Reading Between the Lines

What the ACT Reveals About College Readiness in Reading

ACT®

Founded in 1959, ACT is an independent, not-for-profit organization that provides more than a hundred assessment, research, information, and program management services in the broad areas of education planning, career planning, and workforce development. Each year, we serve millions of people in high schools, colleges, professional associations, businesses, and government agencies—nationally and internationally. Though designed to meet a wide array of needs, all ACT programs and services have one guiding purpose—helping people achieve education and workplace success.

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ACT®

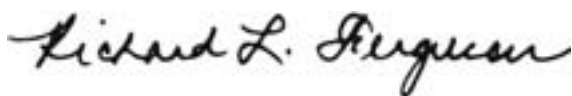# *Contents*

A Message from ACT's CEO and Chairman

This report, which is anchored in ACT data, focuses on steps for improving the reading skills of students attending our nation's high schools. The conclusions reported are based both on what ACT test scores tell us about the reading skills of ACT-tested high school students who graduated in 2005 and trends derived from students who have taken the tests during the past ten years.

What appears, according to our data, to make the biggest difference in students' being ready to read at the college level is something that, for the most part, is neither addressed in state standards nor reflected in the high school curriculum. Our report offers insights into how state standards in reading can be strengthened and how reading instruction at the high school level can be changed to positively impact students' reading achievement.

It is our hope that the insights gained from our data will stimulate discussion and action by educators and policymakers who share our interest in ensuring that all students leave high school with the reading skills needed for successful study in college or a workforce training program.

We share a common interest with teachers, school administrators, parents, school boards, and those making policies affecting school curricula— we all want the very best for our children. We also recognize the challenges inherent in achieving improvements in the reading skills of students from diverse, and sometimes nonsupportive, backgrounds. Daunting and enduring as those challenges are, we believe that, working together, we can overcome them and prevail in our goal of ensuring that all of our nation's children leave high school armed with the reading skills needed both in college and in the workplace.

Sincerely,

Richard L. Ferguson

Richard L. Ferguson
ACT Chief Executive Officer and Chairman of the Board

1

Our Students Are Not Ready for College and Workplace Reading

Only 51 percent of 2005 ACT-tested high school graduates are ready for college-level reading—and, what's worse, more students are on track to being ready for college-level reading in eighth and tenth grade than are actually ready by the time they reach twelfth grade.

Just over half of our students are able to meet the demands of college-level reading, based on ACT's national readiness indicator. Only 51 percent of ACT-tested high school graduates met ACT's College Readiness Benchmark for Reading, demonstrating their readiness to handle the reading requirements for typical credit-bearing first-year college coursework, based on the 2004–2005 results of the ACT.

ACT's College Readiness Benchmark for Reading

ACT's College Readiness Benchmark for Reading represents the level of achievement required for students to have a high probability of success (a 75 percent chance of earning a course grade of C or better, a 50 percent chance of earning a B or better) in such credit-bearing college courses as Psychology and U.S. History— first-year courses generally considered to be typically reading dependent. The benchmark corresponds to a score of 21 on the ACT Reading Test.
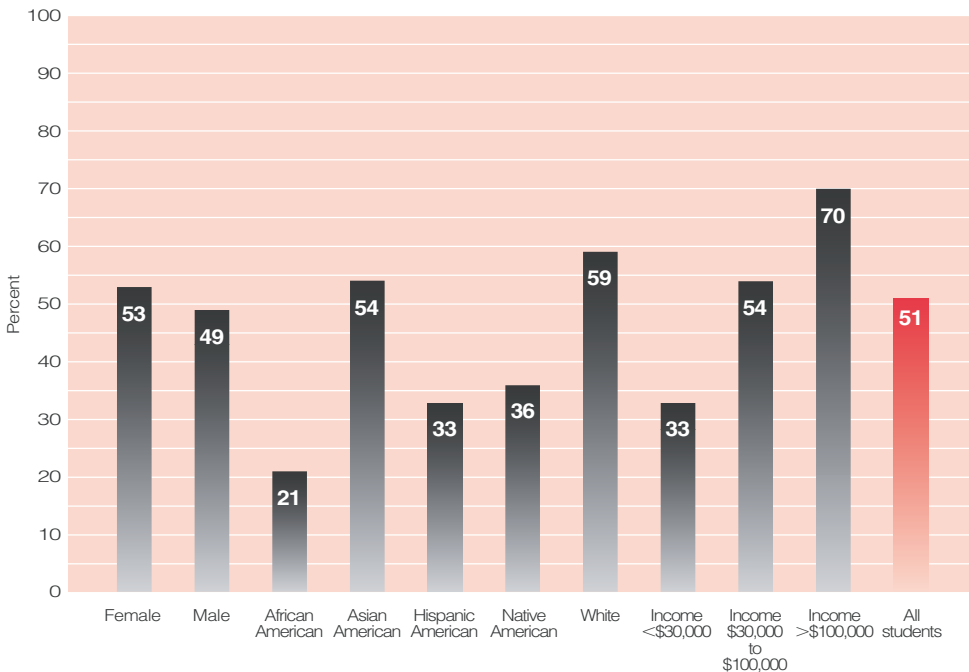
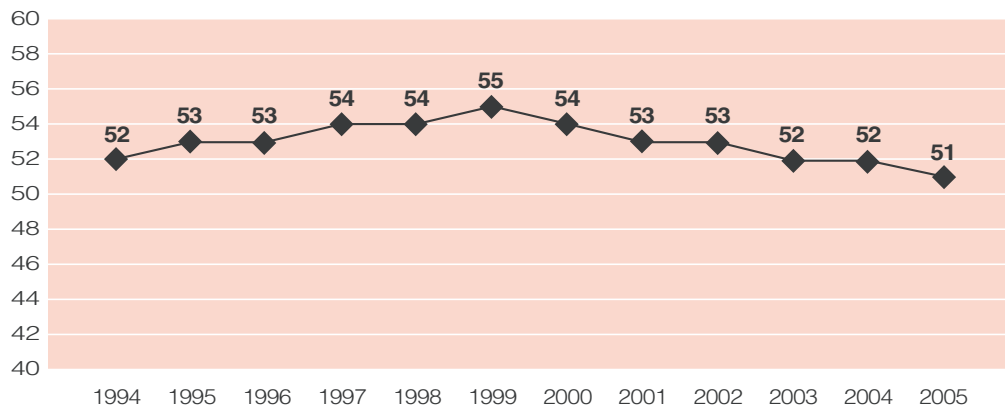*Figure 1: 2005 ACT-tested High School Graduates Meeting ACT College Readiness Benchmark for Reading[1]*

[1] Based on approximately 1.2 million high school students who took the ACT and indicated that they would graduate from high school in 2005. Approximately 27 percent of these students were from the East, 40 percent from the Midwest, 14 percent from the Southwest, and 19 percent from the West.

Unfortunately, the percentage of students who are ready for college-level reading is substantially smaller in some groups. As shown in Figure 1 (on page 1), female students, Asian American students, white students, and students from families whose yearly income exceeds $30,000 are more likely than the ACT-tested population as a whole to be ready for college-level reading. However, male students, African American students, Hispanic American students, Native American students, and students from families whose yearly income is below $30,000 are less likely than the ACT-tested population as a whole to be ready for college-level reading—in some instances, as much as one and a half to two and a half times less.

Student readiness for college-level reading is at its lowest point in more than a decade. Figure 2 shows the percentages of ACT-tested students who have met the Reading Benchmark each year since 1994. During the first five years, readiness for college-level reading steadily increased, peaking at 55 percent in 1999. Since then, readiness has declined—the current figure of 51 percent is the lowest of the past twelve years.

With a few variations, the same general pattern over time of increase followed by decline holds for both genders and nearly all racial/ethnic groups. Only the readiness of Asian American students, Native American students, and white students has experienced some net increase since 1994, while the readiness of female students returned to its 1994 level after peaking in 1999.

Figure 2: ACT-tested High School Graduates Meeting Reading Benchmark, 1994–2005[2]

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[2] Based on more than 12.5 million students who took the ACT from 1993–1994 to 2004–2005 and indicated that they would graduate from high school during the relevant year.

2

The High Costs of Not Being Ready for College-Level Reading

Troubling though these data are, they are not surprising given the general condition of college and workplace readiness in the United States today.

As discussed in *Crisis at the Core: Preparing All Students for College and Work* (ACT, Inc., 2004), college readiness—the level of preparation students need in order to be ready to enroll and succeed without remediation in credit-bearing entry-level coursework at a two- or four-year institution, trade school, or technical school—is currently inadequate and should be an expectation for all high school students.

It is also recognized today that the knowledge and skills needed for college are equivalent to those needed in the workplace (American Diploma Project, 2004; Barth, 2003). Improving college and workforce readiness is critical to developing a diverse and talented labor force that will help ensure our nation's economic competitiveness in a growing global economy (Callan & Finney, 2003; Cohen, 2002; Somerville & Yi, 2002).

Reading is an essential component of college and workplace readiness. Low literacy levels often prevent high school students from mastering other subjects (Alliance for Excellent Education, 2002). Poor readers struggle to learn in text-heavy courses and are frequently blocked from taking academically more challenging courses (Au, 2000).
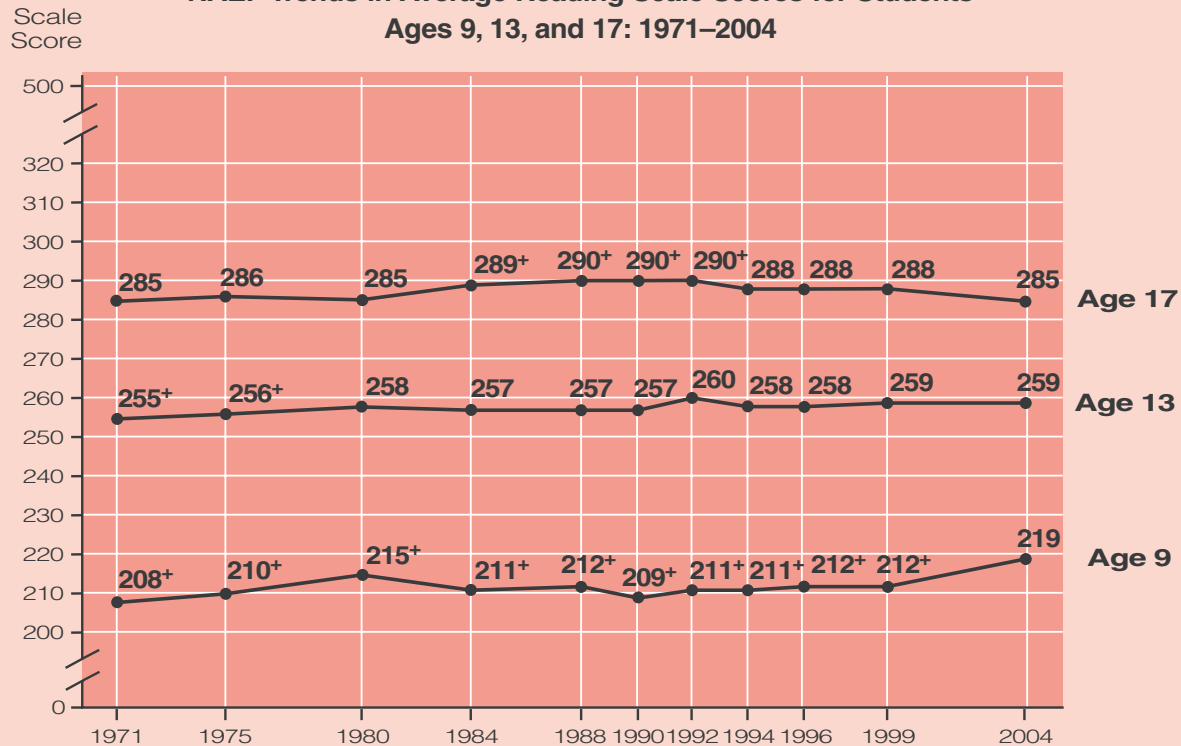
Much has been written about the literacy problem in U.S. high schools. Recent trend results of the National Assessment of Educational Progress for the period 1971–2004 show that, while average reading scores for 9-year-old students in 2004 were the highest they have ever been in the assessment's history, scores for 13-year-old students have risen only 3 points since 1975 and scores for 17-year-old students have *dropped* 5 points since 1992 (Perie, Moran, & Lutkus, 2005).

According to the Alliance for Excellent Education (2002, 2003), approximately six million of the nation's secondary school students are reading well below grade level. More than 3,000 students drop out of high school every day (Alliance for Excellent Education, 2003), and one of the most commonly cited reasons for the dropout rate is that students do not have the literacy skills to keep up with the curriculum (Kamil, 2003; Snow & Biancarosa, 2003).

International comparisons, such as the Programme for International Student Assessment (PISA), which in 2003 tested more than 275,000 15-year-old students from 41 countries in reading as well as mathematics, science, and problem solving, indicate that only about one-third of U.S. 15-year-olds are performing at satisfactory reading levels, with nine countries ranking statistically significantly higher than the U.S. in average performance (Organisation for Economic Co-Operation and Development, 2004).

Students at the college level are not faring much better. Eleven percent of entering postsecondary school students are enrolled in remedial reading coursework (National Center for Education Statistics, 2003). Seventy percent of students who took one or more remedial reading courses do not attain a college degree or certificate within eight years of enrollment (Adelman, 2004).

NAEP Trends in Average Reading Scale Scores for Students Ages 9, 13, and 17: 1971–2004

Scale Score

	1971	1975	1980	1984	1988	1990	1992	1994	1996	1999	2004	
Age 17	285	286	285	289[+]	290[+]	290[+]	290[+]	288	288	288	285	Age 17
Age 13	255[+]	256[+]	258	257	257	257	260	258	258	259	259	Age 13
Age 9	208[+]	210[+]	215[+]	211[+]	212[+]	209[+]	211[+]	211[+]	212[+]	212[+]	219	Age 9

Unfortunately, poor reading skills continue to limit opportunities throughout our lifetimes. When students finish high school or college to enter the workplace, these deficiencies in reading achievement follow them. A survey by the National Association of Manufacturers, Andersen, and the Center for Workforce Success (2001) found that 80 percent of businesses had a moderate to serious shortage of qualified job candidates, citing poor reading as a key reason.

Another survey, published in 2000, found that 38 percent of job applicants taking employer-administered tests lacked the reading skills needed in the jobs for which they applied; this percentage had doubled in four years, not just because applicants lacked basic skills but also because the reading requirements for these jobs had increased so rapidly (Center for Workforce Preparation, 2002).

According to one estimate, the shortage of basic literacy skills costs U.S. businesses, universities, and underprepared high school graduates as much as $16 billion per year in decreased productivity and remedial costs (Greene, 2000). The Business–Higher Education Forum (2002) states the problem as follows: "Without immediate action to correct [deficiencies] in elementary and secondary education resources nationwide, . . . tomorrow's workforce will be neither ready to meet the challenges of a knowledge-intensive workplace, nor be able to take advantage of the vast opportunities that our economy will offer" (p. 27). The Business Roundtable (2001) puts it even more strongly: "Unless school systems adopt higher standards, rigorously assess programs, and hold schools responsible for results, too many students will be unable to get and keep the kinds of jobs they want. And too few companies will be able to sustain the growth they need to compete" (p. 5).

More Than Two-Thirds of New Jobs Require Some Postsecondary Education

Share of Jobs, 2000–2010
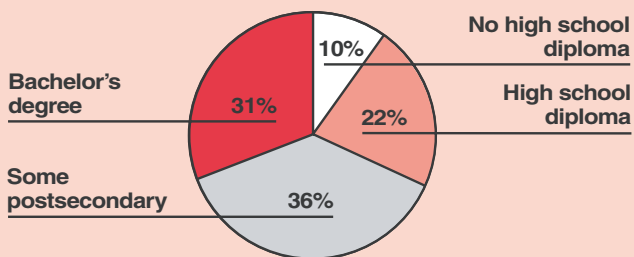
Note. The data in this chart are from *Standards for What?: The Economic Roots of K–16 Reform*, by A.P. Carnevale and D.M. Desrochers, 2003, Princeton, NJ: Educational Testing Service. Copyright 2003 by Educational Testing Service.

All of this, then, provides the background against which ACT's findings about low levels of college readiness in reading among U.S. high school graduates come as no surprise. What is surprising about ACT's data is that, in terms of readiness for college-level reading, students are actually losing momentum *during* high school.

Students Are Losing Momentum in High School

More eighth- and tenth-graders are on track to being ready for college-level reading than are actually ready when they graduate from high school. ACT has developed College Readiness Benchmarks for the eighth- and tenth-grade components of its early college readiness preparation system, EPAS™ (which includes EXPLORE®, PLAN®, and the ACT). These Benchmarks are based on the College Readiness Benchmarks for the ACT, adjusted to reflect expected growth between eighth and tenth grades and between tenth and twelfth grades. Figure 3 shows that, in a combined testing population of four recent cohorts of students who participated in all three EPAS programs (EXPLORE in grade 8, PLAN in grade 10, and the ACT in grade 12), 62 percent of eighth-grade students are on track to being ready for college-level reading by the time they graduate from high school. The percentage of these same students who are on track to being ready increases slightly when they reach the tenth grade. However, by the time they take the ACT, a smaller percentage of these same students are actually college ready in reading. Similar patterns were seen in the four individual cohorts (Figure 3) and by gender, race/ethnicity, and annual family income level (Figure 4). Consistently, fewer students are ready for college-level reading by the time they graduate from high school than is expected based on their performance in eighth and tenth grade.
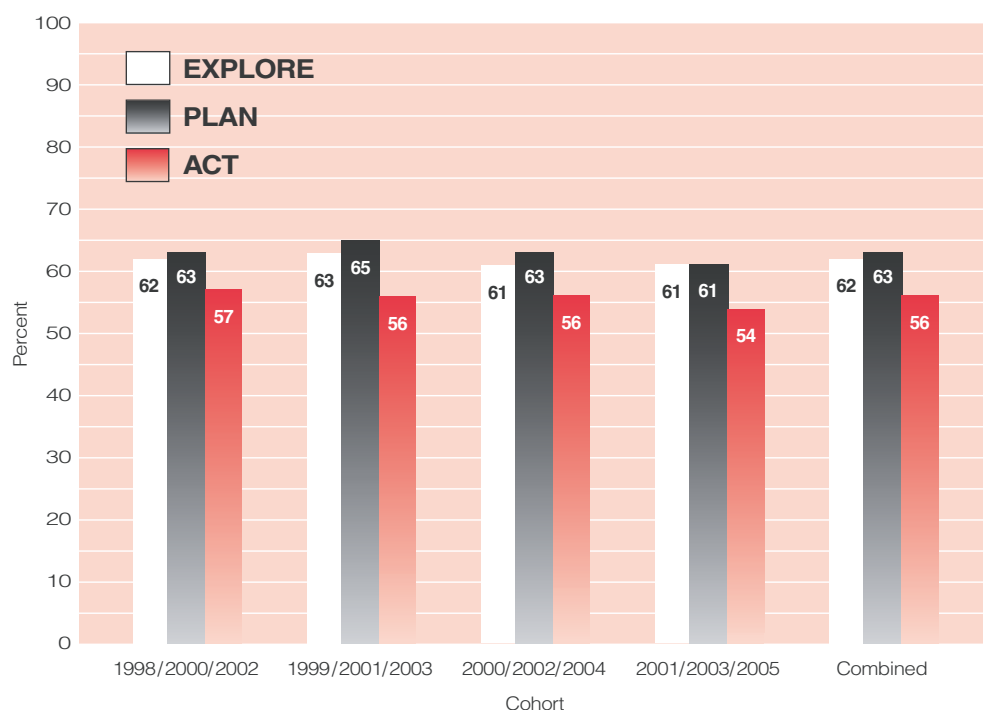
Figure 3: EXPLORE-, PLAN-, and ACT-tested Students Meeting Reading Benchmarks, 1998–2002 to 2001–2005[3]

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[3] The data in this figure are based on approximately 352,000 students.

State Reading Standards: We're Getting What We've Asked For

State standards in high school reading are insufficient—or nonexistent. Why are students losing momentum in high school? One reason may be that they are not being asked to meet specific, rigorous reading standards during their high school years—a time when it is crucial for them to continue refining their reading skills.

After the publication of *A Nation at Risk* (National Commission on Excellence in Education, 1983), states began to focus on setting explicit educational standards and expectations for their students. State educational progress began to be tracked publicly as the states refined their standards, experimented with different ways of communicating these standards to school administrators and teachers so that they could be translated into classroom instruction, and created tests designed to measure student progress. In just six years, 47 states had either initiated statewide assessment programs or substantially expanded programs already in existence.
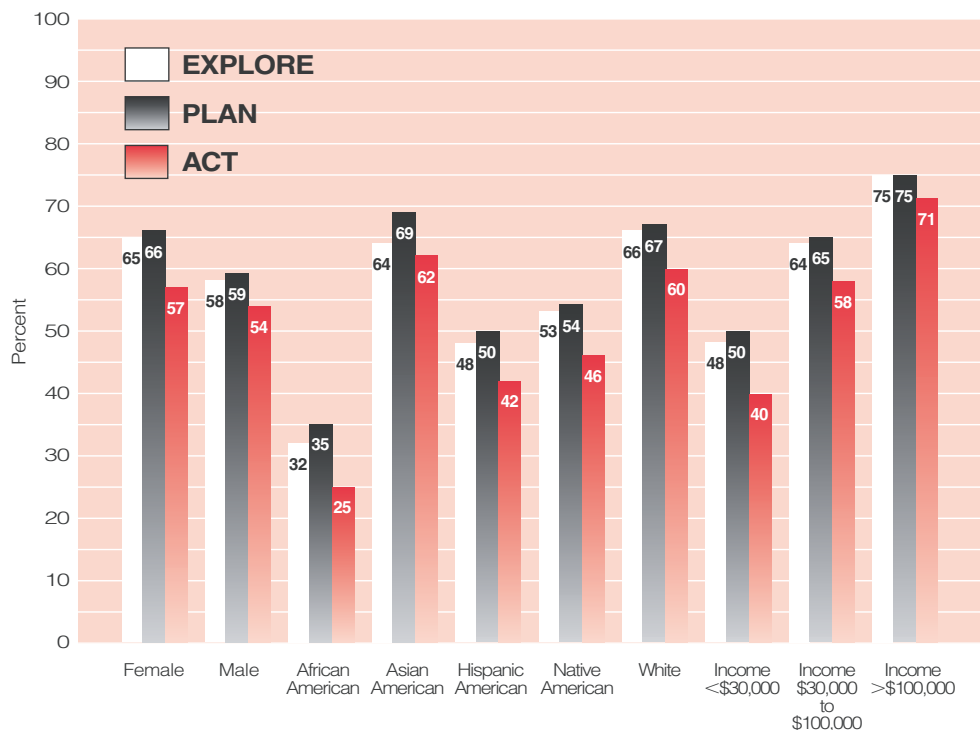
Figure 4: EXPLORE-, PLAN-, and ACT-tested Students Meeting Reading Benchmarks by Gender, Race/Ethnicity, and Selected Family Income Level, 1998–2002 to 2001–2005 (combined)[4]

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[4] The data in this figure are based on approximately 352,000 students (gender), 331,000 students (race/ethnicity), and 283,000 students (income).

With the passage of the No Child Left Behind Act in 2001, all elementary school students are now expected to meet educational standards, and schools are now held accountable for their effectiveness at helping students meet this goal. Forty-nine states have educational standards in place. One effect of this legislation has been an unprecedented demand for rigorous standards that spell out clearly what students need to know and be able to do in order to move on to the next stage of their education.

However, a careful analysis of state standards in reading at the high school level leads to a very different conclusion about the importance of reading to student success in college and work. Research shows that students must continue to develop their reading ability long after they are typically considered literate (Lyon, 2002; Moore, Bean, Birdyshaw, & Rycik, 1999). But according to our analysis of state standards, 28 of the 49 states with standards —more than half—fully define grade-level standards in reading only through the eighth grade.

▼ At the high school level, 20 of these 28 states specify only a single group of reading standards intended to cover grades 9 through 12—standards that do not recognize expectations for increasing proficiency in reading during those years.

▼ Six additional states specify standards for only one, two, or three high school grades, ignoring the other grades altogether.

▼ Two additional states specify just one set of standards for a subset of grades.

Overall (including Iowa, which has not identified state standards), nearly *60 percent*— 29 states—do not have grade-specific standards that define the expectations for reading achievement in high school. If such standards don't exist, teachers can't teach to them and students can't learn them. You can't get what you don't ask for.

Deficits in Acquiring Reading Comprehension Strategies

Some children encounter obstacles in learning to read because they do not derive meaning from the material that they read. In the later grades, higher order comprehension skills become paramount for learning. Reading comprehension places significant demands on language comprehension and general verbal abilities. Constraints in these areas will typically limit comprehension. In a more specific vein, deficits in reading comprehension are related to:

(1) inadequate understanding of the words used in the text;

(2) inadequate background knowledge about the domains represented in the text;

(3) a lack of familiarity with the semantic and syntactic structures that can help to predict the relationships between words;

(4) a lack of knowledge about different writing conventions that are used to achieve different purposes via text (humor, explanation, dialogue, etc.);

(5) verbal reasoning ability which enables the reader to "read between the lines"; and

(6) the ability to remember verbal information.

If children are not provided early and consistent experiences that are explicitly designed to foster vocabulary development, background knowledge, the ability to detect and comprehend relationships among verbal concepts, and the ability to actively employ strategies to ensure understanding and retention of material, reading failure will occur no matter how robust word recognition skills are.

—Lyon, 2002

High School Reading Instruction Is Not Sufficient

Not enough high school teachers are teaching reading skills or strategies and many students are victims of teachers' low expectations. Another likely reason that high school students are losing momentum in readiness for college-level reading is that reading is simply not taught much, if at all, during the high school years, not even in English courses. As one educator explains:

> High school English teachers . . . are traditionally viewed—and view themselves—as outside the teaching of reading, because the assumption has been that students come to them knowing how to read. . . . High school English teachers rarely have the backgrounds to assist the least able readers in their classes, and additionally are often uncertain about what reading instruction actually involves. (Ericson, 2001, pp. 1, 2)

If this is true of English teachers, how much truer must it be of teachers in other courses? Meltzer (2002) reports:

> Overwhelmed by higher content standards, many . . . high school teachers feel under pressure to "cover" more content than ever before and are resistant to "adding" literacy responsibilities to their crowded course calendars. . . . Since literacy is not "visible" as a content area, it is not "owned" by any specific department. The English department, it is wrongly assumed, "takes care of that." (pp. 9, 10)

But even where reading is an element of the high school curriculum—usually as part of English or social studies courses—ACT research suggests that low teacher expectations can prevent some students from being taught the reading skills they need for college and work. According to data gathered as part of the 2002–2003 ACT National Curriculum Survey® (ACT, Inc., 2003), if teachers perceived students to be primarily college bound, they were more likely to focus their instruction on higher-level critical reading skills. If they perceived students not to be college bound, they were less likely to teach these critical reading skills (Patterson, Happel, & Lyons, 2004; Patterson & Duer, in press). These practices are simply not acceptable.

> [A]s a group, the teachers reporting on a class of primarily college-bound students teach and place greater importance on a broader range of reading process skills than do the teachers reporting on a class of primarily non–college-bound students. . . .
>
> The difference in process skills taught is not merely quantitative, but qualitative as well. . . . [T]he process skills most heavily favoring college-bound classes in terms of percent taught . . . were elements of sophisticated, high-level critical reading.
>
> *—Patterson, Happel, & Lyons, 2004*

Beyond-Core Coursework in Social Studies Only Slightly Improves ACT Reading Test Score

ACT research has well documented the strong positive impact of taking rigorous courses in high school, particularly in English, mathematics, and science (ACT, Inc., 2004). According to 2005 data (shown in Figure 5), students who take additional, beyond-core science courses (i.e., Physics) earn ACT Science Test scores that are up to 3 points higher, on average, than the scores of students who take only the core science curriculum. In mathematics, students who take additional courses (i.e., advanced math beyond Algebra II) have ACT Mathematics Test scores that are up to 6.8 points higher, on average, than the scores of students who take only the core mathematics curriculum. These increases are on a score scale ranging from 1 to 36 and represent statistically significant gains.

However, Figure 5 also shows that additional coursework in social studies—the high school subject area that overlaps most closely with the kinds of college social sciences courses used to establish the ACT College Readiness Benchmark for Reading—results in an average ACT Reading Test score no more than 1 point higher than that associated with the recommended three years of social studies. And this includes even those students who took the equivalent of five years of social studies in high school. This suggests that taking additional years of social studies coursework alone does not have a large differential impact on the readiness of ACT-tested students to handle the level of reading required in college social sciences courses. However, as will be discussed in the next chapter, what appears to matter in readiness for college-level reading is not the *number* of courses students take, but what is being asked of students in these courses. We examined student performance on the ACT Reading Test from a number of perspectives in an attempt to answer the question of what *really* matters in reading.

ACT's Recommended Core Curriculum

▼ English: at least four years (typically English 9, English 10, English 11, and English 12)

▼ Mathematics: at least three years (typically Algebra I, Algebra II, and Geometry)

▼ Social studies: at least three years (may include U.S. History, World History, U.S. Government, Economics, Geography, Psychology, European History, state history)

▼ Natural sciences: at least three years (typically General/Physical/Earth Science, Biology, and Chemistry)
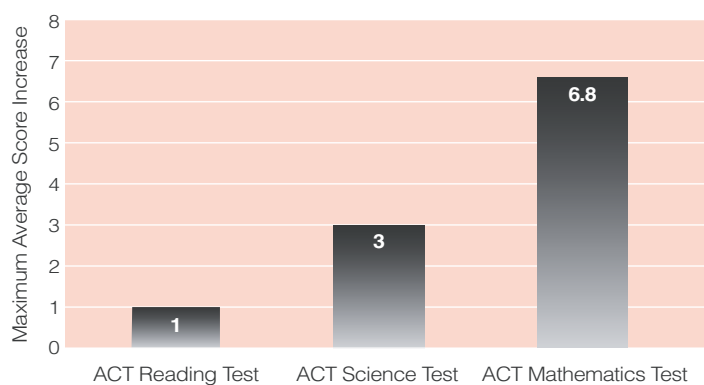
Figure 5: Maximum Average Test Score Increases Associated with Beyond-core Subject-specific Coursework for 2005 ACT-tested High School Graduates

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Ready or Not: What Matters in Reading?

Those ACT-tested students who can read complex *texts are more likely to be ready for college. Those who cannot read complex texts are less likely to be ready for college.*

Students who meet the ACT Benchmark for Reading are more likely to enroll and do better in college than students who do not meet the Benchmark. ACT research demonstrates the clear benefits experienced by students who attain the College Readiness Benchmark for Reading: increased college enrollment in the fall immediately following high school graduation, higher grades in selected first-year college social-sciences courses, higher first-year college grade-point average (GPA), and increased retention (defined as those who return for a second year of college at the same institution). These benefits are illustrated in Figures 6 through 9.

The figures show that students who meet the Reading Benchmark are more likely than students who do not meet the Benchmark to:

▼ enroll in college (74 percent vs. 59 percent);

▼ earn a grade of B or higher (63 percent vs. 36 percent) or C or higher (85 percent vs. 64 percent) in first-year college U.S. History courses;

▼ earn a grade of B or higher (64 percent vs. 39 percent) or C or higher (85 percent vs. 68 percent) in first-year college Psychology courses;

▼ earn a first-year college GPA of 3.0 or higher (54 percent vs. 33 percent) or 2.0 or higher (87 percent vs. 76 percent); and

▼ return for a second year of college at the same institution (78 percent vs. 67 percent).
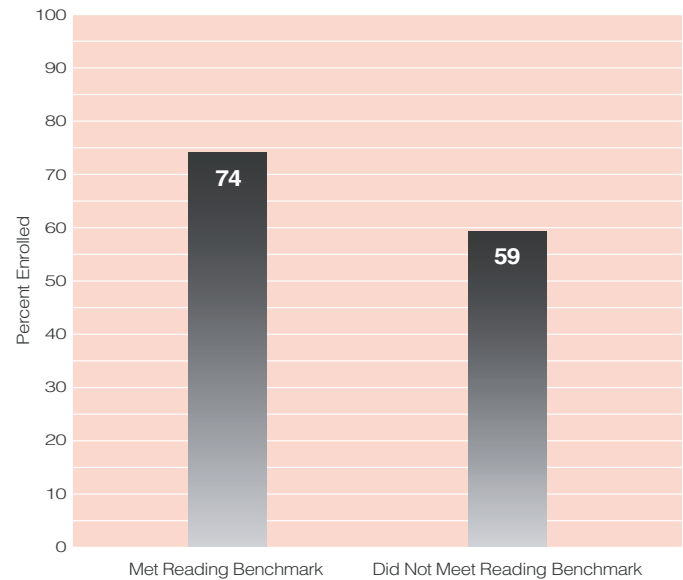
Figure 6: Fall 2003 College Enrollment for 2003 ACT-tested High School Graduates Meeting and Not Meeting ACT's College Readiness Benchmark for Reading[5]

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5   Based on approximately 1.2 million students.
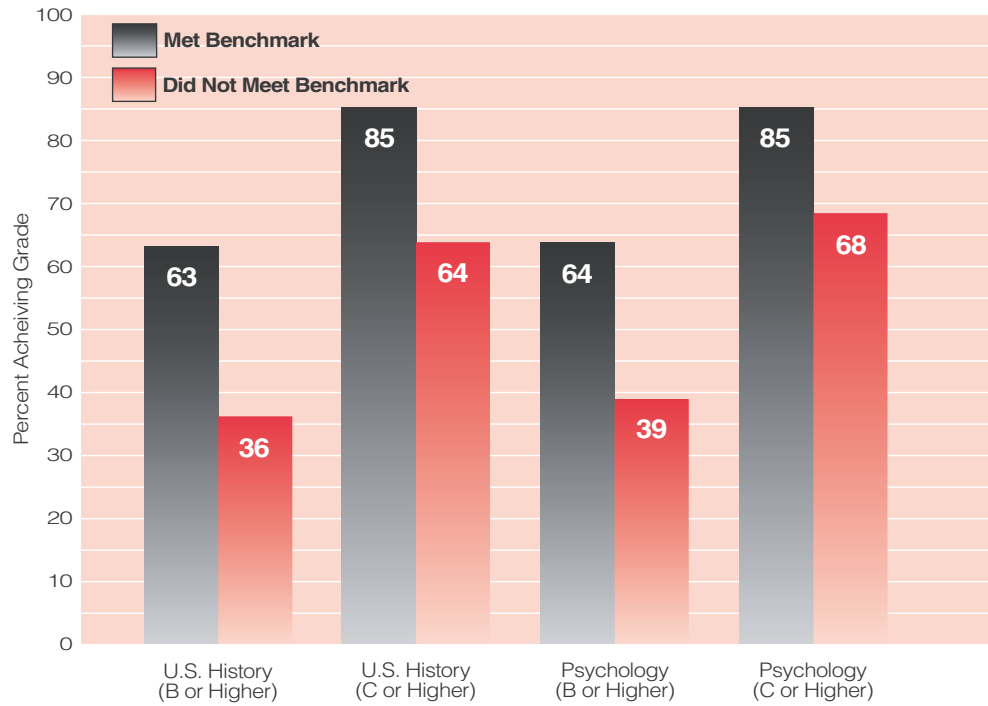
Figure 7: ACT-tested High School Graduates Meeting and Not Meeting ACT's College Readiness Benchmark for Reading Who Achieved Specific Grades in Selected First-year College Social-Sciences Courses[6]
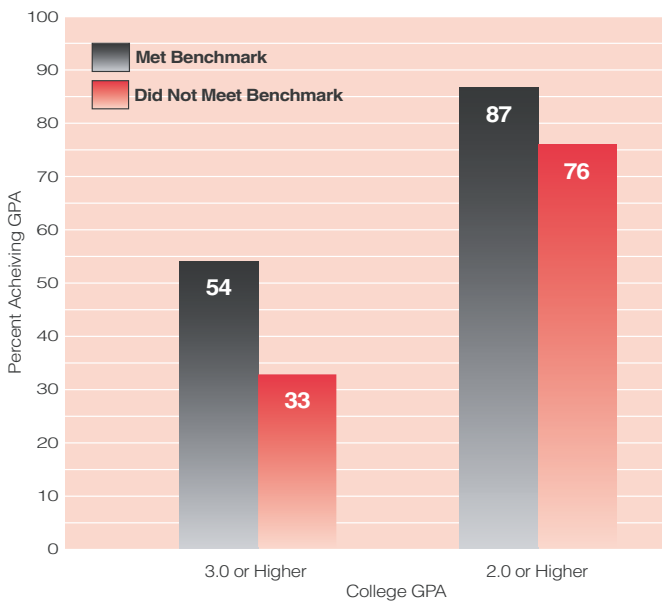
Figure 8: ACT-tested High School Graduates Meeting and Not Meeting ACT's College Readiness Benchmark for Reading Who Achieved Specific First-year College Grade-point Averages (GPA)[7]
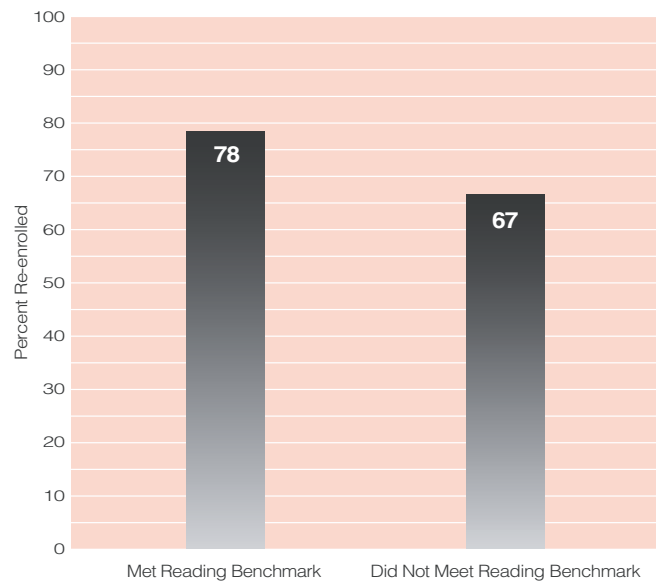
Figure 9: Fall 2004 Second-year College Retention Rate at Same Institution for 2003 ACT-tested High School Graduates Meeting and Not Meeting ACT's College Readiness Benchmark for Reading[8]

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[6] Based on data across multiple years from institutions participating in ACT's Course Placement Service. Approximately 6,000 students were included in the analysis for U.S. History, and approximately 7,000 were included in the analysis for Psychology.

[7] Based on data across multiple years from institutions participating in ACT's High School Feedback Service. Approximately 302,000 students were included in the analysis.

[8] Based on approximately 779,000 first-year college students.

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But what differentiates students who meet the Reading Benchmark from students who do not? We looked at student performance on three aspects of ACT Reading Test content: comprehension level, textual elements, and text complexity.

Comprehension Level

Questions on the Reading Test assess two levels of comprehension: literal and inferential. Literal comprehension requires test-takers to identify information stated explicitly in the text, often within a defined section. Inferential comprehension requires test-takers to process and interpret information not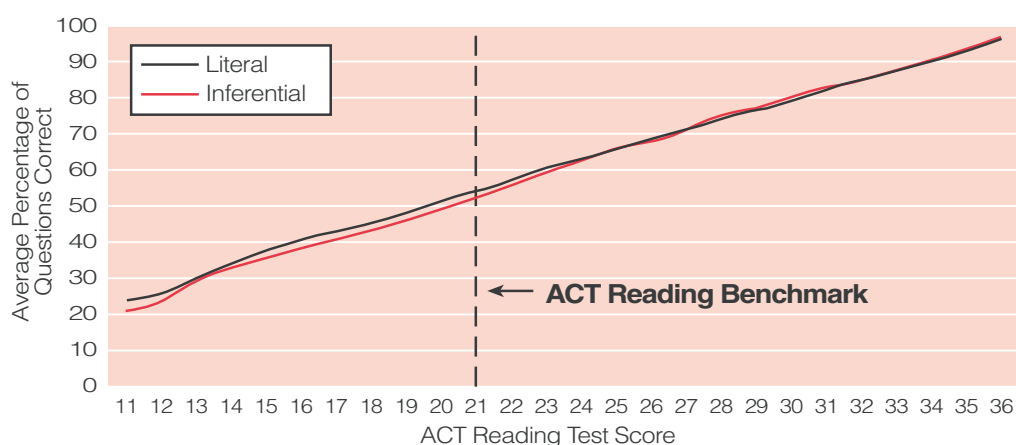 stated explicitly in the text—i.e., to make inferences, often by drawing on material from different sections. Figure 10 presents the results of the analysis by comprehension level.

Figure 10: Performance on the ACT Reading Test by Comprehension Level
(Averaged across Seven Forms)[9]

Figure 10 shows essentially no difference in student performance on the two comprehension levels across the score range, either above or below the ACT College Readiness Benchmark for Reading. At each score point, the percentages of literal and inferential comprehension questions answered correctly are virtually identical. What's more, both above and below the Benchmark, improvement in performance on each of the two levels is uniform and gradual—that is, as performance on one level increases, so does performance on the other, and to almost exactly the same degree. Given this steadily increasing linear relationship between ACT Reading Test score and reading proficiency, there is no clear differentiator here between those students who are ready for college-level reading and those who are not.

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[9] Analyses presented in this and the succeeding two figures were based on approximately 563,000 students who took any of seven test forms administered between Fall 2003 and Spring 2005. It was not possible to analyze performance below a score of 11 due to the small number of students scoring in this range.

Textual Elements

Questions on the Reading Test focus on five kinds of textual elements: 1) main idea or author's approach, 2) supporting details, 3) relationships (sequential, comparative, or cause and effect), 4) meaning of words, and 5) generalizations and conclusions. Figure 11 presents the results of the analysis by textual element.

As was the case in Figure 10, Figure 11 also shows almost no differences in student performance among the five textual elements across the score range, either above or below the Reading Benchmark. Again the percentages of questions answered correctly on the five kinds of textual elements are nearly identical, and again improvement on each of the five kinds is uniform and gradual. Thus, with similar relationships seen among these textual elements, there is no clear point of differentiation that can be used to distinguish those who are ready for college-level reading from those who are not.

Text Complexity

Texts used in the ACT Reading Test reflect three degrees of complexity: uncomplicated, more challenging, and complex. Table 1 summarizes the chief distinctions among the three degrees of text complexity.

Table 1
Characteristics of Uncomplicated, More Challenging, and Complex Texts on the ACT Reading Test

Aspect of Text	Degree of Text Complexity		
	Uncomplicated	**More Challenging**	**Complex**
Relationships	Basic, straightforward	Sometimes implicit	Subtle, involved, deeply embedded
Richness	Minimal/limited	Moderate/more detailed	Sizable/highly sophisticated
Structure	Simple, conventional	More involved	Elaborate, sometimes unconventional
Style	Plain, accessible	Richer, less plain	Often intricate
Vocabulary	Familiar	Some difficult, context-dependent words	Demanding, highly context dependent
Purpose	Clear	Conveyed with some subtlety	Implicit, sometimes ambiguous

As shown in Table 1, the three types of texts represent a continuum of increasing complexity with respect to the following six aspects (which can be abbreviated to "RSVP"):

▼ **Relationships** (interactions among ideas or characters)

▼ **Richness** (amount and sophistication of information conveyed through data or literary devices)

▼ **Structure** (how the text is organized and how it progresses)

▼ **Style** (author's tone and use of language)

▼ **Vocabulary** (author's word choice)

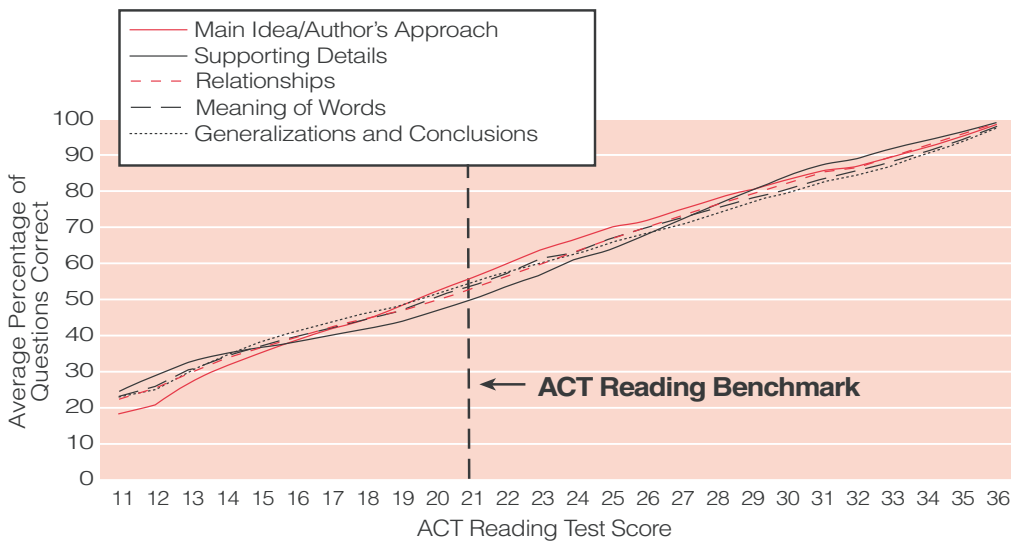▼ **Purpose** (author's intent in writing the text)

Figure 11: Performance on the ACT Reading Test by Textual Element (Averaged across Seven Forms)
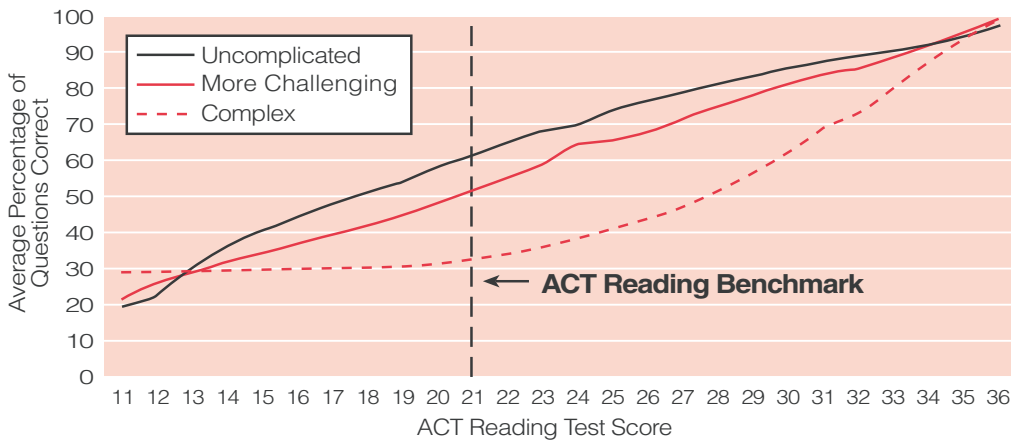
Figure 12: Performance on the ACT Reading Test by Degree of Text Complexity (Averaged across Seven Forms)

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What appears to differentiate those who are more likely to be ready from those who are less likely is their proficiency in understanding complex texts. The results of the analysis by degree of text complexity are presented in Figure 12.

In this figure, performance on questions associated with uncomplicated and more challenging texts both above and below the ACT College Readiness Benchmark for Reading follows a pattern similar to those in Figures 10 and 11, in that improvement on each of the two kinds of questions is gradual and fairly uniform. There is, however, a difference in the percentages of questions answered correctly for the two kinds of texts: for the most part, students correctly answer a higher percentage of questions associated with uncomplicated texts than of questions associated with more challenging texts.

But when we look at performance on questions associated with complex texts, we see a substantially different pattern. Below the Reading Benchmark, the percentage of questions answered correctly remains virtually constant—and not much higher than the level suggested by chance (25 percent, given that each question contains four answer choices).

Most importantly, above the Reading Benchmark performance improves more steeply than it does with either of the other two levels of text complexity, indicating that students who can master the skills necessary to read and understand complex texts are more likely to be college ready than those who cannot. It is not until the uppermost end of the score scale that student performance on questions associated with all three degrees of text complexity is roughly the same. Furthermore, the three performance patterns shown in Figure 12 hold for both genders, all racial/ethnic groups, and all annual family income levels.

What does this mean? For one thing, it shows that degree of text complexity differentiates student performance better than either the comprehension level or the kind of textual element tested. (See the sidebar for information about how degrees of text complexity are associated with specific average score increases on the ACT Reading Test.) But another, more important, conclusion is that, because of its distinct pattern of performance increases relative to the ACT College Readiness Benchmark, *performance on complex texts is the clearest differentiator in reading between students who*

Degree of Text Complexity and ACT Reading Test Score

Performance on ACT Reading Test questions by degree of text complexity is associated with substantial score differences on the test.

Correctly answering questions based on texts classified as more challenging is associated with Reading Test scores that are 3 points higher on average than scores associated with correctly answering questions based on uncomplicated texts. Correctly answering questions based on complex passages is associated with Reading Test scores that are between 6 and 7 points higher on average than scores associated with correctly answering questions based on more challenging texts, and between 9 and 10 points higher on average than scores associated with correctly answering questions based on uncomplicated texts.

In other words, students who correctly answer questions based on complex texts can score potentially as many as 10 points higher on the Reading Test than students who can correctly answer only questions based on uncomplicated texts.

are likely to be ready for college and those who are not. And this is true for both genders, all racial/ethnic groups, and all family income levels.

Complex Texts: A Closer Look

As Table 1 showed, a complex text is typically complex in the following ways:

▼ **Relationships:** Interactions among ideas or characters in the text are subtle, involved, or deeply embedded.

▼ **Richness:** The text possesses a sizable amount of highly sophisticated information conveyed through data or literary devices.

▼ **Structure:** The text is organized in ways that are elaborate and sometimes unconventional.

▼ **Style:** The author's tone and use of language are often intricate.

▼ **Vocabulary:** The author's choice of words is demanding and highly context dependent.

▼ **Purpose:** The author's intent in writing the text is implicit and sometimes ambiguous.

But it makes sense to examine complex texts in more depth now that we know the significant role these texts play in students' college readiness. It is one thing to state, for example, that complex texts contain demanding, highly context-dependent vocabulary, but quite another to see how such vocabulary functions within a text.

Figures 13 and 14 (pages 18–21) present annotated samples of complex texts, in the content areas of prose fiction and natural science, that have been used on the ACT Reading Test. (See the Appendix for annotated examples of additional complex texts in the humanities and social science areas.)

[T]here has been little improvement in areas indicating the substantive content of the English curriculum or the level of difficulty in reading expected by graduation. A few states have content-rich and content-specific literature standards at the high school level. But there has been a decline in the number that seemingly want their English teachers to know how high their academic expectations in reading for students should be by the end of high school.

. . . [W]hile a state's formal content may sometimes seem demanding (e.g., when it expects study of such literary devices as irony or flashbacks), without standards outlining its substantive content, its formal content can be addressed as easily in simple texts as in complex texts with literary qualities. One can study onomatopoeia in "The Three Little Pigs" as well as in "The Raven."

—Stotsky, 2005

It seems likely that while much of the reading material that students encounter in high school may reflect progressively greater content challenges, it may not actually require a commensurate level of text complexity. This observation appears to be consistent with a recent study by ACT and the Education Trust, *On Course for Success*

This text describes two complex, well-developed characters, Sunday and Delta, and their strained yet loving relationship. One factor that contributes to the complexity of the text is its structure: the third-person narrator presents the two sisters both as they see themselves and how each sees the other.

PROSE FICTION: This passage is adapted from the novel *Night Water* by Helen Elaine Lee (©1996 by Helen Elaine Lee).

There had been no words for naming when she was born. She was "Girl Owens" on the stamped paper that certified her birth, and at home, she had just been "Sister," that was all. When asked to decide, at six, what she would be called, she had chosen "Sunday," the time of voices, lifted in praise.

That was one piece of the story, but other parts had gone unspