by 10 percentage points for students who hold a baccalaureate without honors, and by 13 percentage points for those who hold a baccalaureate with minimal passing score (50%-60%), and by 8 percentage points for students whose native language is not French.[16]

As with University Paris-Est Marne-La-Vallée, the implementation of the encouragement device may have contributed to raising academic achievement levels for first-year students at University Lille 1.

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[15] Like at UPEM, the initial literacy test score is on average lower among male students than among female students. It is higher for students who hold a baccalaureate with merit, honors or distinction than for other students. Finally, it is higher for students whose native language is French than for other students. Corresponding tables are available on request.

[16] For female students however, we observe some lock-in effects: the probability of completing the second semester of the first year of university decreases as a consequence of the introduction of the encouragement device.

Table 12a. Evaluation of the impact of the encouragement to literacy learning, or of varying literacy level on academic performance for first-year university students in Economic and Management *sample: male students.*

Discipline	Introduction to economics (GPA)	Introduction to economics (CA)	Introduction to management	Defining career objectives	Statistics (Semester 1)	English language (Semester 1) (CA)	Introduction to Macroeconomics	General accounting (GPA)	General accounting (FE)	Mathematics (F)	Mathematics (Exam 1)	Mathematics (Exam 2)
Model	Effect of encouragement to literacy learning (Intention To treat, ITT)											
Without baseline variables	0.697 (0.454)	0.987* (0.517)	1.460** (0.633)	1.596*** (0.403)	0.874 (0.599)	1.118* (0.575)	1.205 (0.749)	0.680 (0.574)	0.660 (0.576)	0.963 (0.626)	0.482 (0.651)	1.142* (0.607)
With baseline variables	0.754* (0.429)	0.981** (0.488)	1.573** (0.653)	1.669*** (0.421)	1.198** (0.558)	3.174** (1.730)	1.386* (0.745)	0.943* (0.559)	0.920 (0.577)	1.492*** (0.549)	0.945* (0.546)	1.616*** (0.521)
Model	Effect of varying literacy test scores (Local Average Treatment Effect, LATE)											
Without baseline variables	0.512 (0.323)	0.727* (0.383)	0.971** (0.439)	1.201*** (0.405)	0.636 (0.408	2.118** (0.901)	0.922* (0.555)	0.523 (0.415)	0.479 (0.399)	0.726 (0.468)	0.372 (0.490)	0.824* (0.433)
With baseline variables	0.544* (0.293)	0.702** (0.346)	1.063** (0.464)	1.224*** (0.406)	0.864** (0.363)	2.089** (0.860)	1.057** (0.534)	0.708* (0.403)	0.668* (0.368)	1.131*** (0.425)	0.744* (0.413)	1.165*** (0.365)

Source: randomized experiment implemented in University Lille 1 (Northern France; 2013-2014).
Field: 207 first-year university students in Economics and Management, who participate in the literacy learning device, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.
Notes: effect of encouragement to literacy learning (*intention to treat*; OLS estimator) or of varying literacy test score (*local average treatment effect*; Wald estimator). Included explanatory variables: score to the first literacy test; age of the student; the student is a man; scholarship student; kind of baccalaureate (reference= Economics
parentheses. For a considered discipline, FE stands for final exam, CA for continuous assessment, and GPA for grade point average, computed as the average of both the scores obtained to both FE and CA. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.
Reading: *(a)* at a 5 percent level, encouraging to literacy practice increases by 1.460 point the score to the final exam in introduction to management for first-year university students in Economics and Management stream at university Lille 1 (Northern France). *(b)* At a 10 percent level, an increase of 1 point in the difference between t
0.922 point in the score in mathematics for first-year university students in Economics and Management stream at university Lille 1 (Northern France).

Table 12b. Evaluation of the impact of the encouragement to literacy learning, or of varying literacy level on academic performance for first-year university students in Economic and Management a *sample: female students.*

Discipline	Methodology (Sem.1)	Defining career objectives	Financial mathematics (F)	English language (Semester 1) (CA)	English language (Semester 1) (FE)	General accounting (GPA)	General accounting (CA)	General accounting (FE)	Mathematics (GPA)	Mathematics (Exam 1)	Mathematics (Exam 2)
Model	Effect of encouragement to literacy learning (Intention To treat, ITT)										
Without baseline variables	-1.222* (0.644)	1.416*** (0.475)	-1.051 (0.749)	-1.020 (1.624)	-1.348 (1.847)	-1.839** (0.722)	-2.001*** (0.688)	-1.633** (0.791)	-1.511* (0.839)	-2.345** (0.900)	-1.882* (0.841)
With baseline variables	-1.486** (0.608)	1.151*** (0.470)	-1.451* (0.746)	-1.455** (0.676)	-2.410* (1.344)	-1.990*** (0.687)	-2.142*** (0.686)	-1.638** (0.712)	-1.729*** (0.646)	-2.488*** (0.664)	-1.983*** (0.626)
Model	Effect of varying literacy test scores (Local Average Treatment Effect, LATE)										
Without baseline variables	-0.703 (0.475)	0.769** (0.299)	-0.597 (0.540)	-0.564 (0.972)	-0.733 (1.082)	-0.998* (0.590)	-1.034* (0.559)	-0.898 (0.600)	-0.783 (0.541)	-1.177* (0.624)	-0.994* (0.582)
With baseline variables	-1.003* (0.607)	0.719** (0.355)	-0.758 (0.692)	-0.916 (1.023)	-1.474 (1.019)	-1.162* (0.643)	-1.189* (0.626)	-0.965 (0.601)	-1.022* (0.559)	-1.336** (0.548)	-1.146* (0.559)

Source: randomized experiment implemented in University Lille 1 (Northern France; 2013-2014).
Field: 116 first-year university students in Economics and Management, who participate in the literacy learning device, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.
Notes: effect of encouragement to literacy learning (*intention to treat*; OLS estimator) or of varying literacy test score (*local average treatment effect*; Wald estimator). Included explanatory variables: score to the first literacy test; age of the student; the student is a man; scholarship student; kind of baccalaureate (reference= Economi
within parentheses. For a considered discipline, FE stands for final exam, CA for continuous assessment, and GPA for grade point average, computed as the average of both the scores obtained to both FE and CA. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.
Reading: *(a)* at a 5 percent level, encouraging to literacy practice decreases by 1.455 point the score to the continuous assessment in English for first-year university students in Economics and Management stream at university Lille 1 (Northern France). *(b)* At a 10 percent level, an increase of 1 point in the difference between the sec
of 1.162 point in the score to the GPA in general accounting for first-year university students in Economics and Management stream at university Lille 1 (Northern France).

Table 13a. Evaluation of the impact of the encouragement to literacy learning, or of varying literacy level on academic performance for first-year university students in Economic and Management at university Lille 1. *Considered sample: students whose country of origin is France.*

Discipline	Introduction to economics (GPA)	Defining career objectives	Economic history	English language (Semester 1, CA)	Mathematics(CA)	Big contemporary economic issues
Model	Effect of encouragement to literacy learning (Intention To treat, ITT)					
Without baseline variables	1.057** (0.503)	1.635*** (0.366)	1.162 (0.716)	2.856** (1.199)	2.201** (0.941)	1.164* (0.606)
With baseline variables	0.973** (0.503)	1.617*** (0.362)	1.214* (0.643)	2.582** (1.123)	2.973*** (0.861)	0.784 (0.596)
Model	Effect of varying literacy test scores (Local Average Treatment Effect, LATE)					
Without baseline variables	0.595** (0.263)	0.904*** (0.246)	0.638* (0.377)	1.452** (0.565)	1.397** (0.618)	0.645* (0.344)
With baseline variables	0.559** (0.248)	0.896*** (0.243)	0.673** (0.339)	1.319** (0.529)	1.974*** (0.663)	0.441 (0.334)

Source: randomized experiment implemented in University Lille 1 (Northern France; 2013-2014).
Field: 214 first-year university students in Economics and Management, who participate in the literacy learning device, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.
Notes: effect of encouragement to literacy learning (*intention to treat*; OLS estimator) or of varying literacy test score (*local average treatment effect*; Wald estimator). Included explanatory variables: score to the first literacy test; age of the student; the student is a man; scholarship student; kind of baccalaureate (reference= Economics and Social Science stream). Robust standard errors within parentheses. For a considered discipline, FE stands for final exam, CA for continuous assessment, and GPA for grade point average, computed as the average of both the scores obtained to both FE and CA. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.
Reading: *(a)* at a 5 percent level, encouraging to literacy practice increases by 0.595 point the score to the GPA in introduction to economics for first-year university students in Economics and Management stream at university Lille 1 (Northern France). *(b)* At a 10 percent level, an increase of 1 point in the difference between the second and the first literacy test scores induces a rise of 0.638 point in the score in economic history for first-year university students in Economics and Management stream at university Lille 1 (Northern France).

Table 13b. Evaluation of the impact of the encouragement to literacy learning, or of varying literacy level on academic performance for first-year university students in Economic and Management at university Lille 1. *Considered sample: students whose country of origin is NOT France.*

Discipline	Introduction to National accounting	Defining career objectives	Economic history	Functional analysis of organizations	Mathematics (Exam 1)	English language (Semester 2, GPA)	English language (Semester 2, FE)
Model	Effect of encouragement to literacy learning (Intention To treat, ITT)						
Without baseline variables	-1.128* (0.594)	1.593*** (0.579)	1.032 (0.982)	-1.625* (0.916)	-1.587* (0.954)	-1.615* (0.861)	-3.120* (1.666)
With baseline variables	-0.724 (0.552)	1.730*** (0.621)	1.521* (0.918)	-1.501* (0.868)	-1.356 (0.818)	-1.454* (0.835)	-3.136** (1.543)
Model	Effect of varying literacy test scores (Local Average Treatment Effect, LATE)						
Without baseline variables	-0.829 (0.621)	1.181** (0.571)	0.768 (0.700)	-1.223 (0.919)	-1.329 (1.108)	-1.231 (0.935)	-2.774 (2.215)
With baseline variables	-0.443 (0.378)	1.159** (0.509)	0.970* (0.573)	-1.040 (0.741)	-1.008 (0.743)	-0.992 (0.723)	-2.425 (1.623)

Source: randomized experiment implemented in University Lille 1 (Northern France; 2013-2014).
Field: 109 first-year university students in Economics and Management, who participate in the literacy learning device, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.
Notes: effect of encouragement to literacy learning (*intention to treat*; OLS estimator) or of varying literacy test score (*local average treatment effect*; Wald estimator). Included explanatory variables: score to the first literacy test; age of the student; the student is a man; scholarship student; kind of baccalaureate (reference= Economics and Social Science stream). Robust standard errors within parentheses. For a considered discipline, FE stands for final exam, CA for continuous assessment, and GPA for grade point average, computed as the average of both the scores obtained to both FE and CA. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.
Reading: *(a)* at a 10 percent level, encouraging to literacy practice decreases by 1.128 point the score to introduction to national accounting for first-year university students in Economics and Management stream at university Lille 1 (Northern France). *(b)* At a 1 percent level, an increase of 1 point in the difference between the second and the first literacy test scores induces a rise of 1.181 point in the score in "Defining career objectives" for first-year university students in Economics and Management stream at university Lille 1 (Northern France).

Table 14a. Evaluation of the impact of the encouragement to literacy learning, or of varying literacy level on academic performance for first-year university students in Economic and Management in university Lille 1. *Considered sample: students who hold a baccalaureate with merit, honors or distinction.*

Note	Introduction to national accounting	Defining career objectives	English language (Semester 1, FE)	Mathematics (Exam 1)	Mathematics (CC)	English language (Semester 2, GPA)	English language (Semester 2, CA)	English language (Semester 2, FE)
Model	Effect of encouragement to literacy learning (Intention To treat, ITT)							
Without baseline variables	-0.897* (0.457)	1.031** (0.424)	-2.360* (1.421)	-1.488* (0.897)	2.455** (1.134)	-1.806** (0.775)	-3.563** (1.489)	-3.445** (1.354)
With baseline variables	-0.621 (0.432)	1.031** (0.431)	-1.298 (1.300)	-0.817 (0.763)	3.556*** (1.095)	-1.343* (0.771)	-3.202** (1.532)	-2.737** (1.211)
Model	Effect of varying literacy test scores (Local Average Treatment Effect, LATE)							
Without baseline variables	-0,492 (0,311)	0,552** (0,231)	-1,240 (0,869)	-0,792 (0,563)	1,492** (0,741)	-0,972* (0,562)	-1,975* (1,142)	-1,885* (0,998)
With baseline variables	-0,305 (0,231)	0,493*** (0,201)	-0,626 (0,656)	-0,399 (0,401)	2,012** (0,725)	-0,670 (0,458)	-1,665 (1,021)	-1,398* (0,767)

Source: randomized experiment implemented in University Lille 1 (Northern France; 2013-2014).
Field: 136 first-year university students in Economics and Management, who participate in the literacy learning device, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.
Notes: effect of encouragement to literacy learning (*intention to treat*; OLS estimator) or of varying literacy test score (*local average treatment effect*; Wald estimator). Included explanatory variables: score to the first literacy test; age of the student; the student is a man; scholarship student; kind of baccalaureate (reference= Economics and Social Science stream). Robust standard errors within parentheses. For a considered discipline, FE stands for final exam, CA for continuous assessment, and GPA for grade point average, computed as the average of both the scores obtained to both FE and CA. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.
Reading: *(a)* at a 1 percent level, encouraging to literacy practice increases by 2.455 point the score to the continuous assessment mathematics for first-year university students in Economics and Management stream at university Lille 1 (Northern France). *(b)* At a 10 percent level, an increase of 1 point in the difference between the second and the first literacy test scores induces a rise of 0.493 point in the score in "Defining career objectives" for first-year university students in Economics and Management stream at university Lille 1 (Northern France).

Table 14b. Evaluation of the impact of the encouragement to literacy learning, or of varying literacy level on academic performance for first-year university students in Economic and Management in university Lille 1. *Considered sample: students who hold a baccalaureate without merit, honors or distinction.*

Note	Introduction to economics (GPA)	Introduction to management	Defining career objectives	Statistics	Economic history	English language (Semester, 1, CA)	Mathematics(CA)	Tutorials in economics and computer science
Model	Effect of encouragement to literacy learning (Intention To treat, ITT)							
Without baseline variables	1.268** (0.492)	1.643** (0.679)	1.963*** (0.433)	0.742 (0.537)	1.246* (0.710)	3.110** (1.297)	1.702* (0.917)	0.986* (0.542)
With baseline variables	1.064** (0.475)	1.590** (0.691)	1.824*** (0.438)	0.881* (0.510)	1.300* (0.676)	2.767** (1.286)	1.796** (0.899)	0.906* (0.495)
Model	Effect of varying literacy test scores (Local Average Treatment Effect, LATE)							
Without baseline variables	0.917** (0.370)	1.108** (0.470)	1.428*** (0.471)	0.537 (0.365)	0.869* (0.497)	1.942** (0.861)	1.349 (0.822)	0.745** (0.376)
With baseline variables	0.793** (0.351)	1.094** (0.473)	1.365*** (0.454)	0.657* (0.345)	0.938* (0.490)	1.763** (0.849)	1.608* (0.962)	0.696** (0.342)

Source: randomized experiment implemented in University Lille 1 (Northern France; 2013-2014).
Field: 187 first-year university students in Economics and Management, who participate in the literacy learning device, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.
Notes: effect of encouragement to literacy learning (*intention to treat*; OLS estimator) or of varying literacy test score (*local average treatment effect*; Wald estimator). Included explanatory variables: score to the first literacy test; age of the student; the student is a man; scholarship student; kind of baccalaureate (reference= Economics and Social Science stream). Robust standard errors within parentheses. For a considered discipline, FE stands for final exam, CA for continuous assessment, and GPA for grade point average, computed as the average of both the scores obtained to both FE and CA. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.
Reading: *(a)* at a 5 percent level, encouraging to literacy practice increases by 1.590 point the score to the final exam in introduction to management for first-year university students in Economics and Management stream at university Lille 1 (Northern France). *(b)* At a 5 percent level, an increase of 1 point in the difference between the second and the first literacy test scores induces a rise of 0.793 point in the score in introduction to economics for first-year university students in Economics and Management stream at university Lille 1 (Northern France).

