

Reading Ability and Success in Accounting Program

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Abstract:

This study examines the association between subject-specific reading to learn ability and performance in introductory accounting course. Using a sample of U.S. undergraduate business students, we conduct an online reading test regarding new standards on lease accounting. We observe a significant positive association between the online reading test score and GPA in the accounting course. This positive association continues to hold after controlling for the participant's general reading ability and math skills. When we investigate which specific reading skills contribute to this positive association, we observe that it is the global subconstruct of the reading ability, in particular, the ability to make inferences, that contributes to the participant's performance in the accounting course.

I. Introduction

This paper examines the association between a student's reading to learn ability and performance in the introductory accounting course. Accounting has traditionally been viewed as a quantitative subject. Accountants have been referred to as "bean counters," and most students believe that they need to have strong mathematical skills in order to succeed in accounting courses and in an accounting career. This perception of accounting being a quantitative subject leads to the downplay of qualitative skills by the students.

While quantitative skill is important for the study and practice of accounting, we propose that students' qualitative abilities can play a more critical role than the math skill in the successful pursuit of accounting study and career. To test our hypothesis, we constructed and conducted an online reading test among undergraduate students. We then examine whether their reading ability, as proxied by the score of the reading test, is associated with their performance in the introductory accounting course.

We conducted the reading test over two quarters in a private not-for-profit U.S. university. Our sample consists of all the undergraduate business students enrolled in the introductory accounting course during the academic year of 2018-2019. Results suggest that there is a positive correlation between a student's reading to learn ability, as proxied by the online reading test score, and the performance in the course. The result continues to hold after we control for other potential determinants of a student's success in an accounting course. In addition, when we divide the reading test into global and local subconstructs, we observe that the positive association between reading ability and course performance is mainly attributed to the global subconstruct. The association between the local construct and course performance is insignificant. When we further divide the global and local subconstructs into their components, we observe that the ability to make inferences (component of global subconstruct) is critical for the success in the introductory accounting course.

Our study contributes to the literature in the following ways. First, we construct a reading to learn ability test for the subject of accounting. Prior studies have used a more general reading

test, rather than a subject-specific reading test. We believe that our subject-specific test can better assess a student's ability to understand and process the information in a specific subject. Our finding that the subject-specific reading test score, but not the general reading ability test score, is positively associated with performance in the accounting course suggests that the two reading ability measures are different. Thus, future studies that try to assess reading ability in a specific subject should consider using a subject-specific reading test.

Second, our study contributes to the accounting education by identifying the basic skills required for a student to succeed in an accounting course and later in her accounting career. Business schools and universities have been in constant search of a curriculum to better prepare students for their future career. Our study can help to shed light on the importance of reading skill for a student's success in studying and pursuing an accounting career. Instead of focusing solely on the business training, one should consider incorporating courses that can assist the students to improve their reading skill in the curriculum. This improvement can lead to a success in the accounting study.

Third, this study extends Pretorius (2002), who study the effect of reading ability on academic performance in South Africa. Pretorius (2002) focus on students in Medical University and an open University, Unisa. Our sample differs from Pretorius's two samples in that all our participants are business students. The reading ability and skills required of business students differ significant from those of medical students. Further, Pretorius's Unisa sample has no entry requirement. Our business students are recruited from a private university with vigorous entry requirements on Mathematics, English, and various subjects. With these entry requirements, our sample should all meet a certain threshold level of academic skills. We observe that even within this relatively more homogenous group (than the Unisa sample of Pretorius (2002)), a student's reading to learn ability continues to have a significant impact on its academic performance. This positive association between reading to learn ability and academic performance continues to prevail after controlling for native language, SAT scores, etc.

The remaining paper is organized as follows. Section II describes the related literature and research questions. Section III provides a description of the reading test and performance evaluation. Section IV presents the results and Section V concludes.

II. Literature Review and Research Questions

2.1 Literature on Reading Ability

Reading is one of the primary ways in which university students are expected to gain new information. Anderson (2015) interviewed university professors and identified fifteen challenges faced by first-year college students. One of the top challenges is lack of ability to read discipline-specific genre material and read strategically. Average university reading loads of 30-84 pages per week reflect the importance of reading (Anderson, 2015). Business courses fall at the top end of this range (Hartshorn et al., 2017); according to faculty responses to a survey of reading requirements, students in introductory business classes can expect to encounter an average of 84 pages a week. With a standard deviation of 60, some students might be required to read 144 pages in a week for a single class. To manage the reading load of all their classes, students need a high level of skill in reading.

People read for different purposes. They can browse through an article, scan and skim, read to memorize, read to memorize, and read for general comprehension. The skill set required to achieve each of these objectives varies. When people browse an article, there is no clear purpose in mind. Whereas when they read to memorize, they need to retain not only the information of the text but also the form in which it is written. For example, when an actor memorizes the part of Romeo with the goal of performing in a theatre production.

