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# the literacy of america's college students

January 2006

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## Executive Summary

Rapid changes in technology make it necessary for adults of all ages to use written information in new and more complex ways. For example, learning how to operate computers, filling out complicated tax forms, and comparing price labels when shopping for groceries are just a few of the many tasks that are important parts of our lives.

Every adult needs a range of literacy skills to achieve his or her personal goals, pursue a successful career, and play an active role as a citizen. High levels of literacy also enable individuals to keep pace with changing educational expectations and technologies and support the aspirations of their families.

With the recent attention on accountability measures for elementary and secondary schools, accountability in institutions of higher education has been all but overlooked. The National Survey of America's College Students (NSACS) is a study that examines the literacy of U.S. college students, providing information on how prepared these students are to continue to learn and use the skills that they will need in the years to come. Such an examination provides a valuable set of indicators of performance in higher education, informing such issues as the relationship among educational experience, literacy, and preparedness for the job market.

The NSACS, sponsored by The Pew Charitable Trusts, collected data from a sample of 1,827 graduating students at 80 randomly selected 2-year and 4-year colleges and universities (68 public and 12 private) from across the United States. The NSACS specifically targeted college and university students nearing the end of their degree program, thus providing a broader and more comprehensive picture of students' fundamental literacy abilities than ever before.

The NSACS used the same assessment instrument as the 2003 National Assessment of Adult Literacy (NAAL), a nationally representative survey of the English-language literacy abilities of U.S. adults 16 and older residing in households or prisons. The NAAL was developed and administered by the U.S. Department of Education's National Center for Education Statistics (NCES). Literacy levels were categorized as *Below Basic*, *Basic*, *Intermediate*, or *Proficient* on the basis of the abilities of participants.

Because literacy is not a single skill used in the same manner for all types of printed and written information, the NSACS measured literacy along three dimensions: *prose literacy*, *document literacy*, and *quantitative literacy*. These three literacy domains were designed to capture an ordered set of information-processing skills and strategies that adults use to accomplish a wide range of literacy tasks and make it possible to pro-

file the various types and levels of literacy among different subgroups in society.

**Prose Literacy:** The knowledge and skills needed to perform prose tasks, that is, to search, comprehend, and use information from continuous texts. Prose examples include editorials, news stories, brochures, and instructional materials.

**Document Literacy:** The knowledge and skills needed to perform document tasks, that is, to search, comprehend, and use information from noncontinuous texts in various formats. Document examples include job applications, payroll forms, transportation schedules, maps, tables, and drug or food labels.

**Quantitative Literacy:** The knowledge and skills required to perform quantitative literacy tasks, that is, to identify and perform computations, either alone or sequentially, using numbers embedded in printed materials. Quantitative examples include balancing a checkbook, figuring out a tip, completing an order form, or determining the amount of interest on a loan from an advertisement.

In addition to measuring the literacy skills of college students, the NSACS administered a background questionnaire to address specific issues of interest to the higher education and policy communities, such as demographics, educational and language



background, previous educational experience, career plans, and current college experiences.

## Chapter Highlights

### Chapter 2

This chapter compares the literacy of U.S. college students with the literacy of U.S. adults by key demographic groups. The results revealed the following:

- The average prose, document, and quantitative literacy of students in 2- and 4-year institutions was significantly higher than the average literacy of adults in the nation.
- Students in 2- and 4-year colleges struggled most with quantitative literacy. Approximately 30 percent of students in 2-year institutions and 20 percent of students in 4-year institutions have *Basic* or below quantitative literacy.
- Across colleges and universities, the average literacy of male and female college students was higher than the average literacy of men and women in the nation.
- The literacy gap between men and women in the nation largely disappears among college students.
- With the exception of Asian students in 2-year institutions, college students from each racial or ethnic group outperformed adults from the same racial or ethnic groups in the nation.
- The literacy gap between Whites and minorities in the nation remains among students in colleges and universities.
- In 4-year colleges, students with a non-English language background had higher average literacy than adults in the nation with an English-only language background.

- Students in 2- and 4-year colleges had higher prose and document literacy than adults in the nation with similar levels of education. On the document scale, scores for graduating seniors in 4-year institutions were 20 points higher than the scores of all adults in the United States who previously received a degree from a 4-year college or university. For quantitative literacy, however, differences between current and former college graduates were not significant.

### Chapter 3

This chapter examines the literacy of U.S. college students across several measures of school context. The results revealed the following:

- Students in 4-year colleges had higher average prose, document, and quantitative literacy than their peers in 2-year colleges. The percentage of students with *Proficient* literacy in 4-year institutions was also higher than the percentage of students with *Proficient* literacy in 2-year institutions.
- The literacy of students in 4-year public institutions was comparable to the literacy of students in 4-year private institutions.
- Prose literacy was higher for students in selective 4-year institutions, although differences between selective and nonselective 4-year colleges for document and quantitative literacy could not be detected.
- The literacy of students in 2-year institutions did not differ on the basis of the academic or technical curricular emphasis of the institution.

### Chapter 4

This chapter examines the relationship between literacy and selected background characteristics of college students. The results indicated the following:

- The literacy of U.S.-born students was higher than the literacy of their foreign-born peers in 2- and 4-year colleges, though differences in document and quantitative literacy between U.S.-born students in 2-year institutions and foreign-born students in 4-year institutions were not significant.
- Students in 4-year colleges with the highest levels of personal or family income had higher prose and document literacy than students with the lowest levels of personal or family income. Differences based on financial dependence were not significant between students.
- Children of adults who graduated college or attended graduate school had higher literacy than children of adults who failed to graduate high school or stopped their schooling after receiving a high school diploma or a GED.
- Students who enrolled in college immediately after high school graduation had literacy comparable to that of adults who took time off between high school graduation and college.
- Students who graduated from U.S. high schools had higher literacy than graduates from foreign high schools, though the literacy of students from foreign schools was similar to or greater than the literacy of all U.S. adults.
- The average literacy of U.S. college students was generally the same regardless of how long students had been in college, their enrollment status, or the number of postsecondary institutions they attended.
- Students in 2-year colleges who took remedial math classes struggled specifically with their quantitative literacy, whereas students who took remedial English classes struggled with all three domains of literacy.
- Students in 4-year institutions who took remedial English classes also had lower prose, document, and quantitative literacy than students who never completed a remedial course.
- With only a few exceptions, average literacy did not differ significantly across academic majors.
- Students with higher grade point averages (GPAs) generally had higher literacy than students with lower GPAs.
- Among students in 4-year colleges, document and quantitative literacy was highest for students who expected to earn a first professional degree. For students in 2-year institutions, literacy was lowest for students who reported that they would stop their education after obtaining an associate's degree.
- Prose and document literacy was higher for students in 2- and 4-year institutions enrolled in classes that emphasized analytic thinking, such as evaluating the strength of arguments and applying theories to practical problems or new situations. In contrast, prose and quantitative literacy was lower for students in 4-year colleges and universities who frequently met with their instructors outside of class.

### Chapter 5

This chapter examines the relationship between literacy and a variety of student college experiences. Although academics are at the core of postsecondary education, a student's college experience is also influenced by the student's engagement with faculty, peers, and community. Analyses of the NSACS data revealed the following:



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## Introduction

Rapid changes in technology make it necessary for adults of all ages to use printed information in new and more complex ways. For example, learning how to operate computers, filling out complicated tax forms, and comparing price labels when shopping for groceries are just a few of the many tasks that are important parts of our lives.

Every adult needs a range of literacy skills to achieve his or her personal goals, pursue a successful career, and play an active role as a citizen. High levels of literacy also enable individuals to keep pace with changing educational expectations and technologies and support the aspirations of their families.

The more skilled U.S. adults are at using printed materials, the better prepared the nation will be to participate in an increasingly global society, maintain a high standard of living, and compete with other nations around the world.

### What Is NSACS?

With the recent attention on accountability measures for elementary and secondary schools, accountability in institutions of higher education has been all but overlooked. The National Survey of America's College Students (NSACS) is a study that examines the literacy of U.S. college students, providing information on how prepared these students are to continue to learn and use the skills that they will need in the years to come. Such an examination provides a valuable set of indicators of performance in higher education, informing such issues as the relationship among educational experience, literacy, and preparedness for the job market.

The NSACS, sponsored by The Pew Charitable Trusts, surveyed the English-language literacy abilities of students in their final year of 2-year and 4-year higher education institutions. The NSACS specifically targeted college and university students nearing the end of their degree program, thus providing a broader and more comprehensive picture of students' fundamental literacy abilities than ever before.

The information gained from this study helps colleges and universities determine which types of students need help and what specific literacy needs should be addressed. The study also provides information on the relationship between literacy and specific issues related to the higher education experience, such as work experience, academic major, study habits, and out-of-school activities. Ultimately, the NSACS helps educators and employers develop a better picture of the skills of the emerging labor force.

### Relationship Between NSACS and NAAL

The NSACS used the same assessment instrument as the 2003 National Assessment of Adult Literacy (NAAL), a nationally representative survey of the English-language literacy abilities of U.S. adults 16 and older residing in households or prisons. The NAAL was developed and administered by the U.S. Department of Education's National Center for Education Statistics (NCES).<sup>1</sup>

Unlike indirect measures of literacy, which rely on self-reports of educational attainment, the NAAL measures literacy through asking respondents to demonstrate that they understand the meaning of information found in texts they are asked to read. These tasks represent a range of literacy tasks encountered by adults in their daily lives. The NAAL and the NSACS use the same underlying definition of literacy and focus on a broad range of tasks that adults perform in order to function at work, at home, and in the community.

The NSACS is also reported using the same scale as the NAAL, with scores ranging from 0 to 500 in each of three domains of literacy: prose, document, and quantitative. Because of the close relationship between the NSACS and the NAAL, data from the study allow comparisons between college students and the broader adult population.

<sup>1</sup>For additional information about the NAAL, see White, S. and Dillow, S. (2005). *Key Concepts and Features of the 2003 National Assessment of Adult Literacy* (NCES 2006-471). U.S. Department of Education. Washington, DC: National Center for Education Statistics.

## Defining Literacy

The NSACS uses the NAAL definition of literacy:

*using printed and written information to function in society, to achieve one's goals, and to develop one's knowledge and potential.*

This definition goes beyond simply decoding and understanding text to include a broad range of information-processing skills that adults use in accomplishing tasks associated with work, home, and community contexts.

Because literacy is not a single skill used in the same manner for all types of printed and written information, the NSACS measured literacy along three dimensions: *prose literacy*, *document literacy*, and *quantitative literacy*. These three literacy domains were designed to capture an ordered set of information-processing skills and strategies that adults use to accomplish a wide range of literacy tasks and make it possible to profile the various types and levels of literacy among different subgroups in society.

**Prose Literacy:** The knowledge and skills needed to perform prose tasks, that is, to search, comprehend, and use information from continuous texts. Prose examples include editorials, news stories, brochures, and instructional materials.

**Document Literacy:** The knowledge and skills needed to perform document tasks, that is, to search, comprehend, and use information from noncontinuous texts in various formats. Document examples include job applications, payroll forms, transportation schedules, maps, tables, and drug or food labels.

**Quantitative Literacy:** The knowledge and skills required to perform quantitative literacy tasks, that is, to identify and perform computations, either alone or sequentially, using numbers embedded in printed materials. Quantitative examples include balancing a checkbook, figuring out a tip, completing an order form, or determining the amount of interest on a loan from an advertisement.

Sample items for each of the three literacy domains are in Appendix A.

## Background Questionnaire

In addition to measuring the literacy skills of college students, the NSACS administered a background questionnaire to address specific issues of interest to the higher education and policy communities, such as demographics, educational and language background, previous educational experience, career plans, and current college experience. The NSACS questionnaire covered the following topics:

- General and Language Background
- Educational Background and Experience
- Political and Social Participation
- Labor Force Participation
- Literacy Practices
- Demographic Information
- Educational Aspirations

With these data the NSACS can identify relationships between literacy and selected characteristics and experiences of college students.

## Assessment Design and Administration

The literacy tasks included in the NAAL and the NSACS assessments were drawn from actual texts and documents, which were either used in their original format or reproduced in the assessment booklets. The types of texts and documents used in the assessment included an almanac, a mock newspaper, a pamphlet about testing for colon cancer, and an informational booklet about Medicare. Calculators were provided for quantitative literacy questions, but students were not required to use them.

Each question appeared in the assessment booklet before the materials needed to answer it, thus encouraging respondents to read with purpose. Consistent with the way adults use written materials in their everyday lives, respondents could correctly answer many questions by skimming the text or document for the information necessary to answer a given task. All tasks were open-ended, and respondents wrote their answers directly in their assessment booklets.

Unlike the NAAL, which was administered to respondents in the households or prisons where they resided, the NSACS was administered to students on their college campuses. Both the NSACS background questionnaire and the literacy assessment were self-administered under the supervision of a test administrator. The test administrator served as a logistical coordinator to secure space at each college or university where students could go to take the assessment and as a monitor to ensure the fair and accurate administration of the NSACS.