Table 14c. Evaluation of the impact of the encouragement to literacy learning, or of varying literacy level on academic performance for first-year university students in Economic and Management at university Lille 1. *Considered sample: students who got a baccalauréat with pass 50%-60%.*

Note	Introduction to economics (GPA)	Introduction to economics (CA)	Introduction to management	Defining career objectives	Statistics	Economic history	English language (Semester 1, CA)	General accounting (CA)	Mathematics(GPA)	Mathematics(CA)	Big contemporary economic issues	Tutorials in economics and computer science
Model	Effect of encouragement to literacy learning (Intention To treat, ITT)											
Without baseline variables	1.490** (0.571)	1.015 (0.676)	1.455* (0.851)	2.384*** (0.593)	0.840 (0.724)	0.940 (0.927)	3.355* (1.744)	-1.422* (0.745)	0.620 (0.722)	1.970 (1.188)	1.610** (0.757)	1.139* (0.667)
With baseline variables	1.380*** (0.545)	1.015** (0.597)	1.373 (0.905)	2.153*** (0.614)	1.269* (0.691)	1.107 (0.865)	3.330* (1.820)	-1.149 (0.706)	1.064* (0.568)	2.436** (1.082)	1.356* (0.818)	1.188* (0.633)
Model	Effect of varying literacy test scores (Local Average Treatment Effect, LATE)											
Without baseline variables	2.064 (1.290)	1.388 (1.144)	1.776 (1.238)	3.216* (1.927)	1.164 (0.986)	1.277 (1.345)	3.859 (2.577)	-3.182 (3.817)	1.157 (1.585)	4.155 (4.774)	3.903 (4.409)	1.643 (1.138)
With baseline variables	1.673* (0.973)	1.488 (0.961)	1.508 (1.062)	2.601* (1.473)	1.539* (0.857)	1.380 (1.177)	3.300 (2.078)	-2.081 (2.196)	1.627 (1.362)	4.888 (4.994)	2.302 (2.043)	1.456* (0.869)

Source: randomized experiment implemented in University Lille 1 (Northern France; 2013-2014).

Field: 118 first-year university students in Economics and Management, who participate in the literacy learning device, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.

Notes: effect of encouragement to literacy learning (*intention to treat*; OLS estimator) or of varying literacy test score (*local average treatment effect*; Wald estimator). Robust standard errors within parentheses. For a considered discipline, FE stands for final exam, CA for continuous assessment, and GPA for grade point average, computed as the average of both the scores obtained to both FE and CA. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.

Notes: effect of encouragement to literacy learning (*intention to treat*; OLS estimator) or of varying literacy test score (*local average treatment effect*; Wald estimator). Robust standard errors within parentheses. For a considered discipline, FE stands for final exam, CA for continuous assessment, and GPA for grade point average, computed as the average of both the scores obtained to both FE and CA. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.

Reading: *(a)* at a 1 percent level, encouraging to literacy practice increases by 1.380 point the score to the GPA in introduction to economics for first-year university students in Economics and Management stream at university Lille 1 (Northern France). *(b)* At a 10 percent level, an increase of 1 point in the difference between the second and the first literacy test scores induces a rise of 2.601 point in the score in "defining career objectives" for first-year university students in Economics and Management stream at university Lille 1 (Northern France).

6. Conclusion

We have analyzed the impacts of encouraging and improving literacy skills on achieving academic success. We have implemented two randomized experiments in parallel with first-year students enrolled in Economics and Management at two universities: Paris-Est Marne-La-Vallée (2011-2014) and Lille 1 (2013-2014). The methodology of these experiments consisted in encouraging half of the student population in question to take advantage of an innovative pedagogical tool called *Projet Voltaire* for practicing literacy skills. The other half of our population was not encouraged at all.

Our results demonstrate that improving literacy skills can significantly increase academic performance in several disciplines, not only in language-related fields, but even more so in scientific ones. Depending on the discipline, scores can increase by 0.5 to 1.0-1.5 points on average. As a consequence, the probability of students completing the first year of university (or at least one of the semesters) also increases.

We also show that practicing literacy skills provides even more benefit to students who initially demonstrated low literacy skills, such as male students who earned their baccalaureate without honors or students whose native language is not French.

With these results, we have provided concrete evidence that higher literacy skills allow students to improve their academic performance during the first year of university, which is the crucial year for determining future prospects and, in the French context, the most competitive year. Our results underline the importance of public efforts to support literacy programs at the university level, and we further suggest that severe problems in basic literacy skills should be considered a crucial factor contributing to academic failure. Consequently, supporting and reinforcing literacy skills at the start of university programs is a key strategic variable that will prove essential to improving the overall success of programs, as well as the results of individual students throughout the path towards post-graduate studies and finally, to increase the chances of life-long success for all students.

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Appendices.

Table A1. Correlations between time to practice literacy and varying the literacy test score (difference between the second and the first literacy test scores), for first-year university students in Economics and Management, at university Paris-Est Marne-La-Vallée, considering different econometric specifications.

Time to literacy practice indicator (specification) / Explanatory variables	Indicator 1 (1)	Indicator 1 (2)	Indicator 1 (3)	Indicator 2 (1)	Indicator 2 (2)	Indicator 2 (3)
Time to literacy practice : indicator 1	0.012*** (0.001)	0.012*** (0.001)	0.011*** (0.001)			
Time to literacy practice : indicator 2				0.010*** (0.001)	0.010*** (0.001)	0.009*** (0.001)
First literacy test score		0.096** (0.041)	0.032 (0.046)		0.057 (0.039)	0.002 (0.043)
Age			0.003 (0.041)			0.002 (0.040)
Gender (Men vs. women)			-0.752*** (0.252)			-0.644*** (0.240)
Scholarship student			0.068 (0.228)			0.026 (0.219)
Baccalaureate S			0.305 (0.253)			0.261 (0.241)
Baccalaureate STG			-0.722* (0.429)			-0.707* (0.414)
Other baccalaureate			-0.389 (0.442)			-0.383 (0.415)
Intercept	1.954*** (0.148)	1.323*** (0.315)	2.152** (0.885)	1.721*** (0.137)	1.351*** (0.289)	2.103** (0.835)
Observations	528	528	528	528	528	528
R2	0.281	0.287	0.307	0.345	0.347	0.363
F	92.31	50.04	18.11	144.6	78.43	24.82

Source: randomized experiment implemented in University Paris-Est Marne-La-Vallée (Paris region, France; 2011-2014).
Field: 526 first-year university students in Economics and Management stream, entering the literacy learning device for the first year, for whom information from the baseline administrative survey is available, as well as the two literacy test score.
Notes: correlation with or without control variables (OLS estimator). Time to practice literacy: indicator 1 = indicator provided by platform *Projet Voltaire*; indicator 2 = overall time spent using platform *Projet Voltaire* - duration of the 1st literacy evaluation - duration of the 2nd literacy evaluation. Explanatory variables: score to the first literacy test; first-year university student age; student gender (reference=female); scholarship student; kind of baccalaureate (reference= baccalaureate ES, Economics and Social Science stream). Robust standard errors. *** (respectively ** or *) stands for significance at a 1% (respectively a 5% or 10%).
Reading: at a 1 percent level, and whatever the considered econometric specification, a rise of 83 minutes in the time to literacy practice is associated to a 1 point more increase in the variation of the literacy test score, for first-year university students in Economics and Management at University Paris-Est Marne-La-Vallée.

Table A2. Effect of time to practice literacy on varying the literacy test score (difference between the second and the first literacy test scores), for first-year university students in Economics and Management, at university Paris-Est Marne-La-Vallée, considering different econometric specifications.

Time to literacy practice indicator (specification) / Explanatory variables	Indicator 1 (1)	Indicator 1 (2)	Indicator 1 (3)	Indicator 2 (1)	Indicator 2 (2)	Indicator 2 (3)
Time to literacy practice: indicator 1	0.021*** (0.004)	0.021*** (0.004)	0.021*** (0.004)			
Time to literacy practice: indicator 2				0,015*** (0,003)	0,015*** (0,003)	0,015*** (0,003)
Score to the first literacy test		0.110** (0.043)	0.095* (0.050)		0,045 (0,043)	0,030 (0,045)
Age			0.002 (0.039)			0,000 (0,037)
Gender (Men vs. women)			-0.094 (0.396)			-0,051 (0,380)
Scholarship student			-0.123 (0.264)			-0,155 (0,249)
Baccalaureate S			0.170 (0.280)			0,124 (0,265)
Baccalaureate STG			-0.434 (0.514)			-0,465 (0,473)
Other baccalaureate			0.156 (0.528)			0,051 (0,472)
Intercept	1.029** (0.432)	0.331 (0.513)	0.452 (1.033)	0,870** (0,439)	0,583 (0,455)	0,732 (0,971)
Observations	526	526	526	526	526	526
R2	0.118	0.132	0.127	0,225	0,228	0,223
F	24.39	16.26	10.45	27,48	17,88	11,76

Source: randomized experiment implemented in University Paris-Est Marne-La-Vallée (Paris region, France; 2011-2014).

Field: 526 first-year university students in Economics and Management, entering the literacy learning device for the first year, for whom information from the baseline administrative survey is available, as well as the two literacy test score.

Notes: effect of time to literacy practice (instrumental variable estimates using a Wald estimator instrumenting time to literacy practice using the encouragement dummy. Time to practice literacy: indicator 1 = indicator provided by platform *Projet Voltaire*; indicator 2 = overall time spent using platform *Projet Voltaire* - duration of the 1st literacy evaluation - duration of the 2nd literacy evaluation. Explanatory variables: score to the first literacy test; age of the first-year university student; gender of the student (reference=female); scholarship student; kind of baccalaureate (reference= baccalaureate ES, Economics and Social Science). Robust standard errors. *** (respectively ** or *) stands for significance at a 1% (respectively at a 5% or 10%) level.

Reading: at a 1 percent level, and considering the first indicator measuring the student time to literacy practice, an increase of 50 minutes in the time to literacy practice induces an increase in the variation of the 2 literacy tests scores for first-year university students in Economics and Management, at university Paris-Est Marne-La-Vallée.

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Table A3. Effect of encouragement to literacy learning on academic performance of first-year university students at university Paris-Est Marne-La-Vallée.
Detailed results.

Variables / Grades	Overall GPA in first-year BA	First semester GPA	GPA of Module 1 (Semester 1)	Introduction to Economics(GPA)	Introduction to Economics (CA)	**Introduction to Economics (FE)**	Introduction to Management(GPA)	**Introduction to Management(CA)**	Introduction to Management (FE)
Encouragement	0.091	0.084	0.256	0.302	-0.293	**0.708****	0.176	**0.642*****	-0.470
	(0.202)	(0.204)	(0.238)	(0.291)	(0.313)	**(0.335)**	(0.237)	**(0.215)**	(0.319)
Intercept	10.341***	10.272***	9.624***	9.191***	11.467***	**7.292*****	10.024***	**11.438*****	8.853***
	(0.150)	(0.154)	(0.180)	(0.215)	(0.229)	**(0.250)**	(0.186)	**(0.169)**	(0.249)
Observations	437	492	516	521	517	**512**	519	**517**	518
R2	0.000	0.000	0.002	0.002	0.002	**0.009**	0.001	**0.017**	0.004
F	0.203	0.171	1.159	1.076	0.874	**4.457**	0.551	**8.875**	2.173

Variables / Grades	GPA of Module 2 (Semester 1)	Mathematics (GPA)	Mathematics (CA)	**Mathematics (FE)**	English language (GPA)	National Accounting (FE)	GPA of Module 3 (Semester 1)	Methodology (GPA)	Methodology (CA)	Methodology (FE)	Dissertation
Encouragement	0.187	0.533	-0.163	**1.067****	0.061	-0.286	-0.150	0.125	0.045	-0.001	-0.213
	(0.275)	(0.406)	(0.405)	**(0.443)**	(0.237)	(0.301)	(0.207)	(0.206)	(0.199)	(0.275)	(0.195)
Intercept	9.695***	9.031***	10.601***	**7.764*****	11.574***	8.739***	11.131***	10.245***	12.262***	8.538***	12.459***
	(0.211)	(0.304)	(0.306)	**(0.331)**	(0.188)	(0.228)	(0.150)	(0.158)	(0.142)	(0.216)	(0.129)
Observations	504	514	507	**512**	517	516	475	522	516	510	522
R2	0.001	0.003	0.000	**0.011**	0.000	0.002	0.001	0.001	0.000	0.000	0.002
F	0.460	1.724	0.162	**5.803**	0.0662	0.900	0.525	0.368	0.0521	1.48e-05	1.197

Variables /Grades	Second semester GPA	GPA of Module 1 (Semester 2)	**Introduction to Microeconomics (GPA)**	**Introduction to Microeconomics (CA)**	Introduction to Microeconomics (FE)	Introduction to Macroeconomics (GPA)	Introduction to Macroeconomics (CA)	Introduction to Macroeconomics (FE)	Financial economics (GPA)	Financial economics (CA)	Financial economics (FE)
Encouragement	0.162	0.356	**1.082*****	**0.838****	0.655	0.398	0.074	-0.089	0.587	0.607	0.052
	(0.220)	(0.323)	**(0.406)**	**(0.392)**	(0.413)	(0.357)	(0.325)	(0.348)	(0.385)	(0.379)	(0.369)
Intercept	10.057***	8.999***	**7.502*****	**9.665*****	7.143***	8.691***	11.547***	7.753***	9.178***	11.102***	9.051***
	(0.161)	(0.247)	**(0.308)**	**(0.289)**	(0.315)	(0.279)	(0.254)	(0.264)	(0.302)	(0.303)	(0.277)
Observations	443	466	**493**	**454**	451	492	453	453	488	454	452
R2	0.001	0.003	**0.014**	**0.010**	0.006	0.003	0.000	0.000	0.005	0.006	0.000
F	0.542	1.215	**7.114**	**4.570**	2.519	1.239	0.0514	0.0651	2.323	2.556	0.0197

Variables / Grades	GPA of Module 2 (Semester 2)	General policy of the firm (GPA)	Entrepreneurship (CA)	Entrepreneurship (FE)	**Statistics and computer science (GPA)**	Statistics and computer science (CA)	Statistics and computer science (FE)	GPA of Module 3 (Semester 2)	Principles Of law	**English language (Semester 2)**
Encouragement	0.240	0.350	-0.085	-0.172	**0.875****	0.390	0.448	0.131	-0.118	**0.384***
	(0.268)	(0.302)	(0.226)	(0.283)	**(0.369)**	(0.292)	(0.396)	(0.175)	(0.222)	**(0.230)**
Intercept	9.517***	9.604***	11.796***	9.313***	**8.234*****	11.515***	7.152***	11.227***	11.056***	**11.457*****
	(0.204)	(0.246)	(0.170)	(0.217)	**(0.280)**	(0.223)	(0.288)	(0.125)	(0.169)	**(0.165)**
Observations	469	491	462	454	**489**	439	455	447	454	**449**
R2	0.002	0.003	0.000	0.001	**0.012**	0.004	0.003	0.001	0.001	**0.006**
F	0.804	1.344	0.140	0.371	**5.640**	1.786	1.280	0.557	0.282	**2.773**

Source: randomized experiment implemented in University Paris-Est Marne-La-Vallée (Paris region, France; 2011-2014).