In this study, we focus on the purpose of reading to learn. When a person reads to learn, the objective is to comprehend the text, remember the information, and recall the information in the future (Carver, 1990; Grabe, 2009; Maclellan, 1997). Reading to learn requires the reader be able for conceptually integrate the main ideas and supporting ideas and factual details in the text (Enright et al, 2000). It also requires the ability to remember textual information over a period of time (Grabe, 2009). The students also need to recognize and use discourse structure at both a global (Grabe, 2009; Uccelli et al., 2015) and a local level (Uccelli et al., 2015).

Successful comprehension requires a multitude of subskills and strategies. To learn from text, it is not enough to understand printed words on a page; readers must find ways to integrate what they read with what they already know in order to build a firm “mental model” of the text (Kintsch, 1998). This ability to learn from text goes beyond comprehension of vocabulary and grammar, requiring an ability to form inferences and understand logical relationships in a text at a micro and macro level (Carver, 1990; Grabe, 2009; Greenleaf & Valencia, 2017). At higher levels (i.e., university courses), these skills become discipline-specific (Shanahan & Shanahan, 2012). Reading an accounting text requires a set of fine-tuned skills that are different from those required to read a biology text.

Empirical evidence supports a link between reading skill and university success. It has been shown that students with weak reading skills are more likely to drop out of college courses than students with adequate college-level reading skills (Bergey, Deacon, & Parrila, 2015). Pretorius (2002) documents that reading ability can affect academic performance in South Africa. Using a group of students from the Medical University of South Africa, he shows that students in the passing group has higher reading ability while those in the failing group has lower reading ability. Pretorius (2002) also uses a second group of subjects, students enrolled in Unisa, an open university without entry requirements and students without a matriculation exemption can enroll for its courses and finds similar results. Perkins (1991) reports that the reading ability of South African students were poor. He documents that among the undergraduate students at the University of Transkei, only 13.8% of the students have the reading skills necessary to comprehend their textbooks and 26% need assistance to cope with the reading. Webb (1999) also report that a significant portion of the first-year students at the University of Pretoria have the reading levels of only grade 7-8 students.

Although Pretorius (2002), Perkins (1991), and Webb (1999) focused on South Africa, a similar situation can be seen in the United States. Students are woefully underprepared to meet the reading challenges presented in universities. Roughly half of the students who take the ACT are prepared for college-level reading (ACT, 2006). More recently, PISA (2015) results showed that 15-year-olds in the US had a mean of 497 (out of 1,000) on a reading test, placing them near the middle of results from 72 countries. These low levels of reading achievement in high school

students are unlikely to be resolved before students enter university, thus putting students at a disadvantage when faced with the daunting task of reading and absorbing over a hundred pages of new information a week.

Another way in which the results reported by Pretorius (2002) are relevant to the situation in the United States is the large presence of international students. South Africa is a multilingual society, and many students have to learn via a language that is not their primary language. Thus, the above test results can reflect a language proficiency problem and not necessarily the reading ability. Hacquebord (1994) shows that language proficiency problem is different from reading ability. Similar to South Africa, U.S. is also a multilingual society. While the majority of people speak English, a substantial portion of the population also speak Spanish, Chinese, or another language.

Also, U.S. universities attract students from all over the world to study here. Business is the most frequently-sought degree by international students (Open Doors, 2016). It is not uncommon for accounting faculty in the United States to find themselves teaching large numbers of international students. Hence, our students can also face the language proficiency problem. This, in turn, can make reading comprehension even more of a concern. Non-native English speakers (NNESs) have additional challenges, as they encounter differences in orthography, vocabulary, and grammar, all of which require additional processing (Nassaji, 2014). NNESs therefore have fewer resources to devote to learning from text.

Our studies extend Pretorius (2002) in several ways. First, Pretorius (2002) only performs a univariate analysis. It does not consider other factors that can affect the academic performance. Hence, the relationship Pretorius (2002) documented can be caused by spurious correlation. In this study, we perform a multivariate analysis including other factors that can affect academic performance. This allows us to better identify the effect of reading ability on the academic performance. Second, we consider what specific reading skills are required for reading accounting texts, understanding that these may be different from those required to reading biology or engineering texts. Third, to differentiate the effect of language proficiency and reading ability, we use two different groups of subjects for our analysis: (i) native English speakers and (ii) non-native English speakers. The effect of reading ability on academic performance within the native English speaker group is more likely to be attributed to their

reading ability while that within the group of non-native speakers can be caused by either language proficiency or reading ability or both. Comparing the effect of reading ability between these two groups of students allow us to isolate the effect of reading ability on course performance attributed to the language proficiency from that attributed to the reading ability.