On average, the background questionnaire and the assessment took 90 minutes to complete, though students were allowed to take as much time as they needed. Students were given a small monetary incentive to participate in the study.

### Sample

The NSACS collected data from a sample of 1,827 graduating students at 80 randomly selected 2-year and 4-year colleges and universities (68 public and 12 private) from across the United States. Institutions were randomly selected to reflect the population of institutions overall. The sampling procedure followed a two-stage design in which institutions were selected in the first stage and students were selected in the second stage. The sample took into account size, location, and types of degrees offered to create a nationally representative sample.

Approximately 25 students in each institution were randomly selected for the assessment. Eligible students included only those in their last year of a degree-seeking program (e.g., A.A., B.A., B.S.).<sup>2</sup>

### Reporting Standards

NSACS results are reported in the same format as the NAAL to allow easy comparison between the general adult population and the population of students completing higher education degrees.<sup>3</sup>

<sup>2</sup>For further details on sampling procedures and response rates, see Appendix B.

<sup>3</sup>For the first set of NAAL results, see Kutner, M., Greenberg, E., and Baer, J. (2005). *A First Look at the Literacy of America's Adults in the 21st Century* (NCES 2006-470). U.S. Department of Education. Washington, DC: National Center for Education Statistics.

Proficiency is measured separately for prose, document, and quantitative literacy on scales that range from 0 to 500. Literacy scores are presented in two formats: 1) as averages and 2) as the percentage of respondents within different literacy levels. The literacy levels divide respondents into different groups on the basis of their performance on the assessment, providing a context for interpreting the literacy scores.

The National Center for Education Statistics (NCES) asked the National Research Council's Board on Testing and Assessment (BOTA) to recommend a set of literacy levels to report results from the NAAL.<sup>4</sup> The NSACS uses the same literacy reporting levels as the NAAL. Drawing on recommendations from BOTA's Committee on Performance Levels for Adults, NCES decided to report the assessment results using four literacy levels. Descriptions of the abilities associated with each level and the types of tasks that respondents in the levels could complete are presented in Table 1.1.

### Interpreting NSACS Results

The average scores and percentages presented in this report are estimates based on a sample of college students enrolled in 2- and 4-year institutions in the United States. Like all samples, the results are subject to a measure of uncertainty (i.e., sampling error), reflected in the standard errors of the estimates. Standard errors for the prose, document, and quantitative scale scores and the percentage of adults in each literacy level are presented in Appendix C.

The discussion of results in the following chapters takes into account the standard errors associated with the estimates. All differences noted in this report, whether between college students and the nation or between members of a population group (e.g., men and women), are statistically significant at the .05 level, based on a two-tailed test. This means that observed differences between groups are unlikely to be due to chance factors associated with sampling variability. Hence, the term

<sup>4</sup>Hauser, R.M., Edley, C.F. Jr., Koenig, J.A., and Elliott, S.W. (Eds.). (2005). *Measuring Literacy: Performance Levels for Adults, Interim Report*. Washington, DC: National Academies Press.



**Table 1.1. Overview of the literacy levels**

Level and definition	Key abilities associated with level	Sample tasks typical of level
<p><b>Below Basic</b> indicates no more than the most simple and concrete literacy skills.</p> <p>Score ranges for <i>Below Basic</i>:</p> <p>Prose: 0–209 Document: 0–204 Quantitative: 0–234</p>	<p>Adults at the <i>Below Basic</i> level range from being nonliterate in English to having the abilities listed below:</p> <ul style="list-style-type: none"> <li>■ locating easily identifiable information in short, commonplace <b>prose</b> texts</li> <li>■ locating easily identifiable information and following written instructions in simple <b>documents</b> (e.g., charts or forms)</li> <li>■ locating numbers and using them to perform simple <b>quantitative</b> operations (primarily addition) when the mathematical information is very concrete and familiar</li> </ul>	<ul style="list-style-type: none"> <li>■ searching a short, simple text to find out what a patient is allowed to drink before a medical test</li> <li>■ signing a form</li> <li>■ adding the amounts on a bank deposit slip</li> </ul>
<p><b>Basic</b> indicates skills necessary to perform simple and everyday literacy activities.</p> <p>Score ranges for <i>Basic</i>:</p> <p>Prose: 210–264 Document: 205–249 Quantitative: 235–289</p>	<ul style="list-style-type: none"> <li>■ reading and understanding information in short, commonplace <b>prose</b> texts</li> <li>■ reading and understanding information in simple <b>documents</b></li> <li>■ locating easily identifiable <b>quantitative</b> information and using it to solve simple, one-step problems when the arithmetic operation is specified or easily inferred</li> </ul>	<ul style="list-style-type: none"> <li>■ finding in a pamphlet for prospective jurors an explanation of how people were selected for the jury pool</li> <li>■ using a television guide to find out what programs are on at a specific time</li> <li>■ comparing the ticket prices for two events</li> </ul>
<p><b>Intermediate</b> indicates skills necessary to perform moderately challenging literacy activities.</p> <p>Score ranges for <i>Intermediate</i>:</p> <p>Prose: 265–339 Document: 250–334 Quantitative: 290–349</p>	<ul style="list-style-type: none"> <li>■ reading and understanding moderately dense, less commonplace <b>prose</b> texts as well as summarizing, making simple inferences, determining cause and effect, and recognizing the author's purpose</li> <li>■ locating information in dense, complex <b>documents</b> and making simple inferences about the information</li> <li>■ locating less familiar <b>quantitative</b> information and using it to solve problems when the arithmetic operation is not specified or easily inferred</li> </ul>	<ul style="list-style-type: none"> <li>■ consulting reference materials to determine which foods contain a particular vitamin</li> <li>■ identifying a specific location on a map</li> <li>■ calculating the total cost of ordering specific office supplies from a catalog</li> </ul>
<p><b>Proficient</b> indicates skills necessary to perform more complex and challenging literacy activities.</p> <p>Score ranges for <i>Proficient</i>:</p> <p>Prose: 340–500 Document: 335–500 Quantitative: 350–500</p>	<ul style="list-style-type: none"> <li>■ reading lengthy, complex, abstract <b>prose</b> texts as well as synthesizing information and making complex inferences</li> <li>■ integrating, synthesizing, and analyzing multiple pieces of information located in complex <b>documents</b></li> <li>■ locating more abstract <b>quantitative</b> information and using it to solve multistep problems when the arithmetic operations are not easily inferred and the problems are more complex</li> </ul>	<ul style="list-style-type: none"> <li>■ comparing viewpoints in two editorials</li> <li>■ interpreting a table about blood pressure, age, and physical activity</li> <li>■ computing and comparing the cost per ounce of food items</li> </ul>

Note: Although the literacy levels share common names with the achievement levels of the National Assessment of Educational Progress (NAEP), they do not correspond to the NAEP levels.

Source: Hauser, R.M., Edley, C.F. Jr., Koenig, J.A., and Elliott, S.W. (Eds.). (2005). *Measuring Literacy: Performance Levels for Adults, Interim Report*. Washington, DC: National Academies Press; White, S. and Dillow, S. (2005). *Key Concepts and Features of the 2003 National Assessment of Adult Literacy* (NCES 2006-471). U.S. Department of Education. Washington, DC: National Center for Education Statistics.

“significant” does not reflect any judgment about the absolute magnitude of differences.

### Organization of the Report

This report is divided into five chapters. Following this introduction, the next chapter compares the literacy of college students with that of all adults throughout the United States. Chapter 3 explores the relationship between literacy and various contextual aspects of postsecondary education institutions. Chapters 4 and 5 examine literacy as it relates to

various characteristics of students and their college experience. In addition, several appendices provide supplementary information. Appendix A presents sample questions from the NSACS instrument for prose, document, and quantitative literacy. Appendix B contains additional information on various technical aspects of the study, including sampling, data collection, scaling, weighting, and statistical testing. Appendix C gives standard errors for the tables and figures throughout this report. A glossary of terms and their definitions is in Appendix D.



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**CHAPTER 2** efghij

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## Introduction

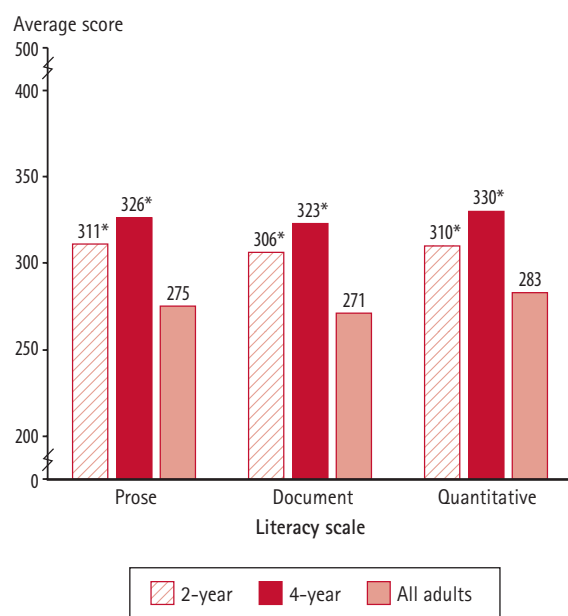
To provide a context for interpreting the literacy of U.S. college students, this chapter compares results from the NSACS study with results from the NAAL. As described in Chapter 1, the NAAL assessed the literacy of U.S. adults residing in households or incarcerated in prisons. Comparisons between the NSACS and the NAAL are useful because they place the literacy of college students within the broader spectrum of adult literacy in the United States.

The NSACS study was designed to explore the relationship between literacy and a series of measures relevant to colleges and college students. Consequently, comparisons between the NSACS and the NAAL are limited to overall differences between the population of college students and the population of all adults, as well as four key measures: gender, race and ethnicity, language background, and completion of a postsecondary degree. The following chapters build on the results presented here, focusing particular attention on differences across types of institutions and characteristics of students.

### Adults in College and in the Nation

The average prose, document, and quantitative literacy of students in 2- and 4-year colleges was significantly higher than the average literacy of adults in the nation (Figure 2.1). Across the literacy scales, the percentage of students in 2- and 4-year institutions with *Below Basic* literacy was also significantly lower than the percentage of adults in the nation with *Below Basic* literacy (Figure 2.2).

**Figure 2.1. Average prose, document, and quantitative literacy scores of U.S. adults in college and the nation**



\* Significantly different from all adults.

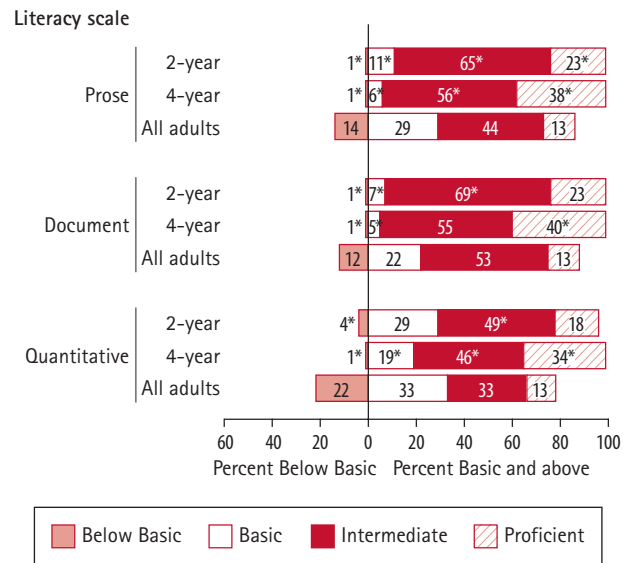
Note: Because of the large number of possible statistical comparisons, not all statistically significant differences are indicated in this figure. The corresponding table in Appendix C has detailed standard errors that can be used to calculate additional tests of statistical significance.

Source: 2003 National Survey of America's College Students and 2003 National Assessment of Adult Literacy.

Most students had literacy above the *Basic* level, though there were fewer differences between students and adults in the nation at the higher literacy levels. For example, the percentage of students in 2-year colleges with *Proficient* document and quantitative literacy did not differ significantly from the percentage of adults in the nation with *Proficient* document and quantitative literacy (the percentage of students in 4-year institutions with *Proficient* literacy was higher than the percentage of adults in the nation across the three scales).

Although the average literacy of college students on all scales was higher than the literacy of America’s adults, the results indicate that students in 2- and 4-year institutions struggle most with quantitative literacy. Nearly 20 percent of students in 4-year colleges had *Basic* quantitative literacy, compared with 6 percent with *Basic* prose literacy and 5 percent with *Basic* document literacy. The performance of students in 2-year institutions was also troubling. Approximately 30 percent had *Basic* quantitative literacy, which was not significantly different from the percentage of adults in the nation with *Basic* quantitative literacy.

**Figure 2.2. Percentage of U.S. adults in college and the nation in each prose, document, and quantitative literacy level**



\* Significantly different from all adults.

Note: Percentages may not add to 100 because of rounding. Because of the large number of possible statistical comparisons, not all statistically significant differences are indicated in this figure. The corresponding table in Appendix C has detailed standard errors that can be used to calculate additional tests of statistical significance.

Source: 2003 National Survey of America’s College Students and 2003 National Assessment of Adult Literacy.