Field: 526 first-year university students in Economics and Management, entering the literacy learning device for the first year, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.

Notes: effect of encouragement to literacy learning (*intention to treat*; OLS estimator). Robust standard errors within parentheses. For a considered teaching, FE stands for final exam, CA for continuous assessment, and GPA for grade point average, computed as the average of both the scores obtained to both FE and CA. *** (respectively ** and *) stands for significance at 1% (respectively at 5% or 10%) level.

Reading: at a 5 percent level, encouraging to literacy learning increases by 1.082 points the score to the grade point average in introduction to microeconomics for first-year university students in Economics and Management at university Paris-Est Marne-La-Vallée (Paris region, France).

Table A4. Effect of increasing the literacy level on academic performance of first-year university students at university Paris-Est Marne-La-Vallée. *Detailed results.*

Variables / Grades	Overall GPA in first-year BA	First semester GPA	GPA of Module 1 (Semester 1)	Introduction to Economics(GPA)	Introduction to Economics (CA)	**Introduction to Economics (FE)**	Introduction to Management(GPA)	**Introduction to Management(CA)**	Introduction to Management (FE)
Increase in literacy test scores	0.092	0.068	0.203	0.246	-0.238	**0.581****	0..141	**0.511*****	-0.404
	(0.196)	(0.159)	(0.178)	(0.228)	(0.272)	**(0.277)**	(0..181)	**(0.173)**	(0.314)
Intercept	10.072***	10.190***	9.108***	8.569***	12.072***	**5.799***	9.666***	**10.148***	9.895***
	(0.803)	(0.544)	(0.589)	(0.740)	(0.888)	**(0.914)**	(0.606)	**(0.575)**	(1.048)
Observations	437	492	516	521	517	**512**	519	**517**	518
R2	0.044	0.058	0.099	0.054	-0.135	**-0.014**	0.083	**-0.028**	-0.304
F	0.0509	0.1800	1.290	1.160	0.760	**4.370**	0.600	**8.640**	1.650

Variables / Grades	GPA of Module 2 (Semester 1)	Mathematics (GPA)	Mathematics (CA)	**Mathematics (FE)**	English language (GPA)	National Accounting (FE)	GPA of Module 3 (Semester 1)	Methodology (GPA)	Methodology (CA)	Methodology (FE)	Dissertation
Increase in literacy test scores	0.153	0.428	-0.132	**0.879****	0.051	-0.243	-0.117	0.103	0.037	-0.001	-0.176
	(0.216)	(0.306)	(0.337)	**(0.343)**	(0.195)	(0.276)	(0.168)	(0.165)	(0.158)	(0.233)	(0.178)
Intercept	9.293***	7.939***	10.942***	**5.494***	11.445***	9.366***	11.420***	9.984***	12.168***	8.540***	12.906***
	(0.731)	(1.012)	(1.126)	**(1.135)**	(0.654)	(0.911)	(0.543)	(0.543)	(0.514)	(0.786)	(0.559)
Observations	504	514	507	**512**	517	516	475	522	516	510	522
R2	0.084	0.120	-0.055	**0.122**	0.023	-0.156	-0.091	0.063	0.025	-0.001	-0.215
F	0.503	1.950	0.150	**6.550**	0.475	0.780	0.480	0.390	0.050	0.000	0.980

Variables / Grades	Second semester GPA	GPA of Module 1 (Semester 2)	**Introduction to Microeconomics (GPA)**	**Introduction to Microeconomics (CA)**	**Introduction to Microeconomics (FE)**	Introduction to Macroeconomics (GPA)	Introduction to Macroeconomics (CA)	Introduction to Macroeconomics (FE)	Financial economics (GPA)	Financial economics (CA)	Financial economics (FE)
Increase in literacy test scores	0.167	0.385	**1.032*****	**0.845****	**0.690***	0.377	0.075	-0.093	**0.558***	**0.578***	0.055
	(0.213)	(0.324)	**(0.376)**	**(0.402)**	**(0.420)**	(0.315)	(0.325)	(0.372)	**(0.337)**	**(0.352)**	(0.389)
Intercept	9.575***	7.917***	**4.799***	**7.242***	**5.170***	7.707***	11.332***	8.019***	**7.695***	**9.455***	8.892***
	(0.734)	(1.101)	**(1.223)**	**(1.385)**	**(1.449)**	(1.036)	(1.137)	(1.277)	**(1.129)**	**(1.251)**	(1.334)
Observations	**443**	**466**	**493**	**454**	**451**	492	453	453	**488**	**454**	452
R2	0.114	0.143	**0.061**	**-0.026**	**0.070**	0.137	0.031	-0.045	**0.154**	**0.054**	0.022
F	0.610	1.400	**7.510**	**4.400**	**2.690**	1.430	0.050	0.060	**2.730**	**2.690**	0.020

Variables / Grades	GPA of Module 2 (Semester 2)	Entrepreneurship (GPA)	Entrepreneurship (CA)	Policy of the firm (FE)	**Descriptive statistics and computer science (GPA)**	Descriptive statistics and computer science (CA)	Descriptive statistics and computer science (FE)	GPA of Module 3 (Semester 2)	Principles Of law	English language (Semester 2)
Increase in literacy test scores	0.249	0.329	-0.083	-0.187	**0.840****	0.395	0.486	0.144	-0.134	0.430
	(0.261)	(0.267)	(0.227)	(0.326)	**(0.335)**	(0.294)	(0.407)	(0.189)	(0.260)	(0.272)
Intercept	8.828***	8.746***	12.029***	9.847***	**6.037***	10.371***	5.760***	10.809***	11.442***	10.206***
	(0.876)	(0.892)	(0.773)	(1.119)	**(1.091)**	(1.035)	(1.378)	(0.644)	(0.889)	(0.925)
Observations	469	491	462	454	**489**	439	**455**	447	454	449
R2	0.119	0.108	-0.034	-0.145	**0.109**	0.014	0.105	0.033	-0.076	-0.109
F	0.910	1.510	0.130	0.320	**6.270**	1.790	1.420	0.570	0.260	2.480

Table A5. Effect of encouragement to literacy learning on academic performance of first-year university students at university Paris-Est Marne-La-Vallée.

Information provided by the administrative baseline survey are used are explanatory variables of the considered score. Detailed results.

Variables / Scores	Overall GPA in first-year BA	First semester GPA	GPA of Module 1 (Semester 1)	Introduction to Economics(GPA)	Introduction to Economics (CA)	**Introduction to Economics (FE)**	Introduction to Management(GPA)	**Introduction to Management(CA)**	Introduction to Management (FE)
Encouragement	0.203	0.115	0.250	0.290	-0.280	**0.683****	0.190	**0.627****	-0.448
	(0.177)	(0.171)	(0.212)	(0.262)	(0.292)	**(0.313)**	(0.213)	**(0.206)**	(0.294)
Score to the first literacy test	0.248***	0.280***	0.256***	0.295***	0.253***	**0.339****	0.224***	**0.160****	0.288***
	(0.038)	(0.038)	(0.047)	(0.059)	(0.064)	**(0.068)**	(0.046)	**(0.043)**	(0.062)
Age	0.009	0.013	-0.006	-0.000	-0.058	**0.113***	-0.011	**0.017**	0.001
	(0.064)	(0.050)	(0.068)	(0.065)	(0.076)	**(0.063)**	(0.080)	**(0.072)**	(0.091)
Gender (Man vs. woman)	-0.919***	-0.916***	-0.686***	-0.277	-0.439	**-0.250**	-1.139***	**-1.020****	-1.321***
	(0.179)	(0.179)	(0.224)	(0.277)	(0.305)	**(0.331)**	(0.220)	**(0.199)**	(0.298)
Scholarship student	-0.358**	-0.301*	-0.328	-0.621**	-0.214	**-0.884****	-0.065	**-0.029**	-0.105
	(0.179)	(0.174)	(0.218)	(0.273)	(0.308)	**(0.324)**	(0.213)	**(0.204)**	(0.298)
Baccalaureate S	0.744***	0.750***	0.500**	1.065***	1.271***	**0.974****	-0.039	**-0.125**	0.246
	(0.186)	(0.189)	(0.248)	(0.303)	(0.333)	**(0.357)**	(0.247)	**(0.225)**	(0.346)
Baccalaureate STG	-2.046***	-1.925***	-1.849***	-2.297***	-2.029***	**-1.782****	-1.393***	**-0.072**	-1.675***
	(0.416)	(0.342)	(0.416)	(0.441)	(0.493)	**(0.572)**	(0.468)	**(0.483)**	(0.577)
Other baccalaureate	-0.613	-1.642***	-2.112***	-2.638***	-2.779***	**-2.073***	-1.801***	**-0.653**	-2.329***
	(0.788)	(0.616)	(0.670)	(0.814)	(0.945)	**(0.836)**	(0.600)	**(0.581)**	(0.709)
Intercept	8.960***	8.732***	8.647***	7.635***	11.093***	**3.375***	9.626***	**10.736****	7.870***
	(1.237)	(1.003)	(1.338)	(1.334)	(1.476)	**(1.322)**	(1.562)	**(1.409)**	(1.800)
Observations	437	492	516	521	517	**512**	519	**517**	518
R2	0.282	0.308	0.195	0.193	0.152	**0.144**	0.172	**0.109**	0.150
F	20.43	29.19	14.76	15.89	11.51	**11.36**	13.88	**6.890**	12.92

Variables / Scores	GPA of Module 2 (Semester 1)	Mathematics (GPA)	Mathematics (CA)	**Mathematics (FE)**	English language (GPA)	National Accounting (FE)	GPA of Module 3 (Semester 1)	Methodology (GPA)	Methodology (CA)	Methodology (FE)	Dissertation
Encouragement	0.191	0.499	-0.156	**1.036***	0.052	-0.219	-0.180	0.129	0.090	0.033	-0.179
	(0.230)	(0.343)	(0.343)	**(0.387)**	(0.206)	(0.281)	(0.192)	(0.183)	(0.181)	(0.259)	(0.168)
Score to the first literacy test	0.313***	0.291***	0.251***	**0.335***	0.414***	0.230***	0.238***	0.272***	0.275***	0.318***	0.274***
	(0.049)	(0.075)	(0.073)	**(0.087)**	(0.043)	(0.061)	(0.038)	(0.041)	(0.038)	(0.058)	(0.037)
Age	0.029	0.091	0.037	**0.166***	-0.028	-0.049	-0.008	-0.052	-0.032	-0.048	-0.012
	(0.064)	(0.090)	(0.100)	**(0.095)**	(0.057)	(0.076)	(0.033)	(0.044)	(0.056)	(0.042)	(0.032)
Gender (Man vs. woman)	-1.080***	-1.550***	-1.541***	**-1.429***	-0.367*	-0.958***	-0.927***	-0.922***	-0.654***	-1.134***	-0.884***
	(0.237)	(0.354)	(0.357)	**(0.396)**	(0.208)	(0.283)	(0.197)	(0.187)	(0.185)	(0.269)	(0.186)
Scholarship student	-0.505**	-0.494	-0.674**	**-0.066**	-0.488**	-0.784***	-0.173	-0.236	-0.370*	-0.149	-0.113
	(0.233)	(0.343)	(0.338)	**(0.388)**	(0.214)	(0.294)	(0.206)	(0.187)	(0.190)	(0.264)	(0.184)
Baccalaureate S	1.636***	3.569***	3.611***	**3.617***	0.336	-0.873***	0.118	-0.016	-0.226	0.228	-0.221
	(0.253)	(0.386)	(0.394)	**(0.433)**	(0.210)	(0.328)	(0.208)	(0.201)	(0.197)	(0.278)	(0.177)
Baccalaureate STG	-2.613***	-3.698***	-3.444***	**-3.726***	-1.186***	-2.263***	-0.775*	-1.515***	-1.610***	-0.814	-1.615***
	(0.423)	(0.576)	(0.570)	**(0.662)**	(0.393)	(0.519)	(0.461)	(0.355)	(0.452)	(0.532)	(0.578)
Other baccalaureate	-1.999**	-1.867*	-1.916	**-1.435**	-2.014***	-2.347***	-0.799	-1.606**	-1.300**	-1.134	-0.737
	(0.776)	(1.110)	(1.188)	**(1.186)**	(0.728)	(0.709)	(0.646)	(0.649)	(0.637)	(0.715)	(0.551)
Intercept	7.665***	5.812***	8.638***	**2.612**	9.860***	9.465***	10.392***	10.233***	11.793***	8.072***	11.633***
	(1.275)	(1.798)	(1.966)	**(1.907)**	(1.116)	(1.520)	(0.671)	(0.853)	(1.074)	(0.887)	(0.629)
Observations	504	514	507	**512**	517	516	475	522	516	510	522
R2	0.317	0.313	0.299	**0.277**	0.258	0.143	0.165	0.238	0.209	0.144	0.215
F	34.04	36.55	34.30	**29.80**	21.08	13.25	10.68	15.52	13.22	9.862	15.76

Variables / Scores	Second semester GPA	GPA of Module 1 (Semester 2)	Introduction to Microeconomics (GPA)	Introduction to Microeconomics (CA)	Introduction to Microeconomics (FE)	Introduction to Macroeconomics (GPA)	Introduction to Macroeconomics (CA)	Introduction to Macroeconomics (FE)	Financial economics (GPA)	Financial economics (CA)	Financial economics (FE)
Encouragement	0.312	0.508*	1.048***	0.954***	0.828**	0.371	0.241	0.051	0.619*	0.728**	0.262
	(0.199)	(0.298)	(0.367)	(0.366)	(0.396)	(0.321)	(0.307)	(0.334)	(0.353)	(0.360)	(0.356)
First literacy test score	0.246***	0.235***	0.282***	0.163**	0.271***	0.343***	0.198***	0.336***	0.258***	0.234***	0.230***
	(0.041)	(0.063)	(0.082)	(0.081)	(0.085)	(0.068)	(0.061)	(0.070)	(0.073)	(0.075)	(0.070)
Age	-0.023	-0.028	0.106	0.000	0.066	0.068	-0.035	-0.015	0.090	-0.002	-0.071
	(0.073)	(0.086)	(0.086)	(0.068)	(0.094)	(0.106)	(0.089)	(0.102)	(0.122)	(0.094)	(0.141)
Gender (Man vs. woman)	-0.912***	-1.325***	-2.159***	-1.782***	-1.650***	-1.140***	-1.165***	-0.110	-1.609***	-1.557***	-0.720**
	(0.201)	(0.302)	(0.373)	(0.368)	(0.400)	(0.314)	(0.303)	(0.334)	(0.354)	(0.365)	(0.364)
Scholarship student	-0.346*	-0.269	0.037	-0.069	-0.420	0.030	-0.079	-0.501	-0.444	-0.554	-0.823**
	(0.203)	(0.305)	(0.373)	(0.371)	(0.401)	(0.320)	(0.319)	(0.333)	(0.353)	(0.368)	(0.361)
Baccalaureate S	0.696***	0.848***	1.881***	2.554***	1.047**	0.683*	0.069	1.133***	-0.222	-0.185	-0.349
	(0.209)	(0.317)	(0.405)	(0.395)	(0.429)	(0.349)	(0.342)	(0.352)	(0.373)	(0.392)	(0.377)
Baccalaureate STG	-2.157***	-3.036***	-2.965***	-2.412***	-2.846***	-3.378***	-2.838***	-2.339***	-3.462***	-2.286***	-2.815***
	(0.438)	(0.605)	(0.666)	(0.816)	(0.782)	(0.623)	(0.617)	(0.653)	(0.659)	(0.664)	(0.798)
Other baccalaureate	-0.468	-1.391	-0.741	0.041	0.104	-2.974***	-2.795**	-1.232	-3.238**	-2.018	-2.103
	(0.908)	(1.219)	(1.289)	(1.484)	(1.490)	(1.071)	(1.200)	(1.002)	(1.295)	(1.316)	(1.378)
Intercept	9.282***	8.661***	4.577**	8.818***	4.885**	5.964***	11.651***	5.782***	7.291***	10.808***	9.748***
	(1.410)	(1.741)	(1.778)	(1.451)	(1.894)	(2.082)	(1.739)	(2.007)	(2.383)	(1.825)	(2.721)
Observations	443	466	493	454	451	492	453	453	488	454	452
R2	0.240	0.181	0.216	0.183	0.134	0.209	0.133	0.137	0.172	0.117	0.100
F	17.34	12.06	17.60	12.50	8.806	14.70	7.687	10.46	11.82	7.449	6.285