2.2 Research Questions

While quantitative skill is important for the study and practice of accounting, we propose that students' qualitative abilities can play a more critical role than the math skill in the successful pursuit of accounting study and career. In accounting study, the requirement for quantitative skills is actually quite basic: addition, subtraction, multiplication, etc. It does not involve any complex technique such as derivatives or real analysis. Most of the students should have acquired the required skills prior to entering the university. Accordingly, we believe that what separates a student who performs well in an accounting course from one who lags behind is not the quantitative skills but rather her qualitative skill, in particular, her reading skill (ability).

The accounting textbooks are long, comprehensive, and loaded with information. They also involve a lot of technical terms and jargon that can be overwhelming for a college student to read, let alone comprehend. A simple poll in an intermediate accounting class in U.S. indicates that a student needs to spend, on average, two to three hours to read one chapter in a well-known intermediate accounting textbook. For certain students, it can take up to six hours to go through the first round. A significant portion of the students is not able to comprehend the content after this first round of reading. Most of them have to read the chapter for a second or third time to be able to comprehend the text.

A lot of students, pressed for time, choose to skim through the text or simply do not read the book. They rely on the notes of the professor, or the homework practice to learn the materials. While the lecture notes and homework practice can supplement the textbook and enhance the student's comprehension of the concepts, they should not be a substitute for the textbook. The textbook materials likely provide other important concepts and knowledge that are not covered in the lecture notes. The lecture notes have to be reasonably short such that they can be covered in

class. Certain important materials can be left out of these notes. As for the homework, it also cannot cover all the concepts discussed in the text. In addition, the professors of accounting classes, while experts in their field, is not likely to master all the knowledge in the subject area. That is why most of the textbooks are co-authored. Each co-author can bring in her expertise and enrich the context of the book. Consequently, if a student does not read the textbook and rely solely on the notes or homework practice, she can have gaps in her knowledge. This can jeopardize her performance in the future career.

Given the importance of textbook reading, the small percentage of college students who actually read and comprehend the textbooks in accounting course should raise concern among educators. In addition to an increased probability of textbook reading, one's reading ability can also affect her comprehension of exam questions. Understanding the exam questions is a critical part of successfully passing the exam. Many students failed an exam not because they do not know how to solve the problem but rather they are not able to understand the questions. We hypothesize that another venue through which reading ability affects performance in accounting course is via the ability to understand the exam questions, which in turn affects her ability to answer the questions and be successful in the exams.

A third venue via which reading ability can affect a student's performance in accounting course is that one's reading ability can be correlated with her quantitative skills. Cimmiyotti (2013) documents a positive correlation between the academic performance in reading and academic performance in mathematics at the early elementary level including grades two through five. If this positive correlation continues to the college level, it is likely that students with better reading ability have better academic performance in accounting because of their better quantitative skills.

In this research, we will investigate whether a student's reading ability, in particular her ability to learn from text, can affect her performance in an accounting course. We ask the question whether students with better reading comprehension ability are more likely to succeed, as proxied by the course grade, in an accounting class.

RQ1: What is the relationship among reading ability, basic math skills, and success in introductory accounting?

In addition to the relationship between reading ability and success in accounting class, we also investigate what specific reading skills are critical for the success. In particular, we examine whether the global and local subconstructs of reading ability both contribute to the success in accounting class. The global subconstruct relates to a big picture view of comprehension whereas local subconstruct refers to a more detail-oriented understanding. Global subconstruct measures whether the reader is able to identify the main idea of the article, summarize and identify the author's opinion, and making inferences. On the other hand, local subconstruct is concerned with the reader's ability to understand the details of the article, its ability to paraphrase, identify text referents, and know the vocabulary of the specific text. The different focus of these subconstructs can have different impact on academic success.

RQ2: What specific reading skills are most predictive of success in introductory accounting?

III. Method

We designed an online reading test to measure students' ability to learn from text. Participants are undergraduate business students enrolled in introductory accounting course at a not-for-profit university in the mid-Atlantic region. Our sample period covers the Winter quarter of 2019 to Spring quarter of 2019 (i.e., from January 2019 to June 2019). The introductory accounting course is the first accounting class business students take at that university. We perform the test on the students of the first accounting course because we are more likely to have students without any prior accounting knowledge in this course. A student's prior accounting knowledge can affect her performance in the college accounting course. As accounting knowledge is cumulative, a student's performance in prior accounting courses can affect her current performance. To minimize the impact of this cumulative effect of accounting knowledge, we choose to perform the reading ability test on students in the introductory course.

Online Test

The online test is constructed using articles related to new standards on lease accounting. We design the test using subject-specific article because a person's general reading ability can differ from its subject-specific reading ability. Further, the reading skills required for accounting

reading can differ significantly from that required of a science subject or other business subjects. For example, the reading ability for understanding an accounting article can differ from that required for comprehending a management article.

The first draft of the test consisted of six texts with 5-8 items (question) to accompany each text. It was piloted by six PhD students, all of whom provided written feedback about the clarity of the items. A focus group was held with four of the PhD students, and they provided further verbal feedback about test and text length and item clarity.