### Gender

Men and women in 2- and 4-year colleges had higher average literacy than did men and women in the nation in 2003 (Table 2.1). The majority of male and female college students had either *Intermediate* or *Proficient* prose, document, and quantitative literacy, and far fewer had *Below Basic* literacy compared with the percentage of men and women in the national population with *Below Basic* literacy. Among men and women at 4-year colleges and universities, a higher percentage had *Proficient* literacy than did men and women in the nation (Tables 2.2, 2.3, 2.4).

Although the performance of men and women in college relative to adults in the population is hardly surprising, more interesting is the absence of a gap in literacy between men and women enrolled in 2- and 4-year institutions. Among the nation's adults, for example, women outperform men on prose

literacy and men outperform women on quantitative literacy. Among college students, however, differences in the average prose, document, and quantitative literacy of men and women were not significant. The lack of a significant difference in quantitative literacy between men and women enrolled in college is especially encouraging because it indicates that women may be making progress in bridging a divide that has long existed between the sexes.

### Race/Ethnicity

Similar to the results for gender, the average literacy of White, Black, Hispanic, and Asian students in 4-year colleges was significantly higher than the average literacy of adults in the same racial and ethnic groups in the nation. The average literacy of White, Black, and Hispanic students in 2-year institutions was also higher than in the nation, though the literacy of Asian stu-

**Table 2.1. Average prose, document, and quantitative literacy scores for U.S. adults in college and the nation, by selected characteristics**

Characteristic	Prose			Document			Quantitative		
	2-year	4-year	All adults	2-year	4-year	All adults	2-year	4-year	All adults
<b>GENDER</b>									
Female	312	326	277*	306	322	272*	306	326	279*
Male	309	327	272	307	325	269	316	336	286
<b>RACE/ETHNICITY</b>									
White	319	332	288	315	329	282	321	337	297
Black	296**	296**	243**	286**	293**	238**	289**	292**	238**
Hispanic	308	313**	216**	294**	313	224**	296**	310**	233**
Asian/Pacific Islander	274**	307**	271**	286**	302**	272	278**	314**	285**
<b>LANGUAGE SPOKEN BEFORE STARTING SCHOOL</b>									
English only	316	329	283	311	326	276	317	333	289
English and other language	~	327	272***	~	316	264***	~	317***	278***
Non-English	288***	303***	212***	283***	306***	222***	284***	318	235***

\* Significantly different from men.

\*\* Significantly different from Whites.

\*\*\* Significantly different from English only.

~ Literacy score could not be estimated because of small sample size.

Note: Because of the large number of possible statistical comparisons, not all statistically significant differences are indicated in this table. The corresponding table in Appendix C has detailed standard errors that can be used to calculate additional tests of statistical significance.

Source: 2003 National Survey of America's College Students and 2003 National Assessment of Adult Literacy.



dents in 2-year colleges did not differ significantly from the literacy of Asians in the national population.

Although the percentage of White, Black, Hispanic, and Asian students with *Below Basic* literacy enrolled in 4-year colleges was significantly lower than in the population, there were far fewer differences in the percentage of White, Black, Hispanic, and Asian students with *Proficient* literacy compared with adults in the nation. With only a few exceptions, the racial and ethnic distribution of college students with *Proficient* prose, document, and quantitative literacy was similar to the distribution in the U.S. adult population.

More discouraging was the persistence of disparities in the average literacy of White students compared with the literacy of students from other racial and ethnic backgrounds. Mirroring trends in the population, the average prose and

quantitative literacy of White students in 4-year institutions was higher than for any other racial/ethnic group. Similarly, White students also had the highest prose and document literacy among students in 2-year colleges.<sup>1</sup> Even at an advanced level of educational attainment, the results indicate that the literacy gap between minority and nonminority students fails to dissipate.

### Language Spoken Before Starting School

Literacy results by language background were similar to the results for gender and race/ethnicity, with students in 2- and 4-year colleges outperforming adults in the nation in the three language groups (English only, English and another

<sup>1</sup>Differences between White and Hispanic students in 4-year institutions were not significant for document literacy. The lack of a statistically significant difference, however, is likely due to the large standard errors for Hispanic students.

**Table 2.2. Percentage of U.S. adults in college and the nation in each prose literacy level, by selected characteristics**

Characteristic	<i>Below Basic</i>			<i>Basic</i>			<i>Intermediate</i>			<i>Proficient</i>		
	2-year	4-year	All adults	2-year	4-year	All adults	2-year	4-year	All adults	2-year	4-year	All adults
<b>GENDER</b>												
Female	0	1	12*	9	6	29	69	56	46*	22	37	14
Male	2	0	15	14	7	29	61	55	43	24	38	13
<b>RACE/ETHNICITY</b>												
White	0	0	7	6	3	25	67	55	51	27	42	17
Black	0	4	24**	18	20**	43**	71	61	31**	11	16**	2**
Hispanic	2	2	44**	12	4	30**	63	55	23**	22	29	4**
Asian/Pacific Islander	5	1	14**	39*	17**	32**	49	59	42**	7**	23	12**
<b>LANGUAGE SPOKEN BEFORE STARTING SCHOOL</b>												
English only	1	0	9	8	5	27	66	56	49	26	39	15
English and other language	~	0	10	~	6	35***	~	58	47	~	36	8***
Non-English	2	4	48***	26***	19***	28	62	54	21***	9***	24	4***

\* Significantly different from men.  
 \*\* Significantly different from Whites.  
 \*\*\* Significantly different from English only.  
 ~ Literacy score could not be estimated because of small sample size.  
 Note: Percentages may not add to 100 because of rounding. Because of the large number of possible statistical comparisons, not all statistically significant differences are indicated in this table. The corresponding table in Appendix C has detailed standard errors that can be used to calculate additional tests of statistical significance.  
 Source: 2003 National Survey of America's College Students and 2003 National Assessment of Adult Literacy.

language,<sup>2</sup> and non-English). Moreover, in 4-year colleges and universities, the average literacy of students with a non-English language background was *higher* than the average literacy of adults in the nation who spoke only English before starting school. The average literacy of students in 4-year institutions who spoke English and an additional non-English language was also higher than the average literacy of English-only speakers in the nation.

<sup>2</sup>Literacy estimates for students in this group are available for 4-year colleges only. The number of students in the 2-year college sample who spoke English and an additional language was too small to generate reliable literacy scores.

The superior prose literacy of students with a non-English language background compared with that of adults in the nation who spoke only English is especially impressive. Document and quantitative literacy tasks require respondents to read English language text, but also to navigate tables, charts, and schedules and to perform arithmetical calculations. Document navigation and math skills are not dependent on English language literacy, though some familiarity with English is certainly required in order to successfully complete the document and quantitative tasks in the NSACS assessment.

**Table 2.3. Percentage of U.S. adults in college and the nation in each document literacy level, by selected characteristics**

Characteristic	<i>Below Basic</i>			<i>Basic</i>			<i>Intermediate</i>			<i>Proficient</i>		
	2-year	4-year	All adults	2-year	4-year	All adults	2-year	4-year	All adults	2-year	4-year	All adults
<b>GENDER</b>												
Female	1	1	11*	8	4	22	68	58	54*	24	38	13
Male	1	0	14	7	5	23	69	52	51	24	43	13
<b>RACE/ETHNICITY</b>												
White	0	0	8	3	3	19	68	52	58	28	45	15
Black	1	3	24**	16	12	35**	74	68	40**	10	17**	2**
Hispanic	1	3	36**	10	10	26**	73	52	33**	15	35	5**
Asian/Pacific Islander	8**	0	11	17**	9	22	56	71	54	18	20	13
<b>LANGUAGE SPOKEN BEFORE STARTING SCHOOL</b>												
English only	0	0	9	5	4	21	68	53	56	27	42	13
English and other language	~	0	11	~	7	27***	~	60	56	~	33	6***
Non-English	4	1	37***	17***	9	25***	69	63	32***	10	26	6***

\* Significantly different from men.

\*\* Significantly different from Whites.

\*\*\* Significantly different from English only.

~ Literacy score could not be estimated because of small sample size.

Note: Percentages may not add to 100 because of rounding. Because of the large number of possible statistical comparisons, not all statistically significant differences are indicated in this table. The corresponding table in Appendix C has detailed standard errors that can be used to calculate additional tests of statistical significance.

Source: 2003 National Survey of America's College Students and 2003 National Assessment of Adult Literacy.

In contrast, prose literacy tasks require respondents to read and draw inferences from connected text, such as newspaper articles, short stories, and poems. The mastery of prose tasks demonstrated by non-English speakers, relative to adults in the nation who spoke only English before starting school, illustrates the strong English literacy of students in 4-year colleges with non-English language backgrounds.

Within 2- and 4-year colleges and universities, the average prose and document literacy of students with an English-only

language background was significantly higher than the literacy of their peers who spoke a non-English language before starting school. The quantitative literacy of students in 2-year institutions with an English-only background was also higher than the quantitative literacy of students with a non-English background, though differences between the two groups of students in 4-year colleges and universities were not significant.

**Table 2.4. Percentage of U.S. adults in college and the nation in each quantitative literacy level, by selected characteristics**

Characteristic	<i>Below Basic</i>			<i>Basic</i>			<i>Intermediate</i>			<i>Proficient</i>		
	2-year	4-year	All adults	2-year	4-year	All adults	2-year	4-year	All adults	2-year	4-year	All adults
<b>GENDER</b>												
Female	5	1	22	31	20	35*	47	49	32	16	30	11*
Male	2	1	21	25	17	31	53	42	33	20	39	16
<b>RACE/ETHNICITY</b>												
White	1	1	13	22	15	32	53	45	39	24	40	17
Black	9	6	47**	42**	43	36**	42	46	15**	7**	5**	2**
Hispanic	10	4	50**	35	33**	29**	41	45	17**	14	19	4**
Asian/Pacific Islander	13	2	19	50	28	34	35	51	35	3**	20	12**
<b>LANGUAGE SPOKEN BEFORE STARTING SCHOOL</b>												
English only	2	1	18	25	17	33	52	46	35	21	36	15
English and other language	~	2	21	~	25	38***	~	53	31***	~	21	10***
Non-English	8	4	49***	49	27	28***	40	41	18***	3***	27	6***

\* Significantly different from men.

\*\* Significantly different from Whites.

\*\*\* Significantly different from English only.

~ Literacy score could not be estimated because of small sample size.

Note: Percentages may not add to 100 because of rounding. Because of the large number of possible statistical comparisons, not all statistically significant differences are indicated in this table. The corresponding table in Appendix C has detailed standard errors that can be used to calculate additional tests of statistical significance.

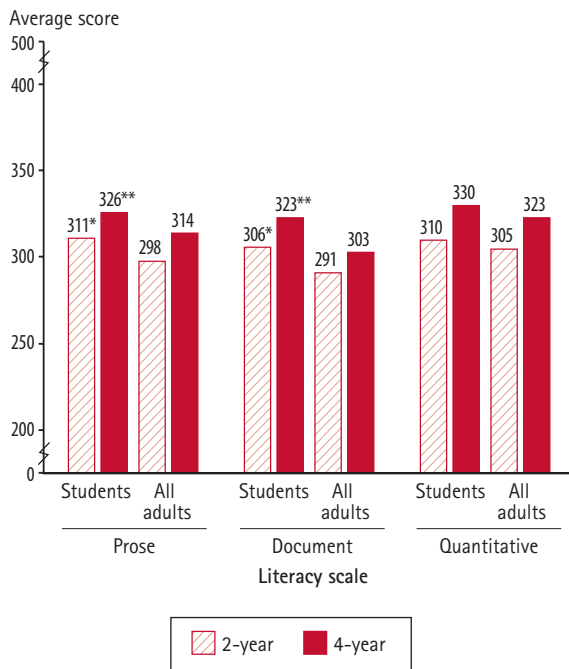
Source: 2003 National Survey of America's College Students and 2003 National Assessment of Adult Literacy.

### Postsecondary Education

Students in 2- and 4-year colleges had higher prose and document literacy than adults in the nation with similar levels of education (Figure 2.3).<sup>3</sup> On the document scale, the scores for graduating seniors in 4-year institutions were 20 points higher than the scores of all adults in the United States who previously received a degree from a 4-year college or university. For quantitative literacy, however, differences between current and former college graduates were not significant.

<sup>3</sup>The former group refers to students selected for the NSACS sample, and the latter group refers to adults in the NAAL sample who obtained a degree from a 2- or 4-year postsecondary institution. Unlike the NSACS, which was limited to students graduating in spring 2003, the year of college graduation varied across adults in the NAAL sample. Some adults in the NAAL sample received their degree recently, whereas others completed their postsecondary education decades ago.

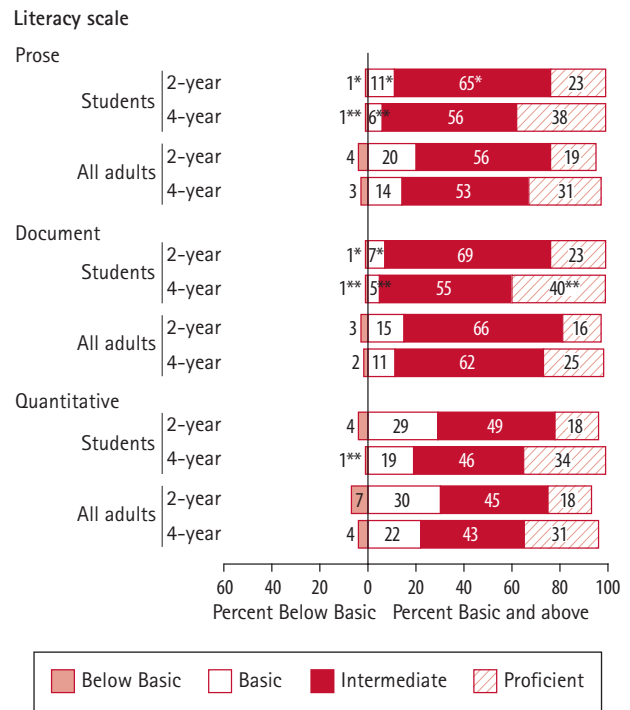
**Figure 2.3. Average prose, document, and quantitative literacy scores of U.S. adults in college and the nation, by completion of postsecondary education**



\*Significantly different from all adults with degrees from 2-year institutions.  
 \*\*Significantly different from all adults with degrees from 4-year institutions.  
 Note: Because of the large number of possible statistical comparisons, not all statistically significant differences are indicated in this figure. The corresponding table in Appendix C has detailed standard errors that can be used to calculate additional tests of statistical significance.  
 Source: 2003 National Survey of America's College Students and 2003 National Assessment of Adult Literacy.

Moreover, with one exception, the percentage of students in 2- or 4-year colleges with *Proficient* literacy (Figure 2.4) was comparable to the percentage of college graduates in the nation with *Proficient* literacy (the percentage of students in 4-year institutions with *Proficient* document literacy was significantly higher than the percentage of college graduates in the nation with *Proficient* document literacy). Underscoring the struggles that current college students have with quantitative literacy, the percentage of graduating students with *Basic* quantitative literacy was comparable to the percentage of college graduates in the nation with *Basic* quantitative literacy.

**Figure 2.4. Percentage of U.S. adults in college and the nation in each prose, document, and quantitative literacy level, by completion of postsecondary education**



\* Significantly different from all adults with degrees from 2-year institutions.  
 \*\* Significantly different from all adults with degrees from 4-year institutions.  
 Note: Percentages may not add to 100 because of rounding. Because of the large number of possible statistical comparisons, not all statistically significant differences are indicated in this figure. The corresponding table in Appendix C has detailed standard errors that can be used to calculate additional tests of statistical significance.  
 Source: 2003 National Survey of America's College Students and 2003 National Assessment of Adult Literacy.

## Chapter Highlights

This chapter compared the literacy of U.S. college students with the literacy of U.S. adults by key demographic groups. The results revealed the following:

- The average prose, document, and quantitative literacy of students in 2- and 4-year institutions was significantly higher than the average literacy of adults in the nation.
- Students in 2- and 4-year colleges struggled the most with quantitative literacy. Approximately 30 percent of students in 2-year institutions and 20 percent of students in 4-year institutions have *Basic* or below quantitative literacy.
- Across colleges and universities, the average literacy of male and female college students was higher than the average literacy of men and women in the nation.
- The literacy gap between men and women in the nation largely disappears among college students.
- With the exception of Asian students in 2-year institutions, college students from each racial or ethnic group outperformed adults from the same racial or ethnic groups in the nation.
- The literacy gap between Whites and minorities in the nation remains among students in colleges and universities.
- In 4-year colleges, students with a non-English language background had higher average literacy than adults in the nation with an English-only language background
- Students in 2- and 4-year colleges had higher prose and document literacy than adults in the nation with similar levels of education, although differences in quantitative literacy between current and former college graduates were not significant.

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## Introduction

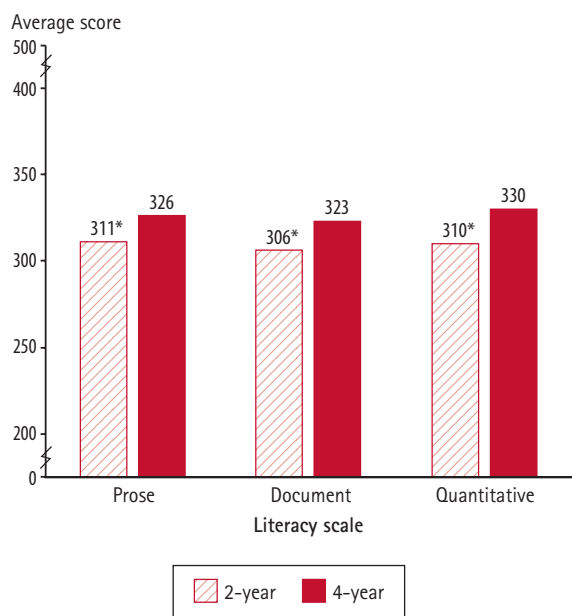
Postsecondary education in the United States is highly diversified, with institutions catering to students pursuing studies with a variety of goals. Students can select from a range of options for higher education, including 2- or 4-year colleges, public, private, or proprietary institutions, small liberal arts colleges, and large research institutions, among many others. This chapter examines the relationship between selected institutional characteristics and college student literacy. Because the emphasis of the NSACS project rested primarily on characteristics of students (examined in the following chapter), information about the context of higher education and literacy was limited to four measures: 1) type of institution (2-year or 4-year), 2) public versus private status,<sup>1</sup> 3) institutional selectivity, and 4) curricular emphasis.

### 2-Year Versus 4-Year Institutions

The results displayed in Figures 3.1 and 3.2 were also presented in Chapter 2, though the focus in that chapter was on differences between college students and adults in the nation (the national results are excluded from Figures 3.1 and 3.2). Just as the literacy of college students differed significantly from the

<sup>1</sup>Private proprietary institutions were excluded from the sample. See glossary under "private institution" for full definition.

**Figure 3.1. Average prose, document, and quantitative literacy scores of U.S. adults in 2- and 4-year colleges**

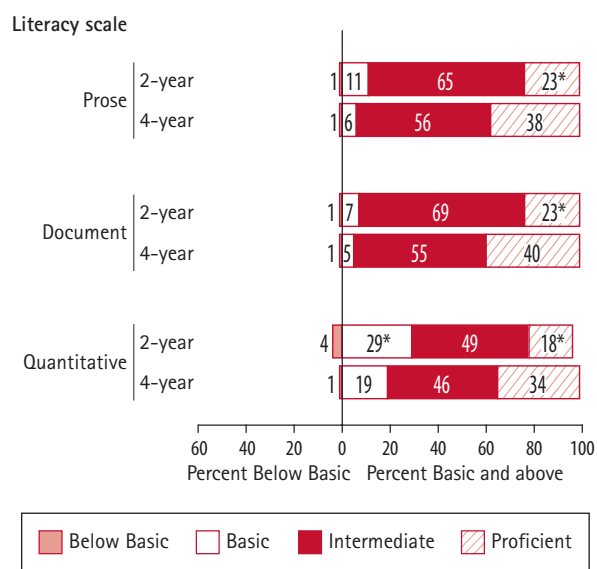


\* Significantly different from students in 4-year institutions.  
Source: 2003 National Survey of America's College Students.

literacy of adults in the nation, the literacy of college students also varied across 2- and 4-year institutions.

The average prose, document, and quantitative literacy of students in 4-year institutions was significantly higher than the literacy of students enrolled in 2-year colleges. The percentage of students with *Proficient* literacy was also higher among students in 4-year colleges and universities compared with students in 2-year colleges.

**Figure 3.2. Percentage of U.S. adults in 2- and 4-year colleges in each prose, document, and quantitative literacy level**



\* Significantly different from students in 4-year institutions.  
Note: Percentages may not add to 100 because of rounding.  
Source: 2003 National Survey of America's College Students.

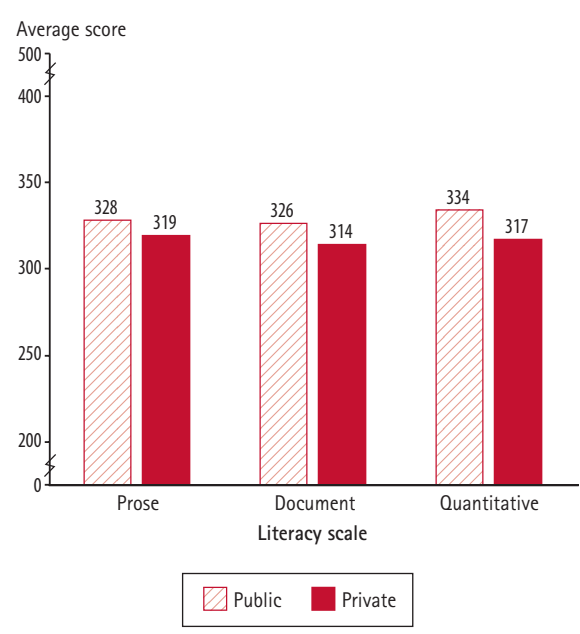


### Public Versus Private

The average prose, document, and quantitative literacy of students in 4-year public colleges was not significantly different from the average literacy of students enrolled in 4-year private colleges (Figure 3.3).<sup>2</sup> The comparable literacy of students in public and private 4-year institutions is likely a reflection of the heterogeneity of private colleges. Although many of the most elite colleges and universities in the country are private, these institutions represent a small proportion of the nation's private postsecondary institutions. A measure such as institutional selectivity may be more appropriate for discerning differences between types of 4-year institutions.

<sup>2</sup>No 2-year private colleges participated in the NSACS, so a similar comparison could not be performed for these institutions.

**Figure 3.3. Average prose, document, and quantitative literacy scores for U.S. adults in 4-year colleges, by public and private institutions**



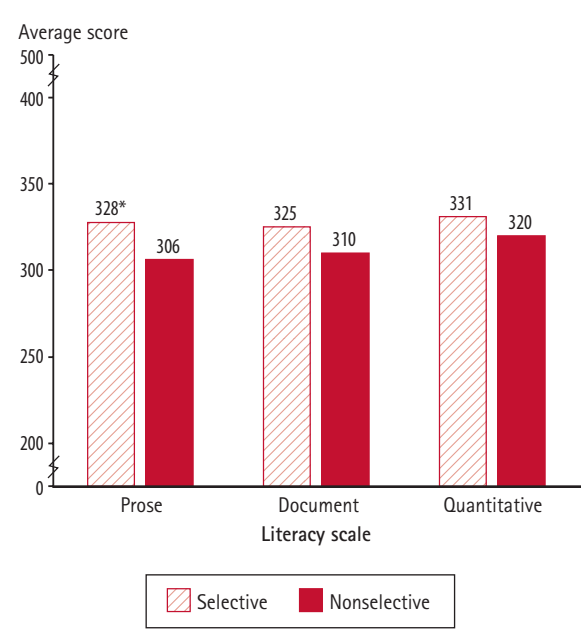
Source: 2003 National Survey of America's College Students.

### Institutional Selectivity

Students in selective 4-year colleges had higher average prose literacy than their peers in nonselective institutions, though differences in average document and quantitative literacy between students in selective and nonselective institutions were not significant (Figure 3.4). Students in selective 4-year colleges had prose literacy scores more than 22 points higher than students in nonselective 4-year institutions.<sup>3</sup>

<sup>3</sup>Differences in document and quantitative literacy between students in selective and nonselective 4-year colleges were likely not significant because of the large standard errors associated with the estimates.

**Figure 3.4. Average prose, document, and quantitative literacy scores for U.S. adults in 4-year colleges, by institutional selectivity**



\* Significantly different from nonselective institutions.  
Source: 2003 National Survey of America's College Students.

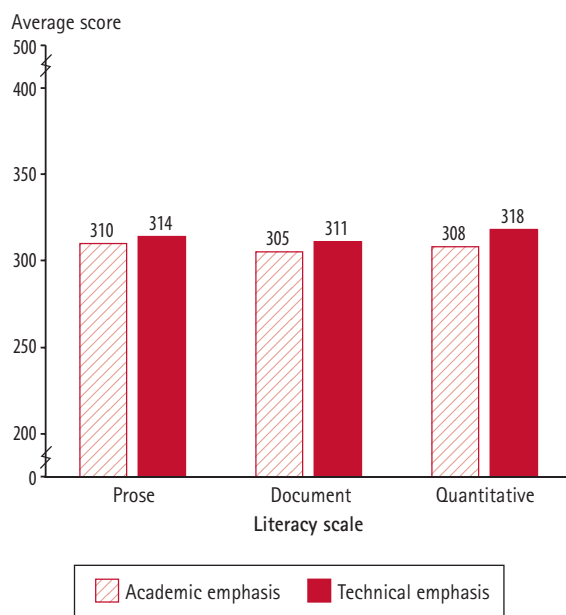
### Curricular Emphasis

Two-year colleges across the country vary in the curricula they offer students. Some 2-year institutions emphasize academic content, preparing students to transfer to 4-year colleges once they earn their associate's degree. Other 2-year institutions focus more on job preparation and technical degrees, providing students with the skills and certification they need to enter the labor force immediately after graduation.

Despite the colleges' different curricular emphases,<sup>4</sup> the average prose, document, and quantitative literacy of students in academically and technically oriented 2-year colleges did not significantly differ from one another (Figure 3.5). The results demonstrate the comparable literacy of students in 2-year colleges, regardless of the type of institution they attend.

<sup>4</sup>See glossary under "curricular emphasis" for a definition of this variable.

Figure 3.5. Average prose, document, and quantitative literacy scores for U.S. adults in 2-year colleges, by curricular emphasis of institution



Source: 2003 National Survey of America's College Students.

## Chapter Highlights

This chapter examined the relationship between the literacy of U.S. college students and institutional context. The results revealed the following:

- Students in 4-year colleges had higher average prose, document, and quantitative literacy than their peers in 2-year colleges. The percentage of students with *Proficient* literacy in 4-year institutions was also higher than the percentage of students with *Proficient* literacy in 2-year institutions.
- The literacy of students in 4-year public institutions was comparable to the literacy of students in 4-year private institutions.
- Prose literacy was higher for students in selective 4-year colleges, though differences between selective and nonselective 4-year colleges for document and quantitative literacy could not be determined because of the sample size.
- The literacy of students in 2-year institutions did not differ on the basis of the academic or technical curricular emphasis of the institution.



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## Introduction

Chapters 4 and 5 examine the relationship between the characteristics of students in 2- and 4-year institutions and their prose, document, and quantitative literacy. This chapter focuses specifically on the background of students before they enter college, based on information about their 1) country of birth, 2) personal/parental income, 3) financial dependence, 4) parents' education, 5) years elapsed between high school graduation and entrance into college, and 6) the country in which students attended high school. Along with a variety of other factors, these characteristics influence the opportunities for postsecondary education available to students as well as the types of institutions they attend.

### Country of Birth

Students who completed the NSACS assessment were asked to record their country of birth. For analysis purposes, this information was coded into one of two categories: U.S.-born or foreign-born. Among students in 2- and 4-year institutions, average prose, document, and quantitative literacy was higher for U.S.-born students than for their foreign-born peers (Figure 4.1). The percentage of U.S.-born students in 4-year colleges and universities with *Proficient* prose and document literacy was also greater than the percentage of foreign-born students with *Proficient* literacy (Figure 4.2).

An additional comparison of interest is between the performance of foreign-born students in 4-year colleges and that of U.S.-born students in 2-year institutions. With the exception of prose literacy, differences between the two groups of students were not significant, indicating comparable literacy between foreign-born students in 4-year colleges and U.S.-born students in 2-year institutions.

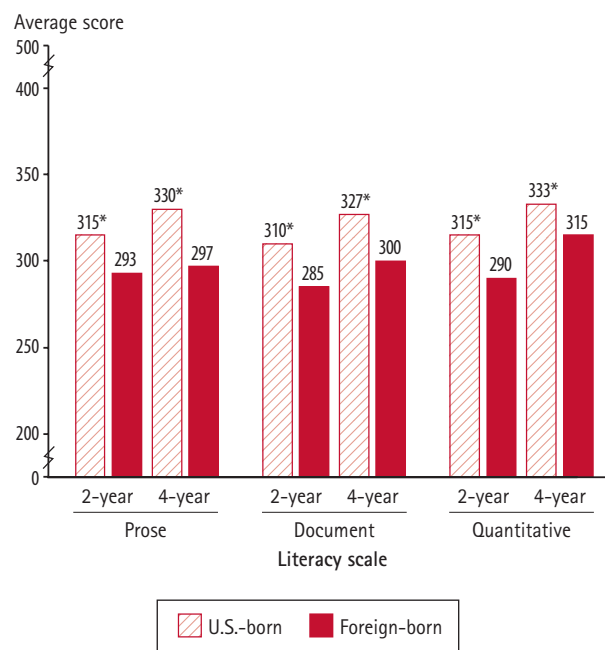
### Personal/Parental Income

College students come from a variety of economic backgrounds, with some students supporting themselves and others relying on their families to pay for tuition and other necessities.<sup>1</sup> Despite variations in income, most differences in the literacy of students across income groups were not significant (Table 4.1).

<sup>1</sup>Students were asked whether they were financially independent or whether they were financially dependent on their parents. Depending on their answer, they were asked to report either their parents' household income or their personal income. The financial information was combined to create a single measure of personal or parents' household income.

Among students in 4-year institutions, for example, the only significant differences were in the lowest and highest income categories. That is, students in the highest income group (either their personal income or the income of their parents) had higher prose and document literacy than students in the lowest

**Figure 4.1. Average prose, document, and quantitative literacy scores for U.S. adults in 2- and 4-year colleges, by country of birth**

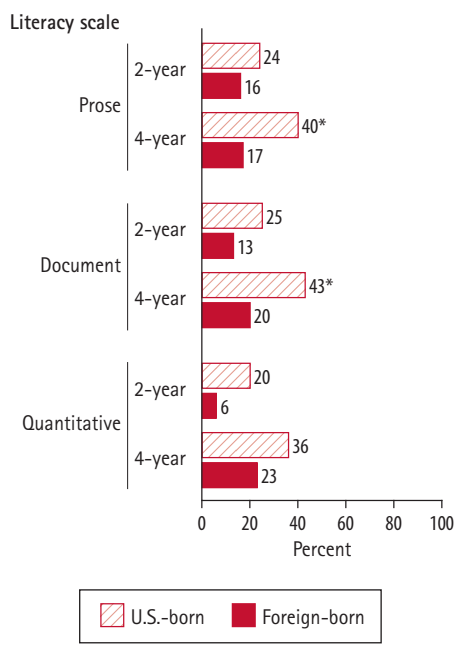


\* Significantly different from foreign-born students.

Note: Because of the large number of possible statistical comparisons, not all statistically significant differences are indicated in this figure. The corresponding table in Appendix C has detailed standard errors that can be used to calculate additional tests of statistical significance.

Source: 2003 National Survey of America's College Students.

**Figure 4.2. Percentage of U.S. adults in 2- and 4-year colleges with *Proficient* prose, document, and quantitative literacy, by country of birth**



\* Significantly different from foreign-born students.  
 Note: Because of the large number of possible statistical comparisons, not all statistically significant differences are indicated in this figure. The corresponding table in Appendix C has detailed standard errors that can be used to calculate additional tests of statistical significance.  
 Source: 2003 National Survey of America's College Students.

income group. The document literacy of students in 2-year colleges from the second highest income group (\$75,000 to \$99,999) was also higher than the literacy of students in 2-year institutions from the lowest income group.

**Financial Dependence**

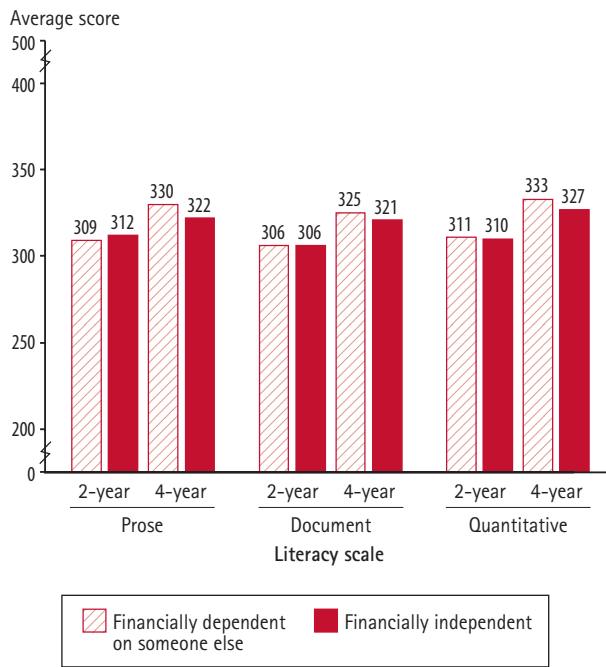
Combining the two income measures (personal and parents' income) into a single category obscures an important distinction between students: those who are dependent on their parents for financial support and those who are financially independent. Many students who enter 4-year institutions directly after high school rely on their parents to pay their college costs. In contrast, older students returning to college after taking time off must make their own financial commitment to their education. Despite the different characteristics of the two groups, the average literacy of students in 2- and 4-year institutions did not vary on the basis of a student's financial dependence or independence (Figure 4.3).

**Table 4.1. Average prose, document, and quantitative literacy scores for U.S. adults in 2- and 4-year colleges, by income**

Income	Prose		Document		Quantitative	
	2-year	4-year	2-year	4-year	2-year	4-year
\$0-\$9,999	314	313	299	312	305	321
\$10,000-\$19,999	310	329	302	325	306	330
\$20,000-\$29,999	307	328	299	318	302	342
\$30,000-\$39,999	316	322	307	329	310	343
\$40,000-\$49,999	324	325	304	333	318	327
\$50,000-\$59,999	321	339*	306	317	323	345*
\$60,000-\$74,999	311	334*	329*	320	317	328
\$75,000-\$99,999	322	326	328*	324	328	336
\$100,000+	308	336*	306	338*	323	333

\* Significantly different from students with an income between \$0 and \$9,999.  
 Note: Because of the large number of possible statistical comparisons, not all statistically significant differences are indicated in this table. The corresponding table in Appendix C has detailed standard errors that can be used to calculate additional tests of statistical significance.  
 Source: 2003 National Survey of America's College Students.

**Figure 4.3. Average prose, document, and quantitative literacy scores for U.S. adults in 2- and 4-year colleges, by financial dependence**



Note: Because of the large number of possible statistical comparisons, not all statistically significant differences are indicated in this figure. The corresponding table in Appendix C has detailed standard errors that can be used to calculate additional tests of statistical significance.  
Source: 2003 National Survey of America's College Students.

**Parents' Education**

A long tradition of research conducted by sociologists has demonstrated the intergenerational effects of education.<sup>2</sup> Parents “pass down” their educational attainment to their children, influencing the occupational, educational, and economic opportunities available to their offspring. Results from the NSACS study illustrate intergenerational effects for literacy as well, at least among students enrolled in 2- and 4-year colleges and universities.

Among students in 4-year institutions, for example, the literacy of children whose parents completed college or attended graduate school was significantly higher than the literacy of students whose parents stopped their education after completing a GED or graduating high school (Table 4.2).

The pattern of results for parents' education among students in 2-year institutions was similar to that of their peers in 4-year institutions. Across the prose, document, and quantitative literacy scales, children of parents who were college graduates and/or had attended graduate school had higher literacy than

<sup>2</sup>Blau, P. and Duncan, O. (1967). *The American Occupational Structure*. New York: Wiley; Hauser, R.M. (1973). “Socioeconomic Background and Differential Returns to Education.” In L.C. Solmon and P.J. Taubman (Eds.), *Does College Matter? Some Evidence on the Impacts of Higher Education* (pp. 129–145). New York: Academic Press.

**Table 4.2. Average prose, document, and quantitative literacy scores for U.S. adults in 2- and 4-year colleges, by parents' education**

Parents' education	Prose		Document		Quantitative	
	2-year	4-year	2-year	4-year	2-year	4-year
Less than/some high school	290	~	279*	~	288*	~
High school graduate/GED	306	315	303	306	305	318
Vocational/trade/business school	317	330	306	337*	313	337
Some college	312	317	305	321	321*	321
Associate's/2-year degree	313	324	316	330*	311	331
College graduate	320*	328*	319*	323*	314	335*
Graduate studies/degree	323*	340*	312	330*	321*	339*

\* Significantly different from high school graduate/GED.

~ Literacy score could not be estimated because of small sample size.

Note: Because of the large number of possible statistical comparisons, not all statistically significant differences are indicated in this table. The corresponding table in Appendix C has detailed standard errors that can be used to calculate additional tests of statistical significance.

Source: 2003 National Survey of America's College Students.



children of parents with a GED or a high school diploma. Moreover, with one exception, literacy was lowest in 2-year institutions for students whose parents never obtained a GED or graduated high school.<sup>3</sup>

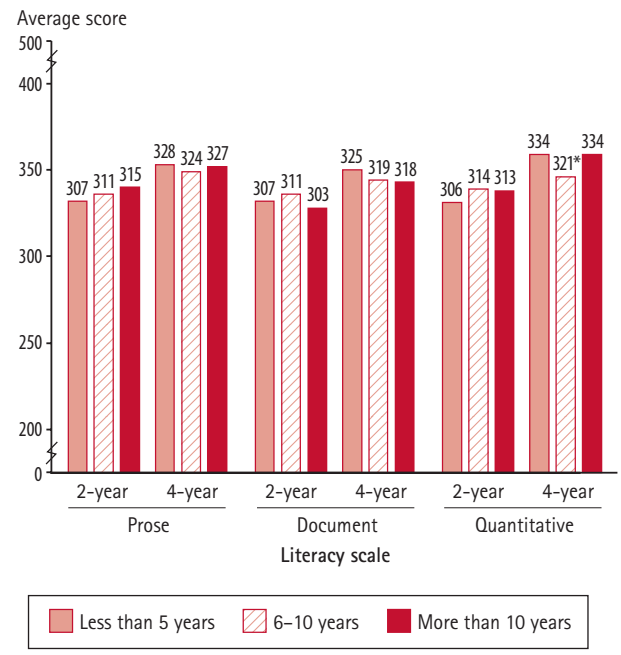
### Years Since High School Graduation

Students enrolled in college follow a variety of paths to higher education; some start their studies directly after graduating high school, whereas others resume their education later in life after taking time to pursue work or a family. Students reported the number of years between their high school graduation and entrance into college, providing one measure of the different life experiences of college students.

The results indicate that the literacy of college students does not vary on the basis of the number of years that have elapsed since the students enrolled in higher education. Among students in 4-year institutions, the only significant difference in average literacy was on the quantitative scale between recent high school graduates (less than 5 years) and students who graduated from high school 6 to 10 years ago (recent graduates had higher average quantitative literacy). Other differences between students in 4-year institutions, as well as for students in 2-year institutions, were not significant (Figure 4.4).

<sup>3</sup>Differences in prose literacy between the children of parents who had less than a high school degree and the children of parents with a GED/high school degree were not significant.

**Figure 4.4. Average prose, document, and quantitative literacy scores for U.S. adults in 2- and 4-year colleges, by years since high school graduation**



\* Significantly different from students who graduated from high school less than 5 years ago.

Note: Because of the large number of possible statistical comparisons, not all statistically significant differences are indicated in this figure. The corresponding table in Appendix C has detailed standard errors that can be used to calculate additional tests of statistical significance.

Source: 2003 National Survey of America's College Students.

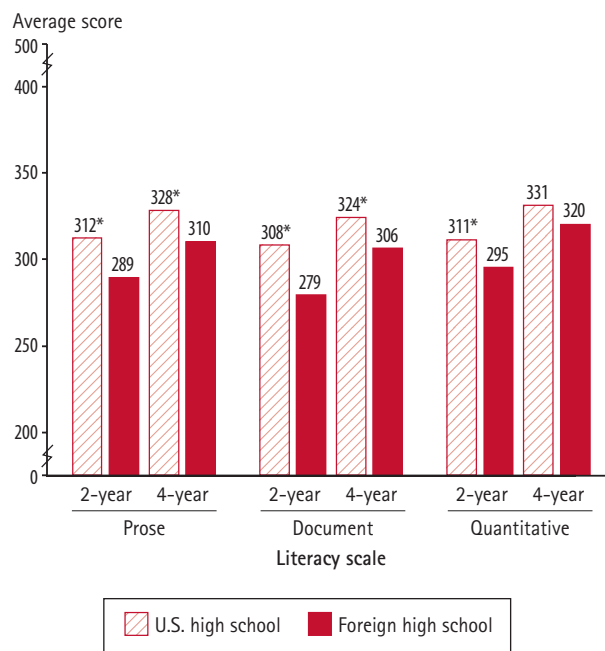
### Country of High School Diploma

Students enter U.S. institutions of higher learning with different educational backgrounds, some obtaining their high school diploma from U.S. schools and others graduating from foreign schools. Among students in 4-year institutions, the prose and document literacy of U.S. high school graduates was higher than the literacy of their peers who graduated from foreign high schools. Similarly, average literacy across the three scales was higher for students in 2-year institutions who graduated from U.S. high schools compared with the literacy of students who graduated from foreign schools (Figure 4.5).

Although lower than the literacy of their peers in 4-year institutions, the literacy of students who graduated from foreign high schools was higher than the literacy of the nation's adults. Likewise, the prose literacy of students from foreign high schools in 2-year institutions was also higher than the literacy of all U.S. adults (differences between the two groups for document and quantitative literacy were not significant). Thus, although the literacy of college students who graduated from foreign high schools may not reach parity with that of students from U.S. high schools, students from foreign high schools compare favorably with the nation's adults.<sup>4</sup>

<sup>4</sup>Results for all adults are not shown but are available in Kutner, M., Greenberg, E., and Baer, J. (2005). *A First Look at the Literacy of America's Adults in the 21st Century* (NCES 2006-470). U.S. Department of Education. Washington, DC: National Center for Education Statistics.

Figure 4.5. Average prose, document, and quantitative literacy scores for U.S. adults in 2- and 4-year colleges, by country of high school diploma



\* Significantly different from students who graduated from a foreign high school.

Note: Because of the large number of possible statistical comparisons, not all statistically significant differences are indicated in this figure. The corresponding table in Appendix C has detailed standard errors that can be used to calculate additional tests of statistical significance.

Source: 2003 National Survey of America's College Students.

## Chapter Highlights

This chapter examined the relationship between literacy and selected background characteristics of college students. The results indicated the following:

- The literacy of U.S.-born students was higher than the literacy of their foreign-born peers in 2- and 4-year colleges, though differences in document and quantitative literacy between U.S.-born students in 2-year institutions and foreign-born students in 4-year institutions were not significant.
- Students in 4-year colleges with the highest levels of personal or family income had higher prose and document literacy than students with the lowest levels of personal or family income. Differences based on financial dependence were not significant between students.
- Children of adults who graduated college or attended graduate school had higher literacy than children of adults who failed to graduate high school or stopped their schooling after receiving a high school diploma or a GED.
- Students who enrolled in college immediately after high school graduation had literacy comparable to that of adults who took time off between high school graduation and college.
- Students who graduated from U.S. high schools had higher literacy than graduates from foreign high schools, though the literacy of students from foreign schools was similar to or greater than the literacy of all U.S. adults.

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**CHAPTER 5** efghij

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## Introduction

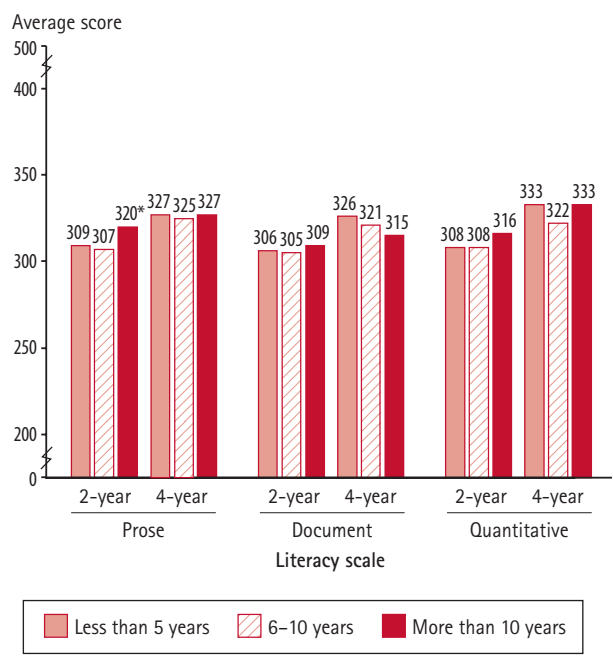
This chapter explores the relationship between literacy and a series of measures that capture the experiences of students in college. The previous chapters examined how the literacy of U.S. college students is influenced by a variety of factors outside of college, from demographic characteristics to the educational attainment of students' parents. The significance of these factors does not imply that literacy is fixed by the time students graduate high school, however.

Once students enter college, their choice of major, scholastic performance, and ability to dedicate time to their studies may continue to shape their literacy. In turn, students' college experiences, as well as their experiences after college, may also be influenced by their literacy. This chapter examines the reciprocal relationship between literacy and college experience across different aspects of postsecondary institutions, focusing not only on academic issues, but also on student engagement in studies and college life.

### Length of Time in College

Although many students are able to attend college full time and graduate within 4 or 5 years of first enrollment, others must extend their stay in college as they manage nonacademic responsibilities. Among students in 4-year institutions, average literacy did not vary by the length of time a student had spent in college (Figure 5.1). Within 2-year institutions, differences in average document and quantitative literacy were also not significant when considered in terms of the length of time since first enrollment. For prose literacy, however, the average literacy of students who started college 10 or more years ago was significantly higher than the literacy of students who had been in college for less than 5 years.

**Figure 5.1. Average prose, document, and quantitative literacy scores for U.S. adults in 2- and 4-year colleges, by length of time in college**



\* Significantly different from students who have been in college less than 5 years.

Note: Because of the large number of possible statistical comparisons, not all statistically significant differences are indicated in this figure. The corresponding table in Appendix C has detailed standard errors that can be used to calculate additional tests of statistical significance.

Source: 2003 National Survey of America's College Students.

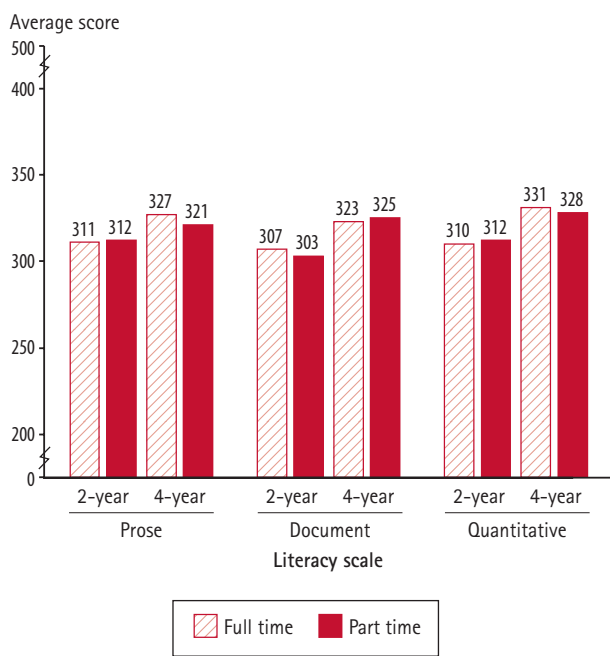
### Enrollment Status

Although students who go directly from high school to college may be likely to enroll in college full time, older students with careers and families may be able to attend only part time. Results from the NSACS study reveal that the literacy of students in 2-year and 4-year institutions did not differ on the basis of enrollment status (Figure 5.2).

### Number of Postsecondary Institutions Attended

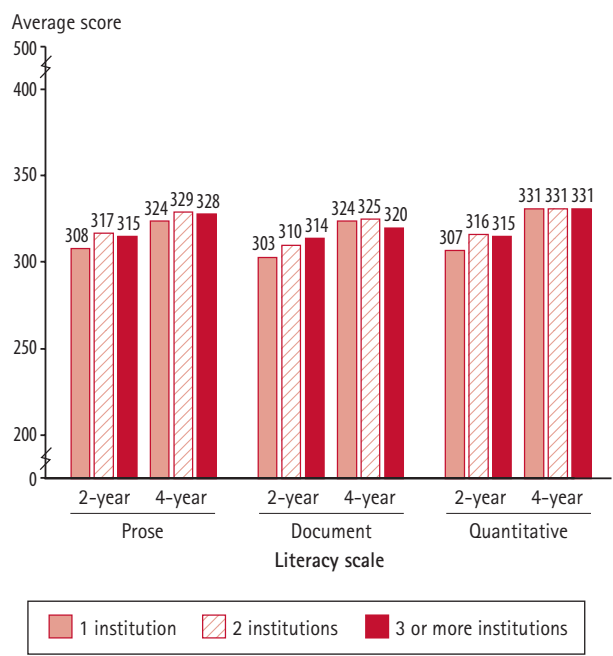
Enrollment in multiple postsecondary institutions may delay the time it takes for a student to obtain a degree, as well as impose extra costs and disrupt the continuity of a student's studies. Although students who switch colleges may face challenges, the average literacy of students in 2- and 4-year institutions did not differ on the basis of the number of institutions they attended (Figure 5.3).

**Figure 5.2. Average prose, document, and quantitative literacy scores for U.S. adults in 2- and 4-year colleges, by enrollment status**



Note: Because of the large number of possible statistical comparisons, not all statistically significant differences are indicated in this figure. The corresponding table in Appendix C has detailed standard errors that can be used to calculate additional tests of statistical significance.  
Source: 2003 National Survey of America's College Students.

**Figure 5.3. Average prose, document, and quantitative literacy scores for U.S. adults in 2- and 4-year colleges, by number of institutions attended**



Note: Because of the large number of possible statistical comparisons, not all statistically significant differences are indicated in this figure. The corresponding table in Appendix C has detailed standard errors that can be used to calculate additional tests of statistical significance.  
Source: 2003 National Survey of America's College Students.