Variables / Scores	GPA of Module 2 (Semester 2)	Entrepreneurship (GPA)	Entrepreneurship (CA)	Entrepreneurship (FE)	Statistics and computer science (GPA)	Statistics and computer science (CA)	Statistics and computer science (FE)	GPA of Module 3 (Semester 2)	Principles Of law t	English language (Semester 2)
Encouragement	0.289	0.294	-0.058	-0.067	0.807**	0.437	0.641*	0.236	0.014	0.477**
	(0.243)	(0.281)	(0.220)	(0.281)	(0.324)	(0.269)	(0.365)	(0.164)	(0.223)	(0.206)
First literacy test score	0.289***	0.234***	0.154***	0.201***	0.418***	0.269***	0.452***	0.204***	0.054	0.372***
	(0.051)	(0.059)	(0.048)	(0.063)	(0.071)	(0.052)	(0.078)	(0.034)	(0.045)	(0.046)
Age	0.008	0.125	0.053	-0.037	0.134	-0.041	-0.002	-0.106**	-0.170***	-0.062
	(0.089)	(0.098)	(0.111)	(0.069)	(0.103)	(0.093)	(0.125)	(0.043)	(0.045)	(0.074)
Gender (Man vs. woman)	-0.630**	-0.940***	-0.492**	-0.478*	-0.817**	-0.139	-0.668*	-0.491***	-0.237	-0.553***
	(0.244)	(0.256)	(0.216)	(0.280)	(0.325)	(0.271)	(0.375)	(0.173)	(0.228)	(0.209)
Scholarship student	-0.433*	-0.108	-0.723***	-0.406	-0.198	-0.533**	-0.620*	-0.046	0.053	-0.179
	(0.239)	(0.264)	(0.222)	(0.273)	(0.318)	(0.259)	(0.369)	(0.166)	(0.218)	(0.214)
Baccalaureate S	1.062***	0.088	-0.139	0.087	1.677***	1.356***	1.873***	0.233	-0.179	0.486**
	(0.254)	(0.287)	(0.230)	(0.298)	(0.363)	(0.296)	(0.414)	(0.174)	(0.235)	(0.227)
Baccalaureate STG	-2.050***	-2.483***	-1.184**	-1.169**	-3.413***	-2.333***	-3.029***	-1.232***	-1.180**	-1.344**
	(0.429)	(0.636)	(0.490)	(0.460)	(0.571)	(0.538)	(0.610)	(0.445)	(0.542)	(0.598)
Other baccalaureate	-1.822*	-3.244***	-2.409***	-0.589	-2.059*	-1.731	-0.497	-0.415	-0.352	-0.860
	(1.050)	(1.115)	(0.898)	(1.319)	(1.113)	(1.058)	(1.286)	(0.516)	(0.632)	(0.587)
Intercept	7.790***	6.617***	10.499***	9.081***	3.386*	10.475***	4.275*	12.063***	14.015***	10.369***
	(1.727)	(1.898)	(2.096)	(1.373)	(2.044)	(1.775)	(2.429)	(0.839)	(0.892)	(1.466)
Observations	469	491	462	454	489	439	455	447	454	449
R2	0.211	0.175	0.111	0.064	0.257	0.195	0.205	0.164	0.045	0.227
F	16.89	9.223	5.827	4.543	23.55	13.97	19.91	10.92	2.759	14.82

Table A6. Effect of increasing the literacy level on academic performance of first-year university students at university Paris-Est Marne-La-Vallée.
Information provided by the administrative baseline survey are used are explanatory variables of the considered score. Detailed results.

Variables / Grades	Overall GPA in first-year BA	First semester GPA	GPA of Module 1 (Semester 1)	Introduction to Economics(GPA)	Introduction to Economics (CA)	**Introduction to Economics (FE**	Introduction to Management(GPA)	**Introduction to Management(CA)**	Introduction to Management (FE)
Increase in literacy test scores	0.186	0.088	0.196	0.234	-0.226	**0.552****	0.150	**0.494****	-0.374
	(0.150)	(0.124)	(0.157)	(0.203)	(0.248)	**(0.253)**	(0.160)	**(0.167)**	(0.273)
Score to the first literacy test	0.262***	0.285***	0.266***	0.305***	0.242***	**0.362****	0.232***	**0.185****	0.272***
	(0.037)	(0.036)	(0.046)	(0.057)	(0.068)	**(0.067)**	(0.045)	**(0.046)**	(0.069)
Age	0.016	0.012	-0.005	0.001	-0.057	**0.112***	-0.011	**0.016**	-0.000
	(0.062)	(0.049)	(0.064)	(0.060)	(0.081)	**(0.059)**	(0.078)	**(0.070)**	(0.097)
Gender (Men vs. women)	-0.608**	-0.787***	-0.397	0.077	-0.794	**0.570**	-0.917***	**-0.271**	-1.879***
	(0.302)	(0.238)	(0.306)	(0.392)	(0.494)	**(0.508)**	(0.311)	**(0.332)**	(0.510)
Scholarship student	-0.391**	-0.328*	-0.383*	-0.679**	-0.148	**-1.024****	-0.106	**-0.161**	-0.023
	(0.166)	(0.171)	(0.213)	(0.265)	(0.330)	**(0.327)**	(0.209)	**(0.213)**	(0.336)
Baccalaureate S	0.654***	0.721***	0.428*	0.972***	1.366***	**0.737***	-0.094	**-0.335**	0.402
	(0.197)	(0.190)	(0.251)	(0.307)	(0.369)	**(0.382)**	(0.255)	**(0.257)**	(0.399)
Baccalaureate STG	-1.875***	-1.855***	-1.619***	-2.037***	-2.271***	**-1.190***	-1.213**	**0.440**	-2.098***
	(0.413)	(0.350)	(0.450)	(0.500)	(0.560)	**(0.708)**	(0.494)	**(0.500)**	(0.669)
Other Baccalaureate	-0.559	-1.567***	-1.910***	-2.413***	-3.011***	**-1.616****	-1.640***	**-0.116**	-2.694***
	(0.748)	(0.599)	(0.638)	(0.788)	(1.034)	**(0.794)**	(0.581)	**(0.565)**	(0.816)
Intercept	8.081***	8.422***	7.926***	6.784***	11.904***	**1.440**	9.073***	**8.987****	9.243***
	(1.395)	(1.084)	(1.441)	(1.496)	(1.819)	**(1.590)**	(1.664)	**(1.561)**	(2.188)
Observations	437	492	516	521	517	**512**	519	**517**	518
R2	0.369	0.362	0.261	0.241	0.051	**0.112**	0.229	**0.030**	-0.068
F	22.82	31.02	16.03	16.15	10.49	**10.75**	15.36	**7.098**	10.18

Variables / Grades	GPA of Module 2 (Semester 1)	Mathematics (GPA)	Mathematics (CA)	**Mathematics (FE)**	English language (GPA)	National Accounting (FE)	GPA of Module 3 (Semester 1)	Methodology (GPA)	Methodology (CA)	Methodology (FE)	Dissertation
Increase in literacy test scores	0.152	0.395	-0.124	**0.836****	0.042	-0.182	-0.140	0.106	0.072	0.027	-0.146
	(0.174)	(0.255)	(0.278)	**(0.298)**	(0.165)	(0.244)	(0.155)	(0.145)	(0.139)	(0.210)	(0.148)
Score to the first literacy test	0.320***	0.310***	0.244***	**0.370****	0.416***	0.222***	0.229***	0.277***	0.278***	0.318***	0.268***
	(0.046)	(0.070)	(0.077)	**(0.081)**	(0.043)	(0.063)	(0.039)	(0.041)	(0.038)	(0.057)	(0.040)
Age	0.029	0.092	0.037	**0.168****	-0.028	-0.050	-0.005	-0.052	-0.032	-0.048	-0.013
	(0.062)	(0.086)	(0.099)	**(0.084)**	(0.057)	(0.076)	(0.034)	(0.041)	(0.054)	(0.041)	(0.034)
Gender (Men vs. women)	-0.848**	-0.952*	-1.736***	**-0.190**	-0.303	-1.229***	-1.148***	-0.763***	-0.544*	-1.094***	-1.108***
	(0.334)	(0.504)	(0.564)	**(0.598)**	(0.323)	(0.447)	(0.333)	(0.277)	(0.286)	(0.403)	(0.303)
Scholarship student	-0.547**	-0.601*	-0.635*	**-0.320**	-0.499**	-0.742**	-0.119	-0.264	-0.390**	-0.156	-0.069
	(0.226)	(0.327)	(0.359)	**(0.375)**	(0.217)	(0.310)	(0.236)	(0.185)	(0.190)	(0.265)	(0.204)
Baccalaureate S	1.577***	3.419***	3.661***	**3.287****	0.319	-0.797**	0.183	-0.058	-0.254	0.219	-0.163
	(0.260)	(0.393)	(0.428)	**(0.449)**	(0.217)	(0.351)	(0.226)	(0.212)	(0.201)	(0.292)	(0.201)
Baccalaureate STG	-2.476***	-3.292***	-3.560***	**-2.811****	-1.143***	-2.462***	-0.918*	-1.392***	-1.526***	-0.783	-1.784***
	(0.434)	(0.604)	(0.637)	**(0.766)**	(0.405)	(0.576)	(0.503)	(0.352)	(0.466)	(0.546)	(0.649)
Other Baccalaureate	-1.861**	-1.474	-2.026	**-0.717**	-1.977***	-2.524***	-0.956	-1.502**	-1.239**	-1.111	-0.879
	(0.761)	(1.057)	(1.242)	**(1.072)**	(0.724)	(0.768)	(0.666)	(0.620)	(0.621)	(0.731)	(0.593)
Intercept	7.118***	4.368***	9.083***	**-0.418**	9.707***	10.128***	10.853***	9.841***	11.548***	7.979***	12.172***
	(1.443)	(2.056)	(2.318)	**(2.152)**	(1.265)	(1.836)	(0.880)	(0.932)	(1.128)	(1.137)	(0.906)
Observations	504	514	507	**512**	517	516	475	522	516	510	522
R2	0.373	0.382	0.263	**0.328**	0.266	0.055	0.081	0.278	0.238	0.151	0.079
F	35.71	38.70	32.44	**28.34**	21.35	12.02	9.380	16.30	13.66	9.923	13.11

Variables / Grades	Second semester GPA	GPA of Module 1 (Semester 2)	Introduction to Microeconomics (GPA)	Introduction to Microeconomics (CA)	Introduction to Microeconomics (FE)	Introduction to Macroeconomics (GPA)	Introduction to Macroeconomics (CA)	Introduction to Macroeconomics(FE)	Financial economics (GPA)	Financial Economics (CA)	Financial economics (FE)
Increase in literacy test scores	0.287*	0.499*	0.997***	0.867**	0.769**	0.351	0.223	0.048	0.573*	0.640**	0.250
	(0.171)	(0.277)	(0.356)	(0.353)	(0.368)	(0.284)	(0.276)	(0.308)	(0.308)	(0.316)	(0.327)
Score to the first literacy test	0.265***	0.262***	0.323***	0.222**	0.318***	0.354***	0.209***	0.337***	0.284***	0.275***	0.243***
	(0.040)	(0.063)	(0.086)	(0.091)	(0.089)	(0.064)	(0.061)	(0.070)	(0.071)	(0.076)	(0.070)
Age	-0.007	0.000	0.103	0.043	0.113	0.068	-0.025	-0.012	0.088	0.028	-0.056
	(0.065)	(0.085)	(0.073)	(0.079)	(0.097)	(0.097)	(0.088)	(0.101)	(0.109)	(0.092)	(0.140)
Gender (Men vs. women)	-0.428	-0.523	-0.519	-0.379	-0.381	-0.565	-0.802	-0.034	-0.700	-0.541	-0.328
	(0.348)	(0.543)	(0.731)	(0.731)	(0.729)	(0.543)	(0.529)	(0.575)	(0.598)	(0.628)	(0.646)
Scholarship student	-0.387**	-0.364	-0.174	-0.163	-0.534	-0.045	-0.114	-0.509	-0.532	-0.632*	-0.866**
	(0.189)	(0.286)	(0.385)	(0.393)	(0.396)	(0.299)	(0.304)	(0.326)	(0.335)	(0.369)	(0.354)
Baccalaureate S	0.558**	0.595*	1.398***	2.202***	0.728	0.508	-0.041	1.114***	-0.481	-0.440	-0.455
	(0.223)	(0.348)	(0.467)	(0.447)	(0.473)	(0.372)	(0.372)	(0.380)	(0.388)	(0.404)	(0.397)
Baccalaureate STG	-1.818***	-2.471***	-1.808**	-1.369	-1.875**	-2.980***	-2.632***	-2.283***	-2.769***	-1.607**	-2.526***
	(0.441)	(0.607)	(0.760)	(0.877)	(0.872)	(0.630)	(0.637)	(0.673)	(0.651)	(0.761)	(0.769)
Other Baccalaureate	-0.394	-1.206	-0.111	0.372	0.361	-2.741***	-2.730**	-1.213	-2.808**	-1.767	-2.001
	(0.854)	(1.140)	(1.193)	(1.493)	(1.354)	(1.037)	(1.001)	(1.153)	(1.211)	(1.198)	(1.336)
Intercept	7.838***	6.218***	0.944	4.526*	0.964	4.707**	10.611***	5.548**	5.191**	7.688***	8.506***
	(1.550)	(2.293)	(2.111)	(2.552)	(2.779)	(2.196)	(2.245)	(2.513)	(2.465)	(2.455)	(3.221)
Observations	443	466	493	454	451	492	453	453	488	454	452
R2	0.324	0.259	0.168	0.065	0.121	0.293	0.175	0.153	0.261	0.103	0.157
F	19.40	13.39	16.48	10.77	8.694	16.41	7.692	10.68	13.79	6.890	6.897

Variables / Grades	GPA of Module 2 (Semester 2)	Entrepreneurship (GPA)	Entrepreneurship (CA)	Entrepreneurship (FE)	Statistics and computer science (GPA)	Statistics and computer science (CA)	Statistics and computer science (FE)	GPA of Module 3 (Semester 2)	Principles Of law and right	English language (Semester 2)
Increase in literacy test scores	0.274	0.274	-0.054	-0.063	0.769***	0.402	0.607*	0.233	0.014	0.479**
	(0.216)	(0.251)	(0.202)	(0.268)	(0.297)	(0.248)	(0.330)	(0.165)	(0.220)	(0.231)
Score to the first literacy test	0.302***	0.243***	0.152***	0.198***	0.447***	0.298***	0.486***	0.217***	0.055	0.398***
	(0.049)	(0.056)	(0.047)	(0.063)	(0.070)	(0.056)	(0.076)	(0.036)	(0.045)	(0.052)
Age	0.024	0.125	0.050	-0.041	0.134	-0.017	0.038	-0.093***	-0.169***	-0.037
	(0.083)	(0.089)	(0.110)	(0.072)	(0.094)	(0.069)	(0.117)	(0.035)	(0.044)	(0.067)
Gender (Men vs. women)	-0.179	-0.487	-0.581	-0.579	0.461	0.552	0.294	-0.103	-0.215	0.246
	(0.420)	(0.465)	(0.408)	(0.529)	(0.590)	(0.477)	(0.628)	(0.322)	(0.403)	(0.438)
Scholarship student	-0.481**	-0.164	-0.718***	-0.396	-0.371	-0.560**	-0.701**	-0.092	0.050	-0.280
	(0.223)	(0.255)	(0.222)	(0.279)	(0.313)	(0.263)	(0.351)	(0.172)	(0.217)	(0.242)
Baccalaureate S	0.911***	-0.049	-0.113	0.115	1.271***	1.167***	1.593***	0.113	-0.186	0.232
	(0.280)	(0.324)	(0.253)	(0.345)	(0.406)	(0.329)	(0.433)	(0.206)	(0.263)	(0.287)
Baccalaureate STG	-1.739***	-2.172***	-1.243**	-1.247**	-2.548***	-1.783***	-2.268***	-0.967**	-1.163**	-0.811
	(0.453)	(0.619)	(0.506)	(0.502)	(0.657)	(0.563)	(0.717)	(0.463)	(0.566)	(0.669)
Other Baccalaureate	-1.735*	-3.079***	-2.444***	-0.607	-1.601	-1.587*	-0.259	-0.356	-0.348	-0.751
	(0.993)	(1.075)	(0.891)	(1.327)	(0.987)	(0.950)	(1.182)	(0.477)	(0.623)	(0.563)
Intercept	6.449***	5.631***	10.756***	9.394***	0.586	8.361***	1.168	10.899***	13.946***	8.027***
	(1.996)	(1.901)	(2.146)	(1.960)	(2.266)	(1.868)	(2.899)	(1.044)	(1.417)	(1.770)
Observations	469	491	462	454	489	439	455	447	454	449
R2	0.298	0.237	0.099	0.027	0.301	0.179	0.261	0.127	0.049	0.023
F	17.76	9.834	5.758	4.423	23.64	14.78	17.91	10.87	2.802	12.87

Source: randomized experiment implemented in University Paris-Est Marne-La-Vallée (Paris region, France; 2011-2014).