The final test had a Cronbach's Alpha of .77 (range of 0 to 1.0) with the study population, which is considered acceptable (Tavakol & Dennick, 2011). A low Alpha can indicate that the test is not functioning as intended, and can adversely affect statistical analyses performed using test data. Table 1 provides summary statistics (psychometrics) on the test. Item Facility refers to the proportion of examinees who got the item correct. Values closer to one indicate an easier item. Point biserial correlation is the correlation between examinee performance on an individual item and their performance on the test overall. One would expect that examinees who do well on the test to also do well on an item; therefore, higher values are preferred. One item had a negative point biserial correlation, meaning that examinees who did well on the test tended to get that item wrong. The table also includes distractor analysis (keys are highlighted). All distractors functioned as intended; there were no distractors that were not selected by candidates. All psychometric data indicate that the test performed as anticipated and was a reliable source of information about the study participants.

In addition to the student's reading ability score, we also collect certain demographic information from the participants. We collected information on the participants' gender, age, native language, other language spoken, year in the university, and their SAT scores on reading and mathematics. A participant's academic performance can be affected by its age, gender, and native language. Hence, we control for these characteristics in our multivariate analysis.

One underlying assumption of this study is that all students enrolling in a university have the basic math skills required for an accounting course. However, we collect information on a student's math skill level by asking them to provide their score in the math SAT exam. This math score allows us to analyze the effect of reading ability after controlling for the cross-sectional

variation in their math skills. We also collect the score in the SAT reading exam to analyze whether the subject-specific reading ability, as captured by our online reading test, has any differential and incremental effect on academic success in accounting than the general reading ability, as captured by the SAT reading score.

To measure a student's performance in the accounting course, we retrieve the students' course grade (both the final score and the GPA) at the end of the quarter. While we acknowledge that the course grade does not necessarily reflect the knowledge a student gain from a course, this is a measurable and more objective performance we can obtain. Hence, we adopt it as our academic performance measure.

IV. Results

Table 2 provides descriptive statistics on our sample. We have 228 observations with the required information for our main analysis. The sample size drops when we include the SAT scores in our analysis. 55% of our sample is male with an average age of 19. Figure 1 provides our sample distribution by gender. These participants have spent on average one and a half year at the university. About 71.5% of them are English native speaker and 49% speaks a second language. Figure 2 describes the median reading ability test scores for English native speakers versus non-English native speakers. There is only one point difference between the two groups.

[Insert Table 2, Figures 1 & 2 here]

Table 3 provides the correlations among the variables. Spearman correlation is presented above the diagonal whereas Pearson correlation is presented below the diagonal. We observe that the reading ability test score has a significant positive correlation with both the final course score and the GPA in the accounting course. This provides preliminary support for the hypothesis that reading ability can affect a student's success in the introductory accounting course. A detailed definition of the variables are provided in Appendix I.

[Insert Table 3 here]

Table 4 presents results of our multivariate analysis on the relationship between reading ability score and the GPA in the introductory accounting course. We have performed the analysis using the final score in the course, instead of GPA, and the results are similar to those presented. Given

the high correlation between GPA and final score in the course, it is not surprising to observe similar results using either performance measure. To conserve space, we only present results using the GPA as a performance measure.

[Insert Table 4 here]

Column 1 of Table 4 presents the result of our first research question. We observe that there is a significantly positive association between the reading to learn test score and the GPA in the introductory accounting course. This result suggests that subject-specific reading ability helps improve academic performance in the subject. Interestingly, there is a negative association between English native speaker and the GPA, after controlling for the reading test score. In addition, the ability to speak a second language is also negatively associated with performance in the accounting course.

In Column 2 of Table 4, we rerun the analysis after controlling for the math skills and the general reading ability of the participants. We proxy for the math skills and general reading ability by the SAT math score and SAT reading score, respectively. The reading test score continues to have a significant positive association with the GPA after controlling for the math skills and general reading ability. This result suggests that our online reading test is capturing a different set of reading skills than that captured by the SAT reading test.

Consistent with the general belief that math skills help in accounting course, we observe a positive association between SAT math score and the performance in accounting course. However, we do not observe any significant association between the general reading ability, as proxied by the SAT reading score, and the performance in accounting course. When we examine the correlation between the SAT reading score and our subject-specific reading ability test score, we do not observe any significant correlation between the two (Pearson). They have a marginally significant positive association using the Spearman measure; however, the correlation is only 0.234. Overall, the correlation analysis suggests that there is not a high correlation between the two reading ability score. The multivariate results suggest that while the subject-specific reading ability can have a significant association with a student's success in the accounting class, the general reading ability may not be of significant help.

The impact of reading to learn ability on academic performance can differ between native English speaker and non-native English speaker. To examine this potential differential impact, we split our sample into a native English speaker sub-group and a non-native sub-group. We rerun the analysis separately for these two sub-groups. Results are reported in Table 5. While we observe that there is a positive association between reading ability test score and GPA in both sub-groups, only the coefficient in the native English speaker group is statistically significant at the 5% level. The insignificant coefficient in the non-native English speaker group can be attributed to two reasons. First, the sample size of the non-native sub-group is significantly smaller than that of the native English speaker sub-group. Second, it suggests that the reading test score does not have a significant association with academic performance in the non-native sub-group. Hence, we cannot draw a definitive conclusion regarding the association between reading ability and academic performance in accounting course for the non-native English speaker sub-group.

[Insert Table 5 here]

To answer our second research question regarding the specific reading skill that helps to succeed in the accounting course, we decompose the total reading ability score into two subconstructs—global versus local. Results of the analysis using these subconstructs are provided in Table 6. We observe a significant positive association between the global subconstruct and GPA. The local subconstruct, on the other hand, has no significant association with the performance in the accounting class. These results suggest that a student’s ability to identify the main idea and the author’s opinion, and the ability to make inferences (components of the global subconstruct) are more critical to their success in the accounting course than their ability to know the vocabulary or understand the fine details of an article (components of the local subconstruct). These results can be important for educators and students who want to improve performance in accounting course. Given the limited resources and time, it is more effective to improve the global subconstruct of the reading ability than the local subconstruct. This can help the student to achieve better performance in the course.

[Insert Table 6 here]

When we further divide the global and local subconstructs into their components, we observe that positive association between the global subconstruct and GPA is mainly attributed to the ability of making inferences (Table 7). On the contrary, the local ability to know the vocabulary has a negative association with GPA. This result suggest that the different sub-constructs of the reading ability test can have different association with academic performance.

[Insert Table 7 here]

V. Conclusion

This study examines the impact of reading to learn ability on academic performance in introductory accounting course. Using undergraduate business students from a private U.S. university, we perform a subject-specific (i.e., accounting) reading to learn ability test. We then analyze its relation with the participants' performance in the introductory accounting course, as proxied by GPA. We observe that the subject-specific reading ability test score is positively associated with the GPA in the accounting course. This positive association continues to hold after controlling for the participants' general reading ability and math skills. Further, the subject-specific reading ability and the general reading ability has different impact on the GPA in the accounting course. While the subject-specific reading ability has a positive association with the GPA, the general reading ability has no significant impact on the GPA in accounting course. This result highlights the importance of subject-specific reading ability on the academic performance in that specific subject area.

We also perform the analysis separately for native English speakers and non-native English speakers. The size of the non-native speaker group is significantly smaller than that of the native English speaker group in our sample. The significant positive association between the subject-specific reading ability test and GPA in accounting course is observed only for the native English speaker group.

When we investigate which specific reading skill affects the academic performance, we observe that the global reading subconstruct has a major impact on academic performance in accounting

course. In particular, the ability to make inferences is a major determinant of a student's success in the accounting course.

Our study focuses on the association between subject-specific reading ability and academic performance in the accounting field. As such, our results may not be generalizable to other academic subjects. In particular, the specific reading skills that can help one succeed in an academic area likely varies with the nature and materials of the subject. Future research examining the impact of reading ability should consider examining the subject-specific reading ability, rather than using general reading ability measures.

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Table 1 Item Statistics

Item Facility	0.63	0.76	0.93	0.28	0.87	0.53	0.34	0.72	0.68	0.35	0.51	0.77	0.79	0.90	0.40	0.71	0.78	0.67	0.36	0.64	0.36
Proportion who answered wrong	0.37	0.24	0.07	0.72	0.13	0.47	0.66	0.28	0.32	0.65	0.49	0.23	0.21	0.10	0.60	0.29	0.22	0.33	0.64	0.64	0.64
point biserial correlation	0.42	0.36	0.33	0.16	0.47	0.25	0.21	0.49	0.34	0.15	0.29	0.47	0.43	0.39	0.33	0.33	0.55	0.45	0.23	0.23	0.23

Distractor analysis:

# of A's	67	36	231	68	217	55	110	31	43	86	128	38	197	9	99	176	194	168	90	80	158	86	160
# of B's	25	189	14	69	24	63	54	22	169	92	98	18	38	225	51	6	39	35	58	107	31	66	37
# of C's	156	23	3	107	8	131	85	134	36	71	22	191	13	14	63	32	14	45	100	61	58	96	52
% of A's	0.27	0.15	0.93	0.28	0.87	0.22	0.44	0.17	0.17	0.35	0.52	0.15	0.79	0.04	0.46	0.82	0.79	0.68	0.36	0.32	0.64	0.35	0.64
% of B's	0.1	0.76	0.06	0.28	0.1	0.25	0.22	0.12	0.68	0.37	0.4	0.07	0.15	0.91	0.24	0.03	0.16	0.14	0.23	0.43	0.13	0.27	0.15
% of C's	0.63	0.09	0.01	0.44	0.03	0.53	0.34	0.72	0.15	0.29	0.09	0.77	0.05	0.06	0.3	0.15	0.06	0.18	0.4	0.25	0.23	0.39	0.21

Table 2 Descriptive Statistics

Variable	No. of Observations	Mean	Median	Std Dev
Gender=Male	228	0.553	1	0.498
Age	228	19.184	19	1.49
Years in University	228	1.513	1	0.754
Native English Speaker	228	0.715	1	0.452
Second Language	228	0.491	0	0.501

Table 3 Correlations among variables

This table presents the correlations among our variables. * denotes $p < 0.10$, ** denotes $p < 0.05$, *** denotes $p < 0.010$. A detailed description of each variable is provided in Appendix I.

	FinalScore	GPA	Reading_score	global	local	Gender	age	year universit y	pre_bus	english_ native	second_ lang	sat_mat h1	sat_read1
FinalScore	1	0.892*	0.191*	0.213*	0.145*	-0.138*	-0.078	-0.181*	0.022	-0.122*	-0.067	0.200*	0.119*
GPA	0.940***	1	0.168*	0.190*	0.138*	-0.093	-0.003	-0.139*	0.035	-0.163*	-0.069	0.203*	0.073
Reading_score	0.188**	0.155*	1	0.865*	0.892*	-0.112	0.037	-0.026	0.082	-0.027	0.001	-0.062	0.234*
global	0.200**	0.180*	0.848***	1	0.603*	-0.104	0.141*	0.020	0.081	-0.010	-0.003	-0.035	0.228*
local	0.126	0.099	0.896***	0.578***	1	-0.129*	-0.016	-0.023	0.101	-0.072	0.019	-0.040	0.168*
Gender	-0.129	-0.094	-0.102	-0.085	-0.107	1	0.105	0.171*	-0.030	0.132*	0.057	0.077	-0.009
age	-0.077	0.039	0.064	0.150*	0.009	0.034	1	0.707*	-0.174*	0.050	-0.121*	-0.026	0.009
Year in University	-0.146*	-0.039	-0.010	0.045	-0.017	0.143*	0.608***	1	-0.137*	0.120*	-0.158*	-0.069	-0.037
pre_bus	0.030	-0.001	0.088	0.085	0.112	-0.030	-0.050	-0.114	1	-0.035	0.083	-0.070	-0.099
english_native	-0.131	-0.147*	-0.032	-0.014	-0.057	0.131	-0.044	0.127	-0.035	1	-0.464*	-0.231*	0.127
second_lang	-0.086	-0.073	-0.013	-0.002	-0.004	0.057	-0.040	-0.155*	0.083	-0.46***	1	0.172*	-0.085
sat_math1	0.119	0.103	-0.110	-0.073	-0.092	0.091	-0.133	-0.060	-0.036	-0.195**	0.123	1	0.424*
sat_read1	-0.044	-0.028	-0.091	-0.102	-0.074	0.071	-0.008	-0.041	-0.193**	0.066	0.051	0.129	1

Table 4 Analysis of Association between Reading ability and Performance in Accounting Course

	(1) Coefficients [Odds Ratio] (z-statistics)	(2) Coefficients [Odds Ratio] (z-statistics)
GPA		
Reading test Score	0.0643** [1.066] (2.45)	0.0649** [1.067] (2.27)
Gender	-0.251 [0.778] (-0.93)	-0.173 [0.841] (-0.59)
Age	-0.0632 [0.939] (-0.68)	0.0565 [1.058] (0.50)
Year in University	-0.211 [0.810] (-1.04)	-0.362 [0.697] (-1.52)
Pre_bus	0.0271 [1.028] (0.07)	0.0569 [1.059] (0.13)
English_native	-1.106*** [0.331] (-3.13)	-0.914** [0.401] (-2.35)
Second_lang	-0.612** [0.542] (-2.02)	-0.824** [0.439] (-2.44)
SAT_math		0.00321** [1.003] (2.02)
SAT_read		-0.0000872 [1.00] (-0.37)
Observations	228	201
LR chi2	23.03	24.01
Pseudo R2	0.0332	0.0407

* p<0.10, ** p<0.05, *** p<0.010

Table 5 Analysis of Association between Reading ability and Performance in Accounting Course—Native English Speaker versus Non-native English Speaker

	English Native Coefficients [Odds Ratio] (z-statistics)	Non-English Native Coefficients [Odds Ratio] (z-statistics)
GPA		
Reading test Score	0.0793** [1.083] (2.43)	0.0256 [1.026] (0.37)
Gender	-0.211 [0.809] (-0.62)	-0.00391 [0.996] (-0.01)
Age	0.600** [1.823] (2.22)	-0.0684 [0.934] (-0.43)
Year in University	-0.892** [0.410] (-2.57)	-0.403 [0.669] (-0.59)
Pre_bus	-0.263 [0.769] (-0.51)	1.190 [3.286] (1.39)
Second_lang	-0.743** [0.476] (-2.02)	-0.146 [0.864] (-0.16)
SAT_math	0.00340* [1.003] (1.92)	0.00372 [1.004] (0.94)
SAT_read	-0.000155 [0.9998] (-0.63)	0.00307 [1.003] (0.50)
Observations	142	59
LR chi2	21.00	6.30
Pseudo R2	0.0481	0.0486

* p<0.10, ** p<0.05, *** p<0.010

Table 6 Analysis of Association between Reading ability and Performance in Accounting Course
—Global vs. Local

	(1) Coefficients [Odds Ratio] (z-statistics)	(2) Coefficients [Odds ratio] (z-statistics)
GPA		
Global	0.205*** [1.228] (2.66)	0.185** [1.203] (2.30)
Local	-0.0280 [0.972] (-0.47)	-0.0148 [0.985] (-0.23)
Gender	-0.263 [0.769] (-0.97)	-0.178 [0.837] (-0.60)
Age	-0.0960 [0.908] (-1.01)	0.0208 [1.021] (0.18)
Year in University	-0.208 [0.812] (-1.02)	-0.353 [0.702] (-1.48)
Pre_bus	0.0877 [1.092] (0.23)	0.114 [1.121] (0.26)
English_native	-1.134*** [0.322] (-3.18)	-0.972** [0.379] (-2.47)
Second_lang	-0.621** [0.537] (-2.04)	-0.835** [0.434] (-2.47)
SAT_math		0.00295* [1.003] (1.87)
SAT_read		-0.0000505 [1.00] (-0.21)
Observations	228	201
LR chi2	26.10	25.97
Pseudo R2	0.0376	0.0440

* p<0.10, ** p<0.05, *** p<0.010

Table 7 Analysis of Association between Reading ability and Performance in Accounting Course

	(1) Coefficients [Odds Ratio] (z-statistics)	(2) Coefficients [Odds ratio] (z-statistics)
GPA		
G_id	-0.320 [0.726] (-1.62)	-0.330 [0.719] (-1.54)
G_sum	0.273 [1.314] (1.49)	0.163 [1.178] (0.82)
G_epis	0.318* [1.374] (1.82)	0.259 [1.296] (1.42)
G_infer	0.386** [1.471] (2.46)	0.432** [1.540] (2.56)
L_details	0.0361 [1.037] (0.35)	0.133 [1.142] (1.10)
L_para	-0.122 [0.885] (-0.77)	-0.244 [0.783] (-1.40)
L_id	0.120 [1.128] (0.70)	0.125 [1.133] (0.67)
L_vocab	-0.660* [0.517] (-1.90)	-0.720* [0.487] (-1.96)
Gender	-0.268 [0.765] (-0.97)	-0.189 [0.828] (-0.62)
Age	-0.103 [0.902] (-1.04)	0.0496 [1.051] (0.41)
Year in University	-0.196 [0.822] (-0.93)	-0.382 [0.682] (-1.55)
Pre_bus	0.236 [1.267] (0.60)	0.316 [1.371] (0.69)
English_native	-1.188*** [0.305]	-0.942** [0.390]

	(-3.16)	(-2.26)
Second_lang	-0.678** [0.508] (-2.17)	-0.884** [0.413] (-2.52)
SAT_math		0.00417*** [1.004] (2.60)
SAT_read		-0.0000550 [1.00] (-0.23)
Observations	228	201
LR chi2	41.86	44.22
Pseudo R2	0.0603	0.0749

* p<0.10, ** p<0.05, *** p<0.010

Figure 1 Sample Distribution by gender

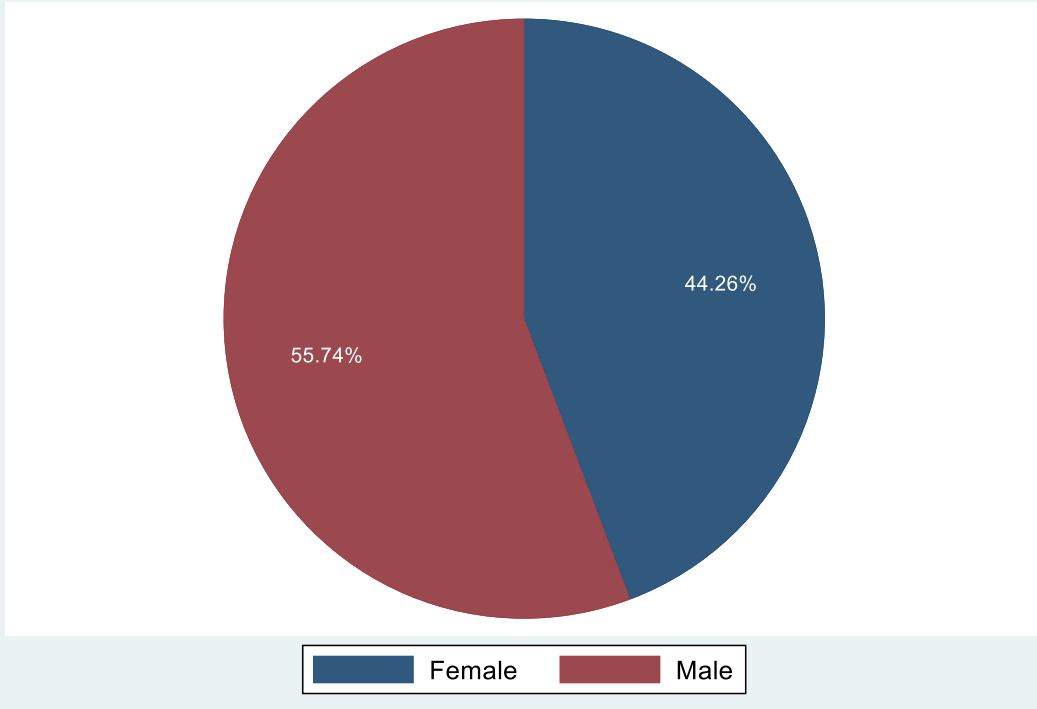
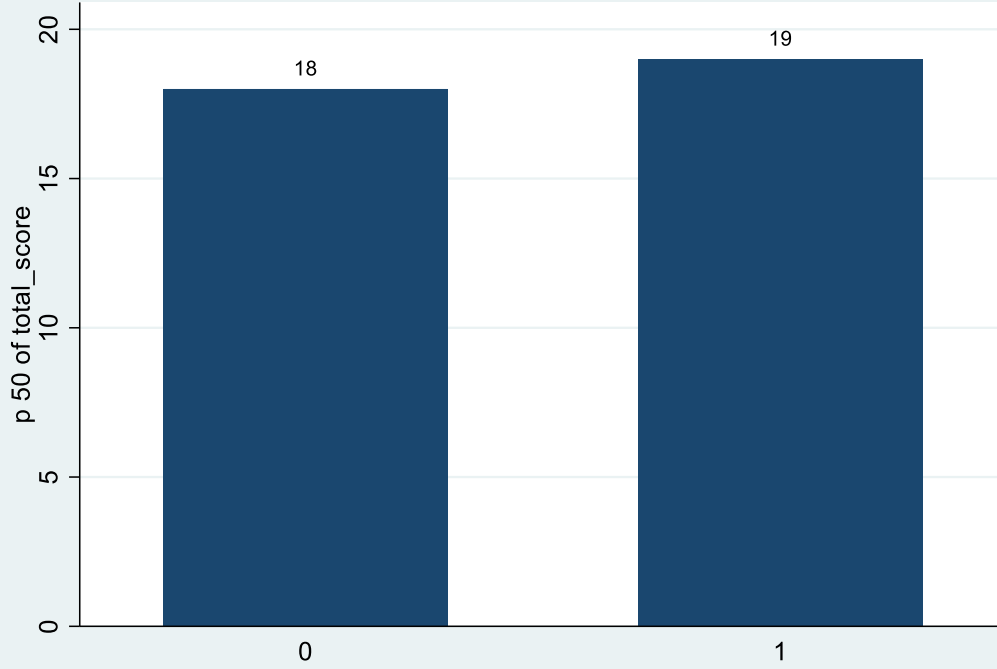


Figure 2 Median Reading Test Score by English Native



Appendix I Variable Definitions

Variables	Definitions
Reading test Score	Score of the Online subject-specific reading test
Gender	Gender of the participant. It takes a value of 1 for male and 0 otherwise.
Age	Age of the participant.
Year in University	Year in the university. Participants can choose from five categories: Freshman, Sophomore, Junior, Senior, Graduate.
Pre_bus	A dummy variable that takes a value of 1 if the participant has taken any business courses before, 0 otherwise.
English_native	A dummy variable that takes a value of 1 if the participant is a native English speaker, 0 otherwise.
Second_lang	A dummy variable that takes a value of 1 if the participant speaks a second language, 0 otherwise.
SAT_math	SAT math score
SAT_read	SAT reading score
Global	Global subconstruct
Local	Local subconstruct
G_id	Identifying the main idea of article. A component of the global subconstruct.
G_sum	Summarizing the article. A component of the global subconstruct.
G_epis	Identifying author's stance or opinion. A component of the global subconstruct.
G_infer	Making inferences. A component of the global subconstruct.
L_details	Understanding details. A component of the local construct.
L_para	Paraphrasing. A component of the local construct.
L_id	Identifying text referents. A component of the local construct.
L_vocab	Knowing vocabulary. A component of the local construct.