### Enrollment in Remedial Math or English

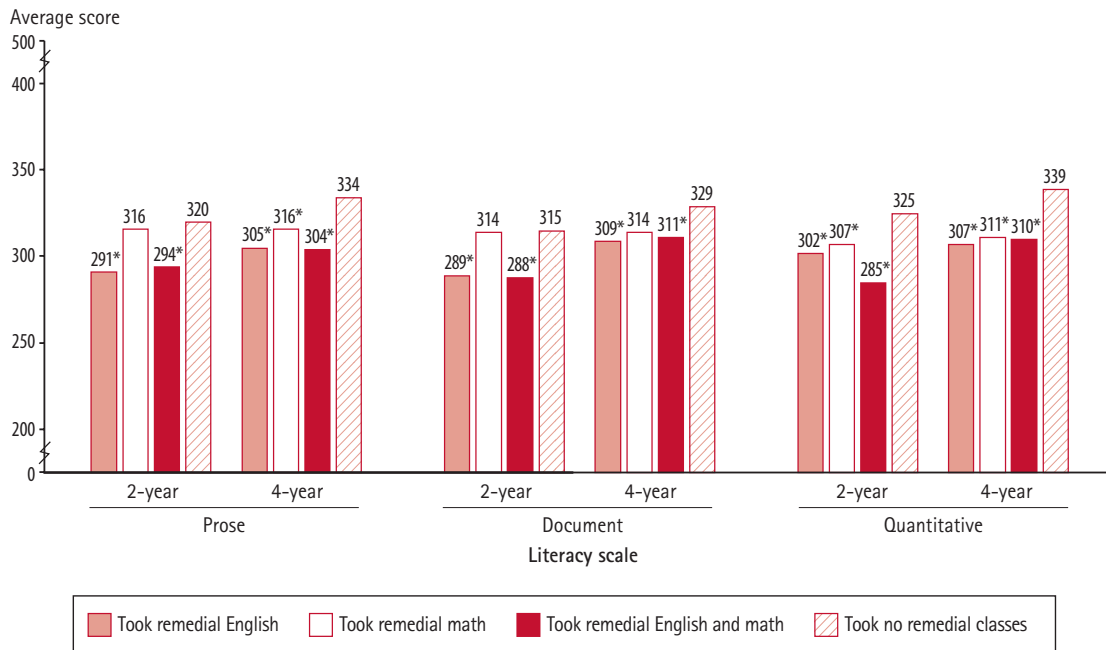
Remedial math and English courses are designed to help students who struggle academically catch up to their peers and gain the basic knowledge they need for college work. Results from the NSACS illustrate the differences not only between students who completed remedial courses and those who did not, but also between students who took different types of remedial classes.

For example, among students in 2-year institutions, the average prose and document literacy of students who completed a remedial English class or both a remedial English and a remedial math class was significantly lower than the average literacy of students who never took a remedial class as well as those students who completed only a remedial math class. Although students who took only a remedial math class had lower quantita-

tive literacy than their peers who never took any type of remedial class, differences in prose and document literacy between the two groups were not significant (Figure 5.4).

Similar to students in 2-year colleges, students in 4-year institutions who took either a remedial English or math class had lower quantitative literacy than their peers who did not take a remedial course. Unlike in 2-year colleges, however, completion of a remedial math course among students in 4-year institutions was not tied exclusively to lower quantitative literacy. Students in 4-year colleges who took only a remedial math class also had lower prose literacy than their peers who did not take a remedial math class. As in 2-year institutions, differences in document literacy between students who took a remedial math class and students who did not take remedial math were not significant.

**Figure 5.4. Average prose, document, and quantitative literacy scores for U.S. adults in 2- and 4-year colleges, by enrollment in remedial math or English**



\* Significantly different from students who took no remedial classes.

Note: Because of the large number of possible statistical comparisons, not all statistically significant differences are indicated in this figure. The corresponding table in Appendix C has detailed standard errors that can be used to calculate additional tests of statistical significance.

Source: 2003 National Survey of America's College Students.



The results suggest that students in 2-year colleges who are required to take only remedial math classes struggle specifically with quantitative literacy. In contrast, students who complete remedial English classes encounter difficulties with all three domains of literacy. Unlike in 2-year colleges, the average literacy of students in 4-year institutions did not differ on the basis of the content of remedial classes.

### Major Course of Study

Different academic majors require different sets of skills, so the literacy of students may vary on the basis of their field of study. For students in 4-year colleges, average prose, document, and

quantitative literacy was similar across most majors. One exception was for math, science, and engineering majors, who had higher average literacy than business majors across the literacy scales. The document and quantitative literacy of math, science, and engineering majors was also higher than the document and quantitative literacy of education majors (Table 5.1).

Like students in 4-year colleges, students in 2-year institutions had similar literacy regardless of major. Differences in average document literacy across majors were not significant. On the prose scale, the literacy of students studying the fine arts or humanities was higher than the literacy of students studying the social sciences.

**Table 5.1. Average prose, document, and quantitative literacy scores for U.S. adults in 2- and 4-year colleges, by academic major**

Academic major	Prose		Document		Quantitative	
	2-year	4-year	2-year	4-year	2-year	4-year
Business management	307	321*	302	316*	312	328*
Math, science, engineering	315	335	310	337	313	347
Education	307	320	311	309*	306	322*
Fine arts and humanities	319	331	306	329	311	321*
Health	315	316*	315	321	316	326
Social sciences	304	327	296	318*	301	332
Vocational/technical/other	314	~	294	~	305	~

\* Significantly different from students majoring in math, science, or engineering.

~ Literacy score could not be estimated because of small sample size.

Note: Because of the large number of possible statistical comparisons, not all statistically significant differences are indicated in this table. The corresponding table in Appendix C has detailed standard errors that can be used to calculate additional tests of statistical significance.

Source: 2003 National Survey of America's College Students.

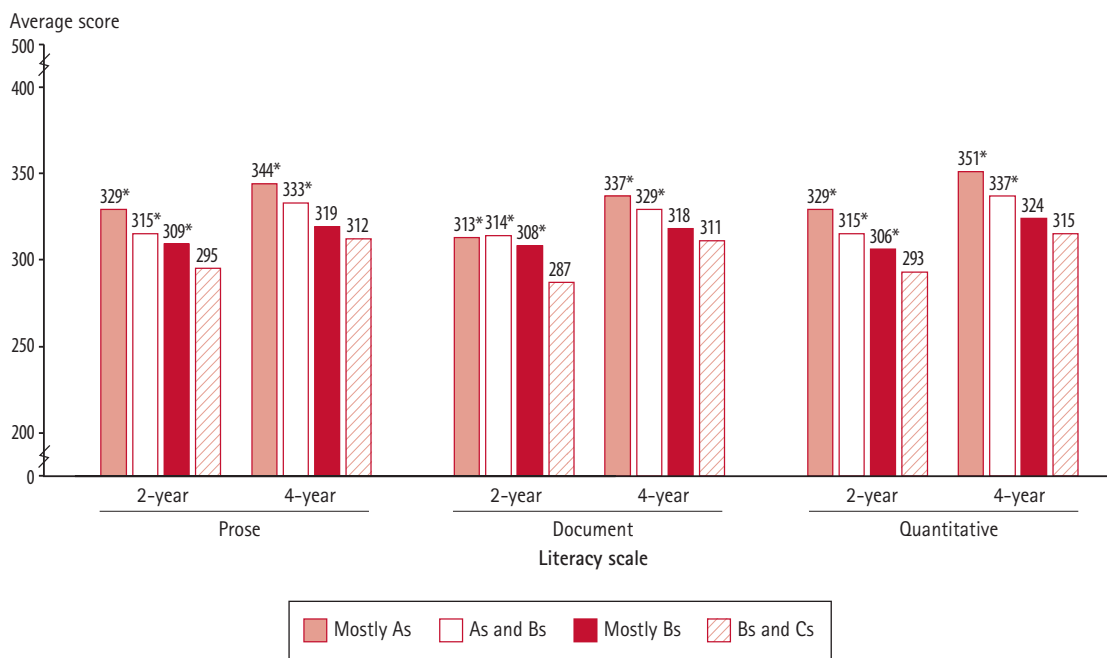
### Grade Point Average

Students who participated in the NSACS were asked to report their grade point average (GPA) during their course of time in college. Among students in 4-year colleges, the average literacy of students with a GPA greater than 3.24 (equivalent to As and Bs and above) was significantly higher than the literacy of students who received Bs and Cs. Students in 2-year institutions with a GPA greater than 3.24 also had higher literacy than their peers with Bs and Cs across the three literacy scales. Unlike in 4-year institutions, however, differences in literacy between

students at the very top of the GPA scale (mostly As) and the next lowest category (As and Bs) were significant for the prose and quantitative scales (Figure 5.5).

The distribution of students across literacy levels also varied depending on students' grades. For both 2- and 4-year colleges, the percentage of students with *Proficient* prose and quantitative literacy who had GPAs above 3.74 was significantly higher than the percentage of students with *Proficient* prose and quantitative literacy who received Bs and Cs (Figure 5.6).

**Figure 5.5. Average prose, document, and quantitative literacy scores for U.S. adults in 2- and 4-year colleges, by grade point average**

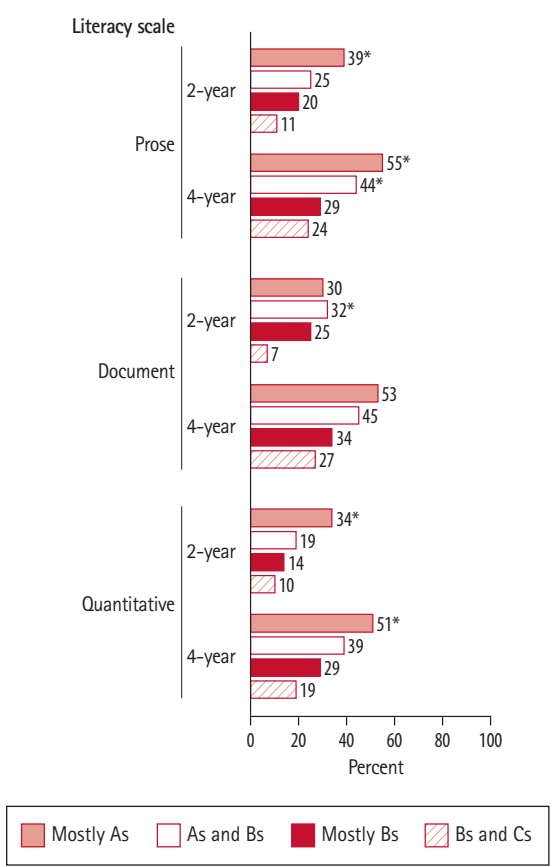


\* Significantly different from students who averaged Bs and Cs.

Note: Literacy scores for students who reported grade point averages lower than Bs and Cs could not be estimated because of small sample sizes. Because of the large number of possible statistical comparisons, not all statistically significant differences are indicated in this figure. The corresponding table in Appendix C has detailed standard errors that can be used to calculate additional tests of statistical significance.

Source: 2003 National Survey of America's College Students.

Figure 5.6. Percentage of U.S. adults in 2- and 4-year colleges with *Proficient* prose, document, and quantitative literacy, by grade point average



\* Significantly different from students who averaged Bs and Cs.  
 Note: Literacy scores for students who reported grade point averages lower than Bs and Cs could not be estimated because of small sample sizes. Because of the large number of possible statistical comparisons, not all statistically significant differences are indicated in this figure. The corresponding table in Appendix C has detailed standard errors that can be used to calculate additional tests of statistical significance.  
 Source: 2003 National Survey of America's College Students.

### Expectations for Postsecondary Education

As competition and the skills required for high-paying jobs increase, many students elect to pursue education beyond a bachelor's degree. Among students in 4-year institutions, average document and quantitative literacy was highest for students who expected to obtain a first professional degree (e.g., law, medicine, or dentistry). With the exception of students who expected to earn a doctoral degree, the average prose literacy of students looking toward a first professional degree was also higher than the average prose literacy of students who did not anticipate completing additional education beyond their bachelor's degree as well as those who expected to pursue a master's degree (Table 5.2).

In 2-year institutions, literacy was generally lowest for students who did not intend to pursue additional education after earning their associate's degree.

### Engagement in Academic and Social Activities

The NSACS background questionnaire asked students a series of questions drawn from the National Survey of Student Engagement (NSSE) and the Community College Survey of Student Engagement (CCSSE), annual studies of student participation in college academic and social activities.<sup>1</sup> NSSE and CCSSE provide information about the engagement of students not only in their classes, but also with their faculty, peers, and campus community. Including NSSE and CCSSE measures as part of the NSACS helps illustrate the relationships between literacy and the context of postsecondary education.

<sup>1</sup>Additional information about NSSE and CCSSE can be found at [www.indiana.edu/~nsse/](http://www.indiana.edu/~nsse/) and [www.ccsse.org](http://www.ccsse.org).

NSSE and CCSSE questions were combined into three scales measuring student academic and social engagement (details about scale construction are in Appendix D):

- Emphasis on Analytic Coursework
- Faculty Interactions Outside of Class
- Institutional Support

The Emphasis on Analytic Coursework scale captures the degree to which students are asked to synthesize ideas, apply concepts, and analyze issues as part of their classes. The Faculty Interactions Outside of Class scale measures how often students talk to their instructors outside of class, whether about course material or other topics. The third scale, Institutional

**Table 5.2. Average prose, document, and quantitative literacy scores for U.S. adults in 2- and 4-year colleges, by expectations for postsecondary education**

Expectations for postsecondary education	Prose		Document		Quantitative	
	2-year	4-year	2-year	4-year	2-year	4-year
Associate's degree	297	—	287	—	299	—
Bachelor's degree	311*	325	305*	319	313*	329
Master's degree or equivalent	318*	326	314*	323	314*	329
Doctoral degree	309	325	312*	319	305	326
First professional degree	325*	343**	315*	342**	315	361**

— Not applicable.

\* Significantly different from students who did not expect to complete education beyond an associate's degree.

\*\* Significantly different from students who did not expect to complete education beyond a bachelor's degree.

Note: Because of the large number of possible statistical comparisons, not all statistically significant differences are indicated in this table. The corresponding table in Appendix C has detailed standard errors that can be used to calculate additional tests of statistical significance.

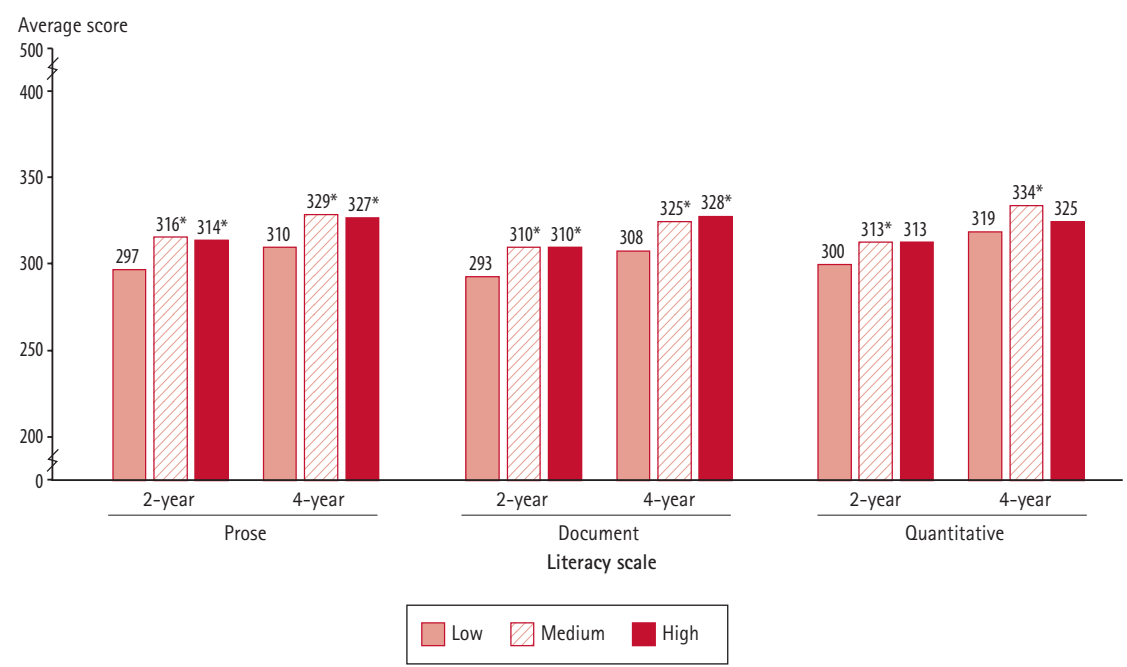
Source: 2003 National Survey of America's College Students.

Support, assesses the perceptions of students of how well their college or university helps them succeed both inside and outside the classroom.

Results from the NSACS revealed a strong relationship between analytic coursework and the literacy of students in both 2- and 4-year institutions. Students in courses that required analytic thinking skills had higher prose and document literacy than students enrolled in courses with a low emphasis on analytic

thinking (Figure 5.7). Among students in 4-year colleges and universities, document literacy scores were 20 points higher for students who indicated a "High" degree of analytic emphasis compared with their peers in classes with a "Low" emphasis. Students in classes that stressed analytic thinking were called on to complete a variety of complex tasks, including making judgments about the strength of arguments, applying theories to practical problems, and synthesizing ideas to create new interpretations of subject matter.

**Figure 5.7. Average prose, document, and quantitative literacy scores for U.S. adults in 2- and 4-year colleges, by emphasis on analytic coursework**



\*Significantly different from students in classes that required low amounts of analytic thinking.

Note: Because of the large number of possible statistical comparisons, not all statistically significant differences are indicated in this figure. The corresponding table in Appendix C has detailed standard errors that can be used to calculate additional tests of statistical significance.

Source: 2003 National Survey of America's College Students.

In contrast to the Emphasis on Analytic Coursework scale, the prose and quantitative literacy of students in 4-year institutions *decreased* the more they visited faculty outside of class (Figure 5.8). Students who met with faculty frequently had prose literacy scores 16 points lower than students who visited their instructors infrequently. Among students in 2-year colleges, quantitative literacy was also lowest for students who frequently met with faculty after class.

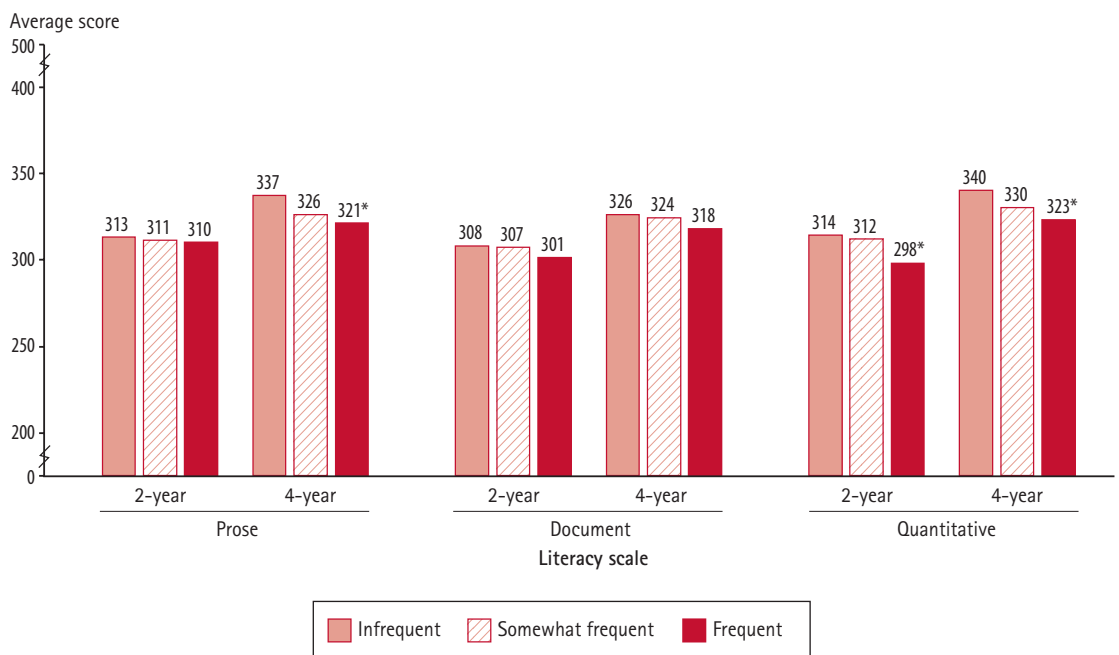
Whereas students who excel academically may seek out their instructors after class to continue discussions, this finding suggests that these students are in the minority. Instead, faculty

may spend much of their time outside of class with students who struggle with course material.

Differences in literacy across students in 2- and 4-year institutions that were based on their perceptions of institutional support were not significant (Figure 5.9).

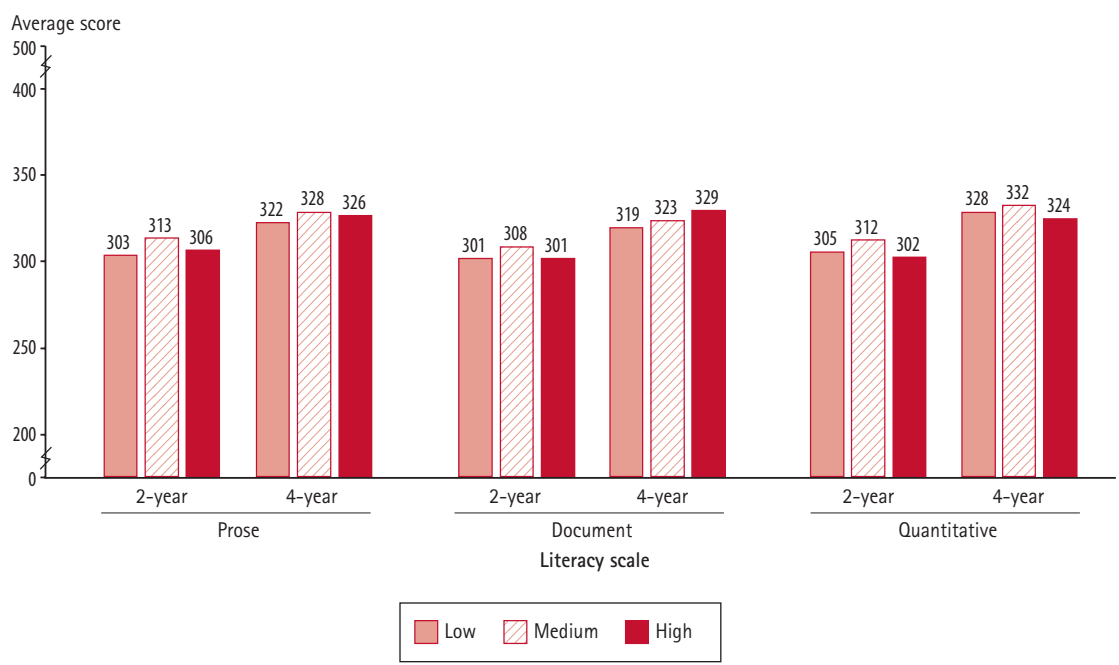
When examining the quality of relationships with faculty and students (Table 5.3), average prose and quantitative literacy was highest for students who reported that they had friendly relationships with faculty compared with somewhat friendly relationships.

**Figure 5.8. Average prose, document, and quantitative literacy scores for U.S. adults in 2- and 4-year colleges, by frequency of faculty interactions outside of class**



\*Significantly different from students who met with faculty infrequently.  
 Note: Because of the large number of possible statistical comparisons, not all statistically significant differences are indicated in this figure. The corresponding table in Appendix C has detailed standard errors that can be used to calculate additional tests of statistical significance.  
 Source: 2003 National Survey of America's College Students.

Figure 5.9. Average prose, document, and quantitative literacy scores for U.S. adults in 2- and 4-year colleges, by institutional support



Note: Because of the large number of possible statistical comparisons, not all statistically significant differences are indicated in this figure. The corresponding table in Appendix C has detailed standard errors that can be used to calculate additional tests of statistical significance.  
 Source: 2003 National Survey of America's College Students.

Table 5.3. Average prose, document, and quantitative literacy scores for U.S. adults in 2- and 4-year colleges, by quality of relationships with faculty and students

Literacy scale and quality of relationships with faculty and students	2-year			4-year		
	Unfriendly	Somewhat friendly	Friendly	Unfriendly	Somewhat friendly	Friendly
<b>PROSE</b>						
Quality of relationships with faculty	~	292*	314	322	320	328
Quality of relationships with other students	~	309	311	~	325	328
<b>DOCUMENT</b>						
Quality of relationships with faculty	~	296	309	321	323	324
Quality of relationships with other students	~	314	306	~	321	324
<b>QUANTITATIVE</b>						
Quality of relationships with faculty	~	294*	312	334	323	332
Quality of relationships with other students	~	319	309	~	320	332

\* Significantly different from students who had friendly relationships with faculty and students.  
 ~ Literacy score could not be estimated because of small sample size.  
 Note: Because of the large number of possible statistical comparisons, not all statistically significant differences are indicated in this table. The corresponding table in Appendix C has detailed standard errors that can be used to calculate additional tests of statistical significance.  
 Source: 2003 National Survey of America's College Students.

## Chapter Highlights

This chapter examined the relationship between literacy and a variety of student college experiences. Although academics are at the core of postsecondary education, a student's college experience is also influenced by the student's engagement with faculty, peers, and community. Analyses of the NSACS data revealed the following:

- The average literacy of U.S. college students was generally the same regardless of how long students had been in college, their enrollment status, or the number of postsecondary institutions they attended.
- Students in 2-year colleges who took remedial math classes struggled specifically with their quantitative literacy, whereas students who took remedial English classes struggled with all three domains of literacy.
- Students in 4-year institutions who took remedial English classes also had lower prose, document, and quantitative literacy than students who never completed a remedial course.
- With only a few exceptions, average literacy did not differ significantly across academic majors.
- Students with higher grade point averages (GPAs) generally had higher literacy than students with lower GPAs.
- Among students in 4-year colleges, document and quantitative literacy was highest for students who expected to earn a first professional degree. For students in 2-year institutions, literacy was lowest for students who reported that they would stop their education after obtaining an associate's degree.
- Prose and document literacy was higher for students in 2- and 4-year institutions enrolled in classes that emphasized analytic thinking, such as evaluating the strength of arguments and applying theories to practical problems or new situations. In contrast, prose and quantitative literacy was lower for students in 4-year colleges and universities who frequently met with their instructors outside of class.