Field: 526 first-year university students in Economics and Management, entering the literacy learning device for the first year, for whom information from the baseline survey is available, as well as the two literacy test score.

Notes: effect of increasing (*local average treatment effect*; Wald estimator). For a considered teaching, FE stands for final exam, CA for continuous assessment, and GPA for grade point average, computed as the average of both the scores obtained to both FE and CA. Included baseline variables: score to the first literacy test, age of the university student; gender (reference=female); scholarship student; kind of baccalaureate (reference= Economics and Social Science stream). *** (respectively ** and *) stands for significance at 1% (respectively at 5% or 10%) level.

Reading: at a 5 percent level, a rise of 1 point in the difference between the second and the first literacy test scores induces an increase of 0.552 point in the final exam of Introduction to Economics for first-year university students in Economics and Management at university Paris -Est Marne-La-Vallée.

Table A7. Testing for differences in sample characteristics between tutorial groups that where encouraged to literacy learning and those who were not, for first-year university students in Economics and Management at university Lille 1.

Characteristics	Encouraged (1)	Not encouraged (2)	Difference (1)-(2) (significance)
Score to the first written literacy test[a]	6.1	6.1	0.0
Age [b]	19.6	19.4	0.2
Gender (being a man)[c]	58.9	67.3	-8.5
French nationality	78.2	82.4	-3.2
Scholarship student	51.6	50.7	-1.1
Kind of baccalauréat[c]:			
Bac ES (Economics and Social Science stream)	52.4	49.2	3.2
Bac S (Science stream)	29.0	32.7	-3.7
Bac STG (Technology stream)	9.7	9.5	0.2
Other (Bac L - Literature stream ; foreign)	8.9	8.5	0.4
French department for the baccalauréat[c]:			
Nord	58.3	62.6	-4.3
Pas de Calais	10.8	9.1	1.7
Other French department	30.8	28.3	2.5
Abroad	17.5	18.2	-0.7
French department for residence[c]			
Nord	97.6	96.5	1.1
Pas de Calais	1.6	2.5	-0.9
Other (including abroad)	0.8	1.0	-0.2

Source: randomized experiment implemented in University Lille 1 (Northern France; 2013-2014).
Field: 323 first-year university students in Economics and Management, who participate in the literacy learning device, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.
Notes: [a] score; [b] years; [c] percentage. *** (respectively ** or *) stands for significance of the difference at a 1% (respectively 5% or 10%) level.

Table A8. Effect of encouragement to literacy learning on academic performance of first-year university students at university Lille 1.
Detailed results.

Variables / Disciplines	Overall GPA in first-year BA	First semester GPA	GPA of Module 1 (Semester 1)	**Introduction to economics (GPA)**	Introduction to economics (CA)	Introduction to economics(FE)	Methodology (Semester 1)	**GPA of Module 2 (Semester 1)**	**Introduction to management**	Introduction to national accounting	**Defining career objectives**
Encouragement	0.407	0.564*	0.473	**0.751***	0.665	0.549	-0.393	**0.944***	**0.998***	-0.304	**1.606***
	(0.373)	(0.331)	(0.330)	**(0.388)**	(0.432)	(0.522)	(0.375)	**(0.338)**	**(0.529)**	(0.314)	**(0.310)**
Intercept	9.156***	10.181***	10.594***	**10.067***	9.890***	9.140***	11.947***	**12.353***	**11.422***	13.497***	**13.799***
	(0.246)	(0.221)	(0.218)	**(0.253)**	(0.266)	(0.330)	(0.233)	**(0.241)**	**(0.358)**	(0.208)	**(0.227)**
Observations	322	323	323	**323**	319	319	318	**323**	**312**	316	**315**
R2	0.004	0.008	0.006	**0.011**	0.007	0.003	0.003	**0.021**	**0.011**	0.003	**0.069**
F	1.194	2.908	2.056	**3.750**	2.370	1.108	1.103	**7.787**	**3.552**	0.939	**26.80**

Variables / Disciplines	GPA of Module 3 (Semester 1)	Financials Mathematics(GPA)	Financial Mathematics(CA)	Financial Mathematics(FE)	Statistics (Semester 1)	GPA of Module 4 (Semester 1)	Economic sociology	**Economic History**	GPA of Module 5 (Semester 1)	English (Semester 1, GPA)	**English (Semester, CA)**	English (Semester 1, FE)
Encouragement	0.156	0.040	0.602	-0.506	0.310	0.699	0.591	**1.118***	0.549	0.184	**1.705***	-0.624
	(0.454)	(0.479)	(0.537)	(0.509)	(0.479)	(0.505)	(0.550)	**(0.575)**	(0.404)	(0.504)	**(0.990)**	(1.049)
Intercept	8.215***	8.117***	11.076***	4.973***	8.272***	9.776***	10.138***	**9.856***	9.979***	9.619***	**15.963***	20.074***
	(0.296)	(0.321)	(0.365)	(0.336)	(0.301)	(0.318)	(0.348)	**(0.365)**	(0.264)	(0.330)	**(0.657)**	(0.667)
Observations	323	322	315	312	322	323	310	**312**	323	322	**284**	308
R2	0.000	0.000	0.004	0.003	0.001	0.006	0.004	**0.012**	0.005	0.000	**0.010**	0.001
F	0.118	0.00702	1.259	0.986	0.418	1.916	1.153	**3.775**	1.842	0.133	**2.964**	0.354

Variables / Disciplines	Second semester GPA	GPA of Module 6 (Semester 2)	Introduction to Macroeconomics	Methodology (Semester 2)	GPA of Module 7 (Semester 2)	General accounting (GPA)	General accounting (CA)	General accounting (FE)	Functional analysis of organizations
Encouragement	0.276	0.315	0.487	-0.160	-0.123	-0.188	-0.496	-0.152	-0.139
	(0.449)	(0.551)	(0.596)	(0.397)	(0.520)	(0.448)	(0.462)	(0.460)	(0.644)
Intercept	8.104***	9.163***	10.027***	11.514***	8.294***	9.270***	11.782***	7.520***	9.232***
	(0.292)	(0.342)	(0.368)	(0.261)	(0.327)	(0.289)	(0.285)	(0.297)	(0.412)
Observations	322	322	269	297	322	301	286	292	277
R2	0.001	0.001	0.003	0.001	0.000	0.001	0.004	0.000	0.000
F	0.377	0.326	0.666	0.163	0.0559	0.177	1.154	0.110	0.0465

Variables / Disciplines	GPA of Module 8 (Semester 2)	Mathematics (GPA)	Mathematics (Exam 1)	Mathematics (Exam 2)	**Mathematics (CA)**	Statistics (Semester 2, GPA)	Statistics (FE)	GPA of Module 9 (Semester 2)	Big contemporary economic issues	Economic history	Tutorials in economics and computer science	GPA of Module 10 (Semester 2)	English (Semester 2, GPA)	English (Semester 2, CA)	English (Semester 2, FE)
Encouragement	0.283	0.087	-0.501	0.074	**2.008***	0.133	-0.395	0.684	0.557	0.532	0.620	0.223	-0.414	-0.997	-0.909
	(0.496)	(0.500)	(0.526)	(0.485)	**(0.732)**	(0.596)	(0.619)	(0.482)	(0.497)	(0.638)	(0.425)	(0.496)	(0.519)	(1.054)	(0.942)
Intercept	5.672***	4.368***	4.298***	3.207***	**5.875***	8.522***	7.177***	9.059***	9.095***	10.107***	10.054***	8.339***	8.971***	16.312***	16.742***
	(0.310)	(0.324)	(0.363)	(0.310)	**(0.399)**	(0.383)	(0.404)	(0.312)	(0.336)	(0.432)	(0.272)	(0.329)	(0.339)	(0.662)	(0.653)
Observations	322	277	284	274	**248**	292	288	322	278	276	317	322	293	251	273
R2	0.001	0.000	0.003	0.000	**0.032**	0.000	0.001	0.006	0.004	0.002	0.007	0.001	0.002	0.004	0.003
F	0.327	0.0304	0.906	0.0232	**7.524**	0.0494	0.408	2.009	1.258	0.696	2.130	0.202	0.634	0.894	0.932

Source: randomized experiment implemented in University Lille 1 (Northern France; 2013-2014) and Tables A9 to A11 (appendix).

Field: 323 first-year university students in Economics and Management, who participate in the literacy learning device, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.

Notes: effect of encouragement to literacy learning (*intention to treat*; OLS estimator). Robust standard errors within parentheses. For a considered discipline, FE stands for final exam, CA for continuous assessment, and GPA for grade point average, computed as the average of both the scores obtained to both FE and CA. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.

Reading: at a 1 percent level, encouraging to literacy practice increases by 0.944 point the score to GPA of Module 2 for first-year university students in Economics and Management stream at university Lille 1 (Northern France).

Table A9. Effect of increasing the literacy level on academic performance of first-year university students at university Lille 1. *Detailed results.*

Variables / Disciplines	Overall GPA In first year BA	First semester GPA	GPA of Module 1 (Semester 1)	**Introduction to economics (GPA)**	Introduction to economics (CA)	Introduction to economics(FE)	Methodology (Semester 1)	**GPA of Module 2 (Semester 1)**	**Introduction to management**	Introduction to National accounting	**Defining Career objectives**
Increase in literacy test scores	0.250	0.345*	0.290	**0.460**	0.414	0.341	-0.245	**0.578***	**0.568***	-0.186	**0.974***
	(0.213)	(0.185)	(0.191)	**(0.226)**	(0.258)	(0.313)	(0.246)	**(0.201)**	**(0.294)**	(0.203)	**(0.234)**
Intercept	8.800***	9.694***	10.185***	**9.419*****	9.305***	8.657***	12.299***	**11.538*****	**10.648*****	13.760***	**12.426*****
	(0.486)	(0.426)	(0.437)	**(0.512)**	(0.566)	(0.689)	(0.539)	**(0.474)**	**(0.673)**	(0.462)	**(0.526)**
Observations	322	323	323	**323**	319	319	318	**323**	**312**	316	**315**
R2	0.130	0.159	0.099	**0.091**	0.065	0.065	-0.112	**0.088**	**0.079**	-0.121	**-0.300**
F	1.377	3.444	2.283	**4.098**	2.547	1.181	0.982	**8.214**	**3.719**	0.830	**17.20**

Variables / Disciplines	GPA of Module 3 (Semester 1)	Financial Mathematics(GPA)	Financial Mathematics(CA)	Financial Mathematics(CT)	Statistics (Semester 1)	GPA of Module 4 (Semester 1)	Economic sociology	**Economic History**	GPA of Module 5 (Semester 1)	English (Semester 1,GPA)	**English (Semester 1, CA)**	English (Semester 1, FE)
Increase in literacy test scores	0.095	0.025	0.373	-0.306	0.189	0.428	0.344	**0.674****	0.336	0.113	**0.993***	-0.362
	(0.271)	(0.290)	(0.320)	(0.331)	(0.280)	(0.292)	(0.305)	**(0.333)**	(0.235)	(0.303)	**(0.551)**	(0.623)
Intercept	8.080***	8.083***	10.545***	5.398***	8.007***	9.172***	9.665***	**8.900*****	9.505***	9.460***	**14.505*****	20.565***
	(0.611)	(0.664)	(0.744)	(0.740)	(0.616)	(0.645)	(0.682)	**(0.733)**	(0.528)	(0.684)	**(1.295)**	(1.386)
Observations	323	322	315	312	322	323	310	**312**	323	322	**284**	308
R2	0.042	0.009	0.067	-0.138	0.079	0.107	0.086	**0.106**	0.102	0.034	**0.104**	-0.056
F	0.123	0.00709	1.354	0.851	0.453	2.131	1.262	**4.083**	2.031	0.138	**3.226**	0.335

Variables / Disciplines	Second semester GPA	GPA of Module 6 (Semester 2)	Introduction to Macroeconomics	Methodology (Semester 2)	GPA of Module 7 (Semester 2)	General accounting (GPA)	General accounting (CA)	General accounting (FE)	Analyse fonctionnelle des organisations
Increase in literacy test scores	0.170	0.193	0.288	-0.098	-0.075	-0.117	-0.308	-0.092	-0.082
	(0.264)	(0.327)	(0.340)	(0.248)	(0.324)	(0.286)	(0.310)	(0.282)	(0.382)
Intercept	7.864***	8.889***	9.569***	11.662***	8.401***	9.446***	12.262***	7.660***	9.363***
	(0.596)	(0.719)	(0.812)	(0.581)	(0.716)	(0.663)	(0.715)	(0.670)	(0.931)
Observations	322	322	269	297	322	301	286	292	277
R2	0.079	0.058	0.063	-0.036	-0.034	-0.064	-0.168	-0.044	-0.024
F	0.410	0.347	0.710	0.157	0.0540	0.166	0.983	0.105	0.0454

Variables / Disciplines	GPA of Module 8 (Semester 2)	Mathematics (GPA)	Mathematics (Exam 1)	Mathematics (Exam 2)	**Mathematics (CA)**	Statistics (Semester 2, GPA)	Statistics (Semester 2, FE)	GPA of Module 9 (Semester 2)	Grands problèmes économiques contemporains	Economic history	Tutorials in economics and computer science	GPA of Module 10 (Semester 2)	English (Semester, GPA)	English (Semester 2, CA)	English (Semester 2, FE)
Increase in literacy test scores	0.174	0.054	-0.309	0.043	**1.419****	0.082	-0.244	0.420	0.348	0.328	0.391	0.137	-0.250	-0.600	-0.529
	(0.293)	(0.304)	(0.341)	(0.278)	**(0.561)**	(0.359)	(0.404)	(0.275)	(0.312)	(0.382)	(0.240)	(0.295)	(0.331)	(0.676)	(0.577)
Intercept	5.425***	4.283***	4.786***	3.140***	**3.424*****	8.399***	7.553***	8.463***	8.533***	9.585***	9.498***	8.145***	9.357***	17.299***	17.541***
	(0.647)	(0.732)	(0.848)	(0.675)	**(1.254)**	(0.835)	(0.949)	(0.619)	(0.769)	(0.942)	(0.538)	(0.677)	(0.786)	(1.633)	(1.431)
Observations	322	277	284	274	**248**	292	288	322	278	276	317	322	293	251	273
R2	0.069	0.016	-0.110	0.013	**-0.143**	0.032	-0.107	0.136	-0.005	0.055	0.185	0.051	-0.106	-0.129	-0.109
F	0.351	0.0308	0.812	0.0235	**6.355**	0.0511	0.364	2.315	1.233	0.733	2.635	0.214	0.568	0.780	0.834

Source: randomized experiment implemented in University Lille 1 (Northern France; 2013-2014).
Field: 323 first-year university students in Economics and Management, who participate in the literacy learning device, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.
Notes: effect of varying literacy test score (*local average treatment effect*; Wald estimator). Robust standard errors within parentheses. For a considered discipline, FE stands for final exam, CA for continuous assessment, and GPA for grade point average, computed as the average of both the scores obtained to both FE and CA. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.
Reading: at a 5 percent level, an increase of 1 point in the difference between the second and the first literacy test scores induces a rise of 0,460 point in the GPA in introduction in economics for first-year university students in Economics and Management stream at university Lille 1 (Northern France).

Table A10. Effect of encouragement to literacy learning on academic performance of first-year university students at university Lille 1.
Information provided by the administrative baseline survey are used are explanatory variables of the considered score. Detailed results.

Variables / Disciplines	Overall GPA In first year BA	First semester GPA	GPA of Module 1 (Semester 1)	Introduction to economics (GPA)	Introduction to economics (CA)	Introduction to economics (FE)	Methodology (Semester 1)	GPA of Module 2 (Semester 1)	Introduction to management	Introduction to national accounting	Defining Career objectives
Encouragement	0.413	0.533*	0.428	0.747**	0.693*	0.574	-0.512	0.889***	0.938*	-0.283	1.533***
	(0.338)	(0.290)	(0.300)	(0.359)	(0.399)	(0.491)	(0.358)	(0.323)	(0.521)	(0.291)	(0.305)
Score to the first literacy test	0.427***	0.425***	0.366***	0.348***	0.374***	0.349***	0.370***	0.297***	0.372***	0.320***	0.188***
	(0.068)	(0.062)	(0.064)	(0.078)	(0.090)	(0.109)	(0.070)	(0.065)	(0.107)	(0.060)	(0.056)
Age	-0.151	-0.097	-0.259*	-0.260	-0.285	-0.413*	-0.175	-0.135	-0.043	0.054	-0.163
	(0.149)	(0.130)	(0.138)	(0.165)	(0.177)	(0.233)	(0.139)	(0.135)	(0.198)	(0.125)	(0.127)
Gender (Man vs. woman)	-0.577	-0.677**	-0.097	0.040	-0.131	0.290	-0.309	-0.890**	-1.132**	-0.647**	-0.791**
	(0.358)	(0.313)	(0.323)	(0.390)	(0.414)	(0.536)	(0.369)	(0.347)	(0.543)	(0.314)	(0.315)
Scholarship student	-0.748**	-0.730**	-0.640**	-0.784**	-0.280	-1.372***	-0.306	-0.071	-0.290	0.027	-0.248
	(0.339)	(0.292)	(0.302)	(0.362)	(0.395)	(0.487)	(0.348)	(0.327)	(0.510)	(0.300)	(0.310)
Baccalaureate S	-0.045	-0.193	-0.956***	-0.821*	-0.310	-1.135*	-1.201***	-0.472	-0.174	0.220	-0.058
	(0.408)	(0.348)	(0.355)	(0.438)	(0.469)	(0.584)	(0.397)	(0.392)	(0.609)	(0.361)	(0.386)
Baccalaureate STG	-2.089***	-2.061***	-1.648***	-2.397***	-2.212***	-3.180***	-0.091	-1.789***	-2.634***	-1.287***	-0.797
	(0.557)	(0.443)	(0.553)	(0.640)	(0.671)	(0.842)	(0.590)	(0.561)	(0.922)	(0.485)	(0.496)
Other baccalaureate	-0.388	-0.771	-0.800	-0.466	-1.890**	-0.128	-1.777***	-0.189	-0.205	-0.254	0.758
	(0.748)	(0.716)	(0.657)	(0.808)	(0.931)	(1.077)	(0.660)	(0.723)	(1.088)	(0.611)	(0.544)
Intercept	10.460***	10.588***	14.314***	13.890***	13.796***	16.165***	14.018***	14.139***	11.250***	10.979***	16.495***
	(2.941)	(2.569)	(2.752)	(3.319)	(3.550)	(4.663)	(2.720)	(2.649)	(3.928)	(2.434)	(2.541)
Observations	315	316	316	316	312	312	311	316	306	310	309
R2	0.220	0.270	0.213	0.180	0.170	0.149	0.157	0.158	0.111	0.148	0.142
F	10.20	14.77	8.860	8.557	8.247	6.882	6.846	6.581	4.257	8.099	7.938

Variables / Disciplines	GPA of Module 3 (Semester 1)	Financial Mathematics(GPA)	Financials Mathematics(CA)	Financial Mathematics(FE)	Statistics (Semester 1)	GPA of Module 4 (Semester 1)	Economic sociology	Economic history	GPA of Module 5 (Semester 1)	Anglais du S1(F)	Anglais du S1 (CC)	Anglais du S1 (CT)
Encouragement	0.262	0.112	0.640	-0.317	0.412	0.636	0.476	1.225**	0.451	0.098	1.701*	-0.680
	(0.408)	(0.435)	(0.510)	(0.452)	(0.436)	(0.460)	(0.512)	(0.532)	(0.352)	(0.434)	(0.946)	(0.882)
Score to the first literacy test	0.452***	0.434***	0.365***	0.462***	0.470***	0.429***	0.464***	0.432***	0.585***	0.793***	1.018***	1.794***
	(0.086)	(0.093)	(0.108)	(0.097)	(0.087)	(0.094)	(0.103)	(0.110)	(0.076)	(0.089)	(0.197)	(0.178)
Age	-0.099	0.023	-0.229	0.105	-0.222	0.122	0.125	0.068	-0.112	-0.259	-0.680	-0.225
	(0.174)	(0.200)	(0.212)	(0.190)	(0.167)	(0.180)	(0.197)	(0.199)	(0.172)	(0.181)	(0.436)	(0.371)
Gender (Man vs. woman)	-0.675	-0.568	-1.014*	-0.420	-0.782*	-0.990**	-1.140**	-0.469	-0.732**	-0.707	-1.715*	-0.708
	(0.429)	(0.462)	(0.524)	(0.477)	(0.449)	(0.472)	(0.517)	(0.557)	(0.372)	(0.437)	(0.949)	(0.880)
Scholarship student	-1.055***	-1.411***	-1.234**	-1.176***	-0.700	-1.043**	-0.859**	-1.662***	-0.840**	-1.131**	-1.810*	-2.367***
	(0.405)	(0.433)	(0.512)	(0.446)	(0.427)	(0.461)	(0.515)	(0.524)	(0.354)	(0.437)	(0.940)	(0.862)
Baccalaureate S	2.197***	2.406***	2.370***	2.900***	1.988***	-0.974*	-1.391**	0.043	-0.763*	-0.537	-0.837	-0.888
	(0.486)	(0.528)	(0.603)	(0.542)	(0.502)	(0.527)	(0.599)	(0.592)	(0.422)	(0.500)	(1.082)	(0.977)
Baccalaureate STG	-1.538***	-1.110*	-0.149	-1.674***	-1.967***	-3.924***	-3.400***	-4.314***	-1.419**	-1.762**	-1.165	-4.800***
	(0.546)	(0.592)	(0.767)	(0.521)	(0.621)	(0.693)	(0.778)	(0.837)	(0.598)	(0.714)	(1.788)	(1.339)
Other baccalaureate	1.027	0.846	0.205	1.815*	1.208	-2.520**	-2.471**	-2.134*	-1.382	-0.474	-1.201	0.207
	(0.993)	(1.077)	(1.197)	(1.089)	(0.981)	(0.982)	(0.973)	(1.154)	(0.841)	(0.944)	(1.902)	(1.942)
Intercept	7.648**	5.320	13.819***	-0.048	9.971***	6.866*	7.049*	7.580*	9.974***	11.201***	25.247***	15.852**
	(3.446)	(3.959)	(4.283)	(3.854)	(3.289)	(3.601)	(3.962)	(4.013)	(3.478)	(3.691)	(8.527)	(7.523)
Observations	316	316	309	306	316	316	303	305	316	315	277	301
R2	0.245	0.222	0.150	0.252	0.234	0.193	0.160	0.196	0.266	0.299	0.171	0.351
F	13.60	11.05	7.688	15.12	12.38	10.08	7.708	10.14	14.48	21.32	8.593	25.27

Variables / Disciplines	Second semester GPA	GPA of Module 6 (Semester 2)	Introduction to Macroeconomics	Methodology (Semester 2)	GPA of Module 7 (Semester 7)	General Accounting (GPA)	General Accounting (CA)	General Accounting (FE)	Functional analysis of organizations
Encouragement	0.314	0.394	0.642	-0.248	-0.026	-0.104	-0.287	-0.059	-0.052
	(0.425)	(0.536)	(0.572)	(0.375)	(0.505)	(0.446)	(0.458)	(0.458)	(0.617)
Score to the first literacy test	0.439***	0.364***	0.388***	0.277***	0.446***	0.302***	0.293***	0.318***	0.520***
	(0.082)	(0.101)	(0.118)	(0.078)	(0.105)	(0.088)	(0.085)	(0.097)	(0.137)
Age	-0.194	-0.295	0.135	-0.208	-0.208	0.156	0.130	0.205	-0.095
	(0.182)	(0.227)	(0.233)	(0.157)	(0.230)	(0.172)	(0.177)	(0.183)	(0.300)
Gender (Man vs. woman)	-0.431	-0.004	0.598	-1.344***	0.296	-0.668	-0.552	-0.416	0.854
	(0.443)	(0.538)	(0.568)	(0.357)	(0.521)	(0.461)	(0.457)	(0.492)	(0.613)
Scholarship student	-0.791*	-0.905*	-0.872	-0.910**	-0.463	-1.014**	-0.837*	-0.838*	-0.399
	(0.422)	(0.533)	(0.568)	(0.378)	(0.492)	(0.430)	(0.442)	(0.444)	(0.607)
Baccalaureate S	0.045	-0.661	-0.053	-0.433	-0.213	0.912*	1.417***	0.925*	-0.817
	(0.510)	(0.637)	(0.662)	(0.441)	(0.589)	(0.504)	(0.495)	(0.523)	(0.723)
Baccalaureate STG	-2.107***	-2.188**	-2.426**	-1.102	-1.773**	-0.381	-0.178	0.061	-3.113**
	(0.726)	(0.906)	(1.064)	(0.748)	(0.898)	(0.835)	(0.853)	(0.828)	(1.287)
Other baccalaureate	-0.010	-0.837	-0.861	0.035	0.212	1.375	0.961	2.238**	-0.871
	(0.848)	(1.063)	(1.171)	(0.771)	(1.036)	(0.895)	(0.883)	(0.932)	(1.167)
Intercept	10.024***	13.578***	5.226	15.429***	9.828**	4.941	7.622**	1.757	8.023
	(3.597)	(4.511)	(4.688)	(3.128)	(4.587)	(3.415)	(3.504)	(3.710)	(5.942)
Observations	315	315	265	291	315	294	280	285	271
R2	0.160	0.097	0.088	0.134	0.103	0.101	0.103	0.102	0.116
F	6.609	4.091	3.225	5.506	3.706	3.973	5.167	4.010	3.317

Variables / Disciplines	GPA of Module 8 (Semester 2)	Mathematics (GPA)	Mathematics (Exam 1)	Mathematics (Exam 2)	**Mathematics (CA)**	Statistics (Semester 2, GPA)	Statistics (Semester 2, FE)	GPA of Module 9 (Semester 2)	Big contemporary economic issues	Economic history	Tutorials in economics and computer science	GPA of Module 10 (Semester 2)	English (Semester 2, GPA)	English (Semester 2, CA)	**English (Semester 2, FE)**
Encouragement	0.372	0.402	-0.139	0.272	**2.486***	0.367	-0.240	0.663	0.592	0.565	0.562	0.168	-0.469	-0.998	-0.903
	(0.462)	(0.439)	(0.442)	(0.415)	**(0.698)**	(0.565)	(0.587)	(0.451)	(0.483)	(0.611)	(0.358)	(0.468)	(0.493)	(1.037)	(0.844)
Score to the first literacy test	0.308***	0.342***	0.453***	0.383***	**0.102**	0.347***	0.340***	0.523***	0.470***	0.332***	0.750***	0.557***	0.561***	0.728***	1.375***
	(0.099)	(0.101)	(0.099)	(0.099)	**(0.148)**	(0.115)	(0.121)	(0.086)	(0.106)	(0.125)	(0.076)	(0.087)	(0.097)	(0.223)	(0.173)
Age	-0.246	-0.089	0.052	-0.085	**-0.528***	-0.134	-0.075	-0.111	-0.126	0.087	0.091	-0.111	0.195	-0.111	0.287
	(0.182)	(0.174)	(0.172)	(0.170)	**(0.290)**	(0.223)	(0.220)	(0.175)	(0.188)	(0.236)	(0.152)	(0.203)	(0.203)	(0.446)	(0.365)
Gender (Man vs. woman)	-1.322***	-1.130**	-1.115**	-1.449***	**-0.646**	-1.977***	-1.907***	-0.455	1.589***	-1.474**	-0.722*	-0.673	-0.988*	-1.888*	0.044
	(0.480)	(0.471)	(0.481)	(0.465)	**(0.716)**	(0.566)	(0.591)	(0.466)	(0.503)	(0.622)	(0.370)	(0.496)	(0.505)	(1.045)	(0.876)
Scholarship student	-1.020**	-1.504***	-1.848***	-1.173***	**-1.923***	-1.038*	-1.336**	-0.785*	-0.388	-0.946	-0.129	-0.790*	-1.116**	-1.017	-2.093**
	(0.439)	(0.420)	(0.436)	(0.396)	**(0.665)**	(0.547)	(0.564)	(0.449)	(0.476)	(0.630)	(0.362)	(0.471)	(0.487)	(0.992)	(0.860)
Baccalaureate S	2.424***	3.160***	3.962***	3.466***	**2.829***	1.716***	2.067***	-0.593	-1.183**	-0.133	0.160	-0.730	-0.130	-1.001	-0.159
	(0.545)	(0.541)	(0.572)	(0.524)	**(0.833)**	(0.638)	(0.662)	(0.542)	(0.553)	(0.720)	(0.426)	(0.565)	(0.579)	(1.174)	(1.033)
Baccalaureate STG	-2.124***	-1.101**	-1.096**	-0.981**	**-1.171**	-3.142***	-2.905***	-2.043***	-1.465	-3.170***	-0.913	-2.409***	-2.596***	-4.258**	-4.059***
	(0.569)	(0.483)	(0.514)	(0.485)	**(0.978)**	(0.853)	(0.863)	(0.794)	(0.921)	(1.103)	(0.717)	(0.906)	(0.856)	(1.850)	(1.180)
Other baccalaureate	1.621*	1.555*	1.905*	1.087	**1.266**	2.012*	2.433**	-0.611	-0.741	-2.677**	1.534**	-0.433	0.167	-0.016	0.728
	(0.931)	(0.934)	(0.991)	(0.723)	**(1.266)**	(1.150)	(1.193)	(0.811)	(0.855)	(1.226)	(0.727)	(0.864)	(0.949)	(2.043)	(1.833)
Intercept	9.184**	4.212	0.688	2.803	**15.719***	10.222**	7.812*	9.123***	8.285**	8.235*	4.114	8.424**	3.237	16.416*	4.057
	(3.632)	(3.442)	(3.451)	(3.336)	**(5.825)**	(4.351)	(4.313)	(3.444)	(3.690)	(4.803)	(2.990)	(4.024)	(4.031)	(8.947)	(7.198)
Observations	315	271	279	270	**243**	286	282	315	271	270	310	315	286	245	266

R2	0.217	0.289	0.353	0.339	**0.157**	0.180	0.188	0.165	0.144	0.104	0.310	0.173	0.186	0.119	0.261
F	11.09	15.16	17.31	16.02	**6.835**	8.781	8.688	6.895	5.294	3.814	18.68	8.709	8.468	3.992	14.70

Source: randomized experiment implemented in University Lille 1 (Northern France; 2013-2014) and Tables A9 to A11 (appendix).

Field: 323 first-year university students in Economics and Management, who participate in the literacy learning device, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.

Notes: effect of varying literacy test score (*local average treatment effect*; Wald estimator). Included explanatory variables: score to the first literacy test; age of the student; the student is a man; scholarship student; kind of baccalaureate (reference= Economics and Social Science stream). Robust standard errors within parentheses. For a considered discipline, FE stands for final exam, CA for continuous assessment, and GPA for grade point average, computed as the average of both the scores obtained to both FE and CA. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.

Reading: at a 5 percent level, encouraging to literacy practice increases by 0.747 point the score to GPA in introduction to economics for first-year university students in Economics and Management stream at university Lille 1 (Northern France).

Table A11. Effect of increasing the literacy level on academic performance of first-year university students at university Lille 1.
Information provided by the administrative baseline survey are used are explanatory variables of the considered score. Detailed results.

Variables / Disciplines	Overall GPA In first year BA	First semester GPA	GPA of Module 1 (Semester 1)	Introduction to economic(GPA)	Introduction to economics(CA)	Introduction to economics(FE)	Methodology (Semester 1)	GPA of Module 2 (Semester 1)	Introduction to Management	Introduction to National accounting	Defining Career objectives
Increase in literacy test scores	0.270	0.347**	0.278	**0.486***	**0.454***	0.376	-0.337	**0.578*****	**0.563***	-0.183	**0.984*****
	(0.201)	(0.170)	(0.181)	**(0.220)**	**(0.248)**	(0.306)	(0.254)	**(0.207)**	**(0.307)**	(0.196)	**(0.247)**
Score to the first literacy test	0.416***	0.409***	0.353***	**0.325*****	**0.350*****	0.330***	0.386***	**0.269*****	**0.346*****	0.329***	**0.133***
	(0.062)	(0.057)	(0.061)	**(0.076)**	**(0.086)**	(0.105)	(0.074)	**(0.065)**	**(0.105)**	(0.062)	**(0.075)**
Age	-0.184	-0.141	-0.294**	**-0.321***	**-0.339***	-0.457**	-0.128	**-0.208**	**-0.141**	0.076	**-0.276***
	(0.131)	(0.115)	(0.127)	**(0.154)**	**(0.158)**	(0.219)	(0.157)	**(0.136)**	**(0.202)**	(0.134)	**(0.161)**
Gender (Men vs. women)	-0.191	-0.189	0.294	**0.724**	**0.504**	0.815	-0.787	**-0.077**	**-0.278**	-0.918**	**0.592**
	(0.449)	(0.384)	(0.398)	**(0.483)**	**(0.506)**	(0.665)	(0.544)	**(0.441)**	**(0.716)**	(0.455)	**(0.532)**
Scholarship student	-0.687**	-0.648**	-0.574**	**-0.669***	**-0.178**	-1.287***	-0.388	**0.065**	**-0.158**	-0.008	**0.011**
	(0.307)	(0.261)	(0.278)	**(0.337)**	**(0.378)**	(0.452)	(0.376)	**(0.315)**	**(0.488)**	(0.315)	**(0.388)**
Baccalaureate S	0.003	-0.122	-0.899***	**-0.721***	**-0.217**	-1.058*	-1.271***	**-0.353**	**-0.115**	0.190	**0.063**
	(0.374)	(0.314)	(0.326)	**(0.405)**	**(0.444)**	(0.550)	(0.421)	**(0.371)**	**(0.589)**	(0.377)	**(0.455)**
Baccalaureate STG	-1.811***	-1.706***	-1.363**	**-1.900*****	**-1.672***	-2.733***	-0.426	**-1.198***	**-2.015***	-1.471***	**0.171**
	(0.557)	(0.453)	(0.557)	**(0.624)**	**(0.719)**	(0.874)	(0.659)	**(0.619)**	**(0.978)**	(0.528)	**(0.673)**
Other Baccalaureate	-0.515	-0.933	-0.930	**-0.694**	**-2.111***	-0.311	-1.628**	**-0.460**	**-0.214**	-0.141	**0.307**
	(0.678)	(0.656)	(0.631)	**(0.813)**	**(0.873)**	(1.030)	(0.800)	**(0.770)**	**(0.984)**	(0.701)	**(0.817)**
Intercept	10.467***	10.647***	14.361***	**13.973*****	**13.822*****	16.187***	13.882***	**14.237*****	**11.831*****	10.956***	**16.505*****
	(2.618)	(2.251)	(2.532)	**(3.077)**	**(3.189)**	(4.361)	(3.004)	**(2.524)**	**(3.743)**	(2.569)	**(3.134)**
Observations	315	316	316	**316**	**312**	312	311	**316**	**306**	310	**309**
R2	0.331	0.384	0.292	**0.244**	**0.218**	0.203	-0.008	**0.178**	**0.147**	0.050	**-0.275**
F	11.94	17.99	9.747	**9.528**	**8.892**	7.387	5.875	**6.610**	**4.442**	7.186	**4.503**

Variables / Disciplines	GPA of Module 3 (Semester 3)	Financial Mathematics(GPA)	Financial Mathematics(CA)	Financial Mathematics(FE)	Statistics (Semester 1)	GPA of Module 4 (Semester 1)	Economic Sociology	Economic history	GPA of Module 5 (Semester 1)	English (Semester 1, GPA)	English (Semester 1, CA)	English (Semester 1, FE)
Increase in literacy test scores	0.171	0.073	0.412	-0.205	0.268	0.414	0.300	**0.780***	0.293	0.064	**1.057***	-0.408
	(0.250)	(0.274)	(0.311)	(0.304)	(0.262)	(0.282)	(0.307)	**(0.327)**	(0.215)	(0.275)	**(0.560)**	(0.538)
Score to the first literacy test	0.444***	0.430***	0.342***	0.470***	0.457***	0.409***	0.452***	**0.387*****	0.571***	0.790***	**0.955*****	1.822***
	(0.082)	(0.090)	(0.105)	(0.099)	(0.083)	(0.090)	(0.099)	**(0.107)**	(0.073)	(0.088)	**(0.192)**	(0.185)
Age	-0.121	0.014	-0.281	0.137	-0.256	0.069	0.073	**-0.037**	-0.149	-0.267	**-0.789***	-0.163
	(0.167)	(0.196)	(0.204)	(0.200)	(0.158)	(0.165)	(0.189)	**(0.188)**	(0.160)	(0.177)	**(0.394)**	(0.384)
Gender (Men vs. women)	-0.435	-0.466	-0.432	-0.724	-0.406	-0.408	-0.675	**0.614**	-0.320	-0.617	**-0.145**	-1.328
	(0.581)	(0.642)	(0.747)	(0.716)	(0.596)	(0.604)	(0.696)	**(0.727)**	(0.472)	(0.576)	**(1.253)**	(1.245)
Scholarship student	-1.015***	-1.394***	-1.129**	-1.206***	-0.637	-0.945**	-0.821*	**-1.438*****	-0.771**	-1.116***	**-1.634***	-2.441***
	(0.388)	(0.421)	(0.495)	(0.460)	(0.404)	(0.439)	(0.489)	**(0.516)**	(0.333)	(0.427)	**(0.880)**	(0.881)
Baccalaureate S	2.232***	2.421***	2.437***	2.873***	2.043***	-0.889*	-1.372**	**0.235**	-0.703*	-0.524	**-0.769**	-0.915
	(0.464)	(0.514)	(0.568)	(0.555)	(0.476)	(0.503)	(0.578)	**(0.581)**	(0.395)	(0.499)	**(1.043)**	(0.998)
Baccalaureate STG	-1.364**	-1.035	0.277	-1.871***	-1.693**	-3.500***	-3.094***	**-3.473*****	-1.119*	-1.696**	**-0.101**	-5.191***
	(0.599)	(0.653)	(0.826)	(0.600)	(0.668)	(0.697)	(0.793)	**(0.864)**	(0.634)	(0.786)	**(1.884)**	(1.502)
Other Baccalaureate	0.947	0.812	0.029	1.798	1.082	-2.714***	-2.480***	**-2.390***	-1.520**	-0.504	**-1.786**	0.313
	(0.938)	(1.057)	(1.123)	(1.148)	(0.889)	(0.954)	(0.871)	**(1.116)**	(0.774)	(0.914)	**(1.531)**	(2.034)
Intercept	7.677**	5.333	13.916***	-0.176	10.017***	6.936**	7.356**	**7.865***	10.024***	11.212***	**25.003*****	15.511**
	(3.243)	(3.834)	(4.009)	(4.048)	(3.025)	(3.274)	(3.677)	**(3.742)**	(3.214)	(3.574)	**(7.495)**	(7.745)
Observations	316	316	309	306	316	316	303	**305**	316	315	**277**	301
R2	0.302	0.244	0.199	0.176	0.318	0.264	0.215	**0.251**	0.333	0.314	**0.236**	0.304
F	14.65	11.30	8.265	13.86	13.98	11.60	8.425	**11.14**	15.87	21.91	**9.499**	22.89

Variables / Disciplines	Second semester GPA	GPA of Module 6 (Semester 6)	Introduction to Macroeconomics	Methodology (Semester 2)	GPA of Module 7 (Semester 2)	General accounting (GPA)	General accounting (CA)	General accounting (FE)	Functional analysis of organizations
Increase in literacy test scores	0.205	0.258	0.395	-0.164	-0.017	-0.067	-0.182	-0.037	-0.032
	(0.260)	(0.332)	(0.329)	(0.250)	(0.289)	(0.298)	(0.285)	(0.374)	
Score to the first literacy test	0.430***	0.353***	0.371***	0.286***	0.446***	0.305***	0.305***	0.320***	0.522***
	(0.076)	(0.096)	(0.111)	(0.080)	(0.103)	(0.087)	(0.086)	(0.097)	(0.134)
Age	-0.219	-0.326	0.055	-0.181	-0.206	0.170	0.171	0.212	-0.090
	(0.167)	(0.210)	(0.222)	(0.161)	(0.225)	(0.182)	(0.195)	(0.190)	(0.298)
Gender (Men vs. women)	-0.138	0.365	1.238*	-1.593***	0.271	-0.771	-0.828	-0.471	0.804
	(0.578)	(0.709)	(0.748)	(0.551)	(0.737)	(0.699)	(0.701)	(0.724)	(0.901)
Scholarship student	-0.745*	-0.847*	-0.813	-0.946**	-0.467	-1.032**	-0.879*	-0.847*	-0.405
	(0.397)	(0.505)	(0.535)	(0.383)	(0.493)	(0.434)	(0.455)	(0.447)	(0.608)
Baccalaureate S	0.082	-0.615	-0.034	-0.473	-0.216	0.895*	1.386***	0.917*	-0.821
	(0.480)	(0.609)	(0.630)	(0.454)	(0.581)	(0.505)	(0.505)	(0.520)	(0.712)
Baccalaureate STG	-1.897**	-1.923**	-1.993*	-1.270	-1.790*	-0.455	-0.362	0.019	-3.145**
	(0.741)	(0.938)	(1.082)	(0.785)	(0.969)	(0.917)	(0.933)	(0.916)	(1.326)
Other Baccalaureate	-0.107	-0.959	-1.163	0.110	0.220	1.407	1.049	2.264**	-0.854
	(0.784)	(1.012)	(1.125)	(0.787)	(1.052)	(0.925)	(0.954)	(0.961)	(1.187)
Intercept	10.029***	13.585***	5.798	15.299***	9.828**	4.830	7.260**	1.693	8.011
	(3.322)	(4.227)	(4.339)	(3.175)	(4.538)	(3.400)	(3.613)	(3.655)	(5.857)
Observations	315	315	265	291	315	294	280	285	271
R2	0.239	0.163	0.164	0.090	0.096	0.071	0.025	0.088	0.107
F	7.299	4.426	3.587	5.227	3.681	3.839	4.693	3.939	3.285

Variables / Disciplines	GPA of Module 8 (Semester 2)	Mathematics (GPA)	Mathematics (Exam 1)	Mathematics (Exam 2)	**Mathematics (CA)**	Statistics (Semester 2, GPA))	Statistics (Semester 2, FE)	GPA of Module 9 (Semester 2)	Big contemporary economic issues	Economic History	Tutorials in economics and computer science	GPA of Module 10 (Semester 2)	English (Semester 2, GPA)	English (Semester 2, CA)	English (Semester 2, FE)
Increase in literacy test scores	0.243	0.253	-0.087	0.166	**1.789***	0.231	-0.155	0.434	0.376	0.368	0.374*	0.110	-0.296	-0.607	-0.536
	(0.284)	(0.264)	(0.278)	(0.243)	**(0.577)**	(0.336)	(0.387)	(0.270)	(0.300)	(0.381)	(0.210)	(0.295)	(0.325)	(0.655)	(0.521)
Score to the first literacy test	0.297***	0.329***	0.458***	0.373***	**0.004**	0.336***	0.346***	0.504***	0.456***	0.311**	0.727***	0.552***	0.575***	0.782***	1.414***
	(0.092)	(0.095)	(0.099)	(0.093)	**(0.150)**	(0.110)	(0.122)	(0.079)	(0.105)	(0.121)	(0.067)	(0.085)	(0.102)	(0.236)	(0.182)
Age	-0.275*	-0.142	0.069	-0.116	**-0.882***	-0.183	-0.046	-0.164	-0.192	0.012	0.040	-0.124	0.250	0.006	0.384
	(0.167)	(0.172)	(0.179)	(0.168)	**(0.305)**	(0.224)	(0.234)	(0.159)	(0.192)	(0.240)	(0.137)	(0.194)	(0.224)	(0.510)	(0.389)
Gender (Men vs. women)	-0.975	-0.742	-1.250*	-1.197*	**2.009**	-1.619**	-2.145**	0.165	2.214***	-0.896	-0.184	-0.517	-1.452*	-2.793*	-0.777
	(0.665)	(0.655)	(0.711)	(0.666)	**(1.262)**	(0.811)	(0.918)	(0.575)	(0.751)	(0.795)	(0.451)	(0.674)	(0.756)	(1.453)	(1.281)
Scholarship student	-0.965**	-1.428***	-1.871***	-1.147***	**-1.619**	-0.978*	-1.362**	-0.688*	-0.370	-0.904	-0.042	-0.766*	-1.173**	-1.054	-2.141**
	(0.416)	(0.413)	(0.449)	(0.385)	**(0.776)**	(0.525)	(0.574)	(0.414)	(0.469)	(0.609)	(0.324)	(0.457)	(0.515)	(1.035)	(0.904)
Baccalaureate S	2.467***	3.233***	3.941***	3.499***	**3.452***	1.772***	2.047***	-0.516	-1.159**	-0.095	0.224	-0.711	-0.147	-0.982	-0.143
	(0.516)	(0.518)	(0.562)	(0.495)	**(1.013)**	(0.612)	(0.663)	(0.497)	(0.543)	(0.694)	(0.378)	(0.545)	(0.599)	(1.226)	(1.055)
Baccalaureate STG	-1.874***	-0.826	-1.179**	-0.774	**0.983**	-2.883***	-3.082***	-1.597**	-1.046	-2.741**	-0.501	-2.297**	-2.918***	-4.819**	-4.589***
	(0.612)	(0.533)	(0.580)	(0.529)	**(1.543)**	(0.896)	(0.979)	(0.794)	(0.983)	(1.162)	(0.693)	(0.936)	(0.979)	(2.067)	(1.374)
Other Baccalaureate	1.506*	1.450*	1.944*	1.003	**0.622**	1.889*	2.519**	-0.816	-1.027	-2.863**	1.310**	-0.485	0.333	0.518	1.086
	(0.845)	(0.864)	(1.029)	(0.719)	**(1.672)**	(1.055)	(1.265)	(0.757)	(0.878)	(1.213)	(0.615)	(0.830)	(1.122)	(2.275)	(2.146)
Intercept	9.191***	4.603	0.577	3.002	**18.019***	10.598**	7.640*	9.134***	8.605**	8.791*	4.266*	8.427**	2.913	15.390	3.296
	(3.346)	(3.219)	(3.435)	(3.195)	**(5.652)**	(4.123)	(4.382)	(3.098)	(3.619)	(4.642)	(2.562)	(3.841)	(4.296)	(9.779)	(7.549)
Observations	315	271	279	270	**243**	286	282	315	271	270	310	315	286	245	266
R2	0.287	0.327	0.334	0.365	**-0.152**	0.242	0.137	0.277	0.153	0.144	0.442	0.207	0.086	0.019	0.170
F	11.94	15.21	17.11	16.56	**4.395**	9.457	8.172	8.055	5.432	3.980	24.13	9.162	7.528	3.511	12.78

Source: randomized experiment implemented in University Lille 1 (Northern France; 2013-2014) and Tables A9 to A11 (appendix).

Field: 323 first-year university students in Economics and Management, who participate in the literacy learning device, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests..

Notes: effect of encouragement to literacy learning (*intention to treat*; OLS estimator) or of varying literacy test score (*local average treatment effect*; Wald estimator). Included explanatory variables: score to the first literacy test; age of the student; the student is a man; scholarship student; kind of baccalaureate (reference= Economics and Social Science stream). Robust standard errors within parentheses. For a considered discipline, FE stands for final exam, CA for continuous assessment, and GPA for grade point average, computed as the average of both the scores obtained to both FE and CA. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.

Reading: At a 5 percent level, an increase of 1 point in the difference between the second and the first literacy test scores induces a rise of 0,486 point in the GPA in introduction to economics for first-year university students in Economics and Management stream at university Lille 1 (Northern France).

Table A12a. Evaluation of the impact of the encouragement to literacy learning, or of increasing literacy level on the probability of achieving semester or academic year for first-year university students in Economic and Management. *Male students.*

Discipline	Academic Year	First Semester	Second Semester
Model	Effect of encouragement to literacy learning (Intention To treat, ITT)		
Without baseline variables	0.070 (0.326)	0.131* (0.064)	0.064 (0.335)
With baseline variables	0.094 (0.152)	0.136**(a) (0.046)	0.085 (0.172)
Model	Effect of varying literacy test scores (Local Average Treatment Effect, LATE)		
Without baseline variables	0.051 (0.309)	0.090** (0.012)	0.046 (0.330)
With baseline variables	0.066 (0.113)	0.091***(b) (0.008)	0.060 (0.128)

Source: randomized experiment implemented in University Lille 1 (Northern from France; 2013-2014).
Field: 207 first-year university students in Economics and Management, who participate in the literacy learning device, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.
Notes: effect of encouragement to literacy learning (*intention to treat*; probit estimator) or of varying literacy test score (*local average treatment effect*; probit instrumental variable estimator). Marginal effects. Included explanatory variables: score to the first literacy test; age of the student; the student is a man; scholarship student; kind of baccalaureate (reference= Economics and Social Science stream). P-value within parentheses. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.
Reading: *(a)* at a 5 percent level, encouraging to literacy practice increases by 13.6 percentage points the probability to achieve the first term of the first-year university for male students in Economics and Management stream at university Paris-Est Marne-La-Vallée (Paris region, France). *(b)* At a 1 percent level, an increase of 1 point in the difference between the second and the first literacy test scores induces a rise of 9.1 percentage points the probability to achieve first-year university for male students in Economics and Management stream at university Lille 1 (Northern from France)

Table A12b. Evaluation of the impact of the encouragement to literacy learning, or of increasing literacy level on the probability of achieving semester or academic year for first-year university students in Economic and Management. *Female students.*

Discipline	Academic Year	First Semester	Second Semester
Model	Effect of encouragement to literacy learning (Intention To treat, ITT)		
Without baseline variables	-0.037 (0.693)	0.016 (0.857)	-0.111 (0.222)
With baseline variables	-0.056 (0.528)	0.005 (0.947)	-0.134(a) (0.127)
Model	Effect of varying literacy test scores (Local Average Treatment Effect, LATE)		
Without baseline variables	-0.026 (0.543)	0.006 (0.909)	-0.056**(b) (0.021)
With baseline variables	-0.047 (0.226)	-0.003 (0.950)	-0.070*** (<0.001)

Source: randomized experiment implemented in University Lille 1 (Northern from France; 2013-2014).
Field: 116 first-year university students in Economics and Management, who participate in the literacy learning device, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.
Notes: effect of encouragement to literacy learning (*intention to treat*; probit estimator) or of varying literacy test score (*local average treatment effect*; probit instrumental variable estimator). Marginal effects. Included explanatory variables: score to the first literacy test; age of the student; the student is a man; scholarship student; kind of baccalaureate (reference= Economics and Social Science stream). P-value within parentheses. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.
Reading: *(a)* at any level, encouraging to literacy practice let unchanged the probability to achieve the second term of the first-year university for female students in Economics and Management stream at university Lille 1 (Northern from France). *(b)* At a 5 percent level, an increase of 1 point in the difference between the second and the first literacy test scores induces a decrease of 5.6 percentage points the probability to achieve the second term of first-year university for female students in Economics and Management stream at university Lille 1 (Northern from France).

Table A13a. Evaluation of the impact of the encouragement to literacy learning, or of increasing literacy level on the probability of achieving semester or academic year for first-year university students in Economic and Management. *Considered sample: students whose country of origin is France.*

Discipline	Academic Year	First Semester	Second Semester
Model	Effect of encouragement to literacy learning (Intention To treat, ITT)		
Without baseline variables	0.043 (0.542)	0.100 (0.150)	0.006 (0.930)
With baseline variables	0.026 (0.679)	0.069(a) (0.282)	-0.001 (0.989)
Model	Effect of varying literacy test scores (Local Average Treatment Effect, LATE)		
Without baseline variables	0.023 (0.571)	0.057 (0.111)	-0.001 (0.974)
With baseline variables	0.013 (0.756)	0.043(b) (0.271)	-0.008 (0.846)

Source: randomized experiment implemented in University Lille 1 (Northern from France; 2013-2014).
Field: 214 first-year university students in Economics and Management, who participate in the literacy learning device, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.
Notes: effect of encouragement to literacy learning (*intention to treat*; probit estimator) or of varying literacy test score (*local average treatment effect*; probit instrumental variable estimator). Marginal effects. Included explanatory variables: score to the first literacy test; age of the student; the student is a man; scholarship student; kind of baccalaureate (reference= Economics and Social Science stream). P-value within parentheses. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.
Reading: *(a)* at any level, encouraging to literacy practice let unchanged the probability to achieve the first term of the first-year university for students (whose country of origin is France) in Economics and Management stream at university Lille 1 (Northern from France). *(b)* At a 1 percent level, an increase of 1 point in the difference between the second and the first literacy test scores let unchanged the probability to achieve first-year university for students (whose country of origin is France) in Economics and Management stream at university Lille 1 (Northern from France)

Table A13b. Evaluation of the impact of the encouragement to literacy learning, or of increasing literacy level on the probability of achieving semester or academic year for first-year university students in Economic and Management. *Considered sample: students whose country of origin is NOT France.*

Discipline	Academic Year	First Semester	Second Semester
Model	Effect of encouragement to literacy learning (Intention To treat, ITT)		
Without baseline variables	0.027 (0.784)	0.091 (0.341)	0.009 (0.922)
With baseline variables	0.063 (0.448)	0.126 (0.116)	0.032(a) (0.694)
Model	Effect of varying literacy test scores (Local Average Treatment Effect, LATE)		
Without baseline variables	0.013 (0.857)	0.065 (0.218)	-0.002(b) (0.972)
With baseline variables	0.050 (0.371)	0.081** (0.024)	0.027 (0.644)

Source: randomized experiment implemented in University Lille 1 (Northern from France; 2013-2014).
Field: 109 first-year university students in Economics and Management, who participate in the literacy learning device, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.
Notes: effect of encouragement to literacy learning (*intention to treat*; probit estimator) or of varying literacy test score (*local average treatment effect*; probit instrumental variable estimator). Marginal effects. Included explanatory variables: score to the first literacy test; age of the student; the student is a man; scholarship student; kind of baccalaureate (reference= Economics and Social Science stream). P-value within parentheses. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.
Reading: *(a)* at any level, encouraging to literacy practice let unchanged the probability to achieve the first term of the first-year university for students (whose country of origin is NOT France) in Economics and Management stream at university Lille 1 (Northern from France). *(b)* At a 5 percent level, an increase of 1 point in the difference between the second and the first literacy test scores induces an increase of 8.1 percentage points the probability to achieve the first term of first-year university for students (whose country of origin is NOT France) in Economics and Management stream at university Lille 1 (Northern from France).

Table A14a. Evaluation of the impact of the encouragement to literacy learning, or of increasing literacy level on the probability of achieving semester or academic year for first-year university students in Economic and Management. *Considered sample: students who got a baccalaureate with merit, honors or distinction.*

Discipline	Academic Year	First Semester	Second Semester
Model	Effect of encouragement to literacy learning (Intention To treat, ITT)		
Without baseline variables	0.023 (0.781)	-0.005 (0.945)	-0.039 (0.650)
With baseline variables	0.035 (0.433)	0.035*(a)* (0.622)	-0.031 (0.713)
Model	Effect of varying literacy test scores (Local Average Treatment Effect, LATE)		
Without baseline variables	0.009 (0.842)	-0.002 (0.957)	-0.025 (0.507)
With baseline variables	0.013 (0.756)	0.019*(b)* (0.633)	-0.027 (0.485)

Source: randomized experiment implemented in University Lille 1 (Northern from France; 2013-2014).
Field: 136 first-year university students in Economics and Management, who participate in the literacy learning device, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.
Notes: effect of encouragement to literacy learning (*intention to treat*; probit estimator) or of varying literacy test score (*local average treatment effect*; probit instrumental variable estimator). Marginal effects. Included explanatory variables: score to the first literacy test; age of the student; the student is a man; scholarship student; kind of baccalaureate (reference= Economics and Social Science stream). P-value within parentheses. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.
Reading: *(a)* at any level, encouraging to literacy practice let unchanged the probability to achieve the first term of the first-year university for students (whose country of origin is France) in Economics and Management stream at university Lille 1 (Northern from France). *(b)* At any level, an increase of 1 point in the difference between the second and the first literacy test scores let unchanged the probability to achieve first-year university for students (whose country of origin is France) in Economics and Management stream at university Lille 1 (Northern from France)

Table A14b. Evaluation of the impact of the encouragement to literacy learning, or of increasing literacy level on the probability of achieving semester or academic year for first-year university students in Economic and Management. *Considered sample: students who got a baccalaureate without merit, honors or distinction.*

Discipline	Academic Year	First Semester	Second Semester
Model	Effect of encouragement to literacy learning (Intention To treat, ITT)		
Without baseline variables	0.025 (0.730)	0.147** (0.042)	0.017 (0.782)
With baseline variables	0.019 (0.770)	0.144***(a)* (0.037)	0.016 (0.783)
Model	Effect of varying literacy test scores (Local Average Treatment Effect, LATE)		
Without baseline variables	0.016 (0.768)	0.099*** (0.004)	0.010 (0.830)
With baseline variables	0.012 (0.804)	0.100***(b)* (0.005)	0.011 (0.808)

Source: randomized experiment implemented in University Lille 1 (Northern from France; 2013-2014).
Field: 187 first-year university students in Economics and Management, who participate in the literacy learning device, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.
Notes: effect of encouragement to literacy learning (*intention to treat*; probit estimator) or of varying literacy test score (*local average treatment effect*; probit instrumental variable estimator). Marginal effects. Included explanatory variables: score to the first literacy test; age of the student; the student is a man; scholarship student; kind of baccalaureate (reference= Economics and Social Science stream). P-value within parentheses. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.
Reading: *(a)* at a 5 percent level, encouraging to literacy practice increase by 14.4 percentage points the probability to achieve the first term of the first-year university for students (whose country of origin is NOT France) in Economics and Management stream at university Lille 1 (Northern from France). *(b)* At a 1 percent level, an increase of 1 point in the difference between the second and the first literacy test scores induces an increase of 10 percentage points in the probability to achieve the first term of first-year university for students (whose country of origin is NOT France) in Economics and Management stream at university Lille 1 (Northern from France).

Table A14c. Evaluation of the impact of the encouragement to literacy learning, or of increasing literacy level on the probability of achieving semester or academic year for first-year university students in Economic and Management. *Considered sample: students who got a baccalaureate with pass 50%-60%.*

Discipline	Academic Year	First Semester	Second Semester
Model	Effect of encouragement to literacy learning (Intention To treat, ITT)		
Without baseline variables	-0.014 (0.884)	0.138 (0.145)	0.003 (0.969)
With baseline variables	-0.010 (0.911)	0.152*(a) (0.095)	0.016 (0.849)
Model	Effect of varying literacy test scores (Local Average Treatment Effect, LATE)		
Without baseline variables	-0.024 (0.841)	0.130*** (0.001)	-0.001 (0.999)
With baseline variables	-0.013 (0.895)	0.131***(b) (0.001)	0.015 (0.881)

Source: randomized experiment implemented in University Lille 1 (Northern from France; 2013-2014).

Field: 118 first-year university students in Economics and Management, who participate in the literacy learning device, for whom information from the baseline administrative survey is available, as well as scores for the two literacy tests.

Notes: effect of encouragement to literacy learning (*intention to treat*; probit estimator) or of varying literacy test score (*local average treatment effect*; probit instrumental variable estimator). Marginal effects. Included explanatory variables: score to the first literacy test; age of the student; the student is a man; scholarship student; kind of baccalaureate (reference= Economics and Social Science stream). P-value within parentheses. *** (respectively ** or *) stands for significance at 1% (respectively at 5% or 10%) level.

Reading: *(a)* at a 10 percent level, encouraging to literacy practice increases by 15.2 percentage points the probability to achieve the first term of the first-year university for students (whose country of origin is NOT France) in Economics and Management stream at university Lille 1 (Northern from France). *(b)* At a 1 percent level, an increase of 1 point in the difference between the second and the first literacy test scores induces an increase of 13.1 percentage points the probability to achieve the first term of first-year university for students (whose country of origin is NOT France) in Economics and Management stream at university Lille 1 (Northern from France).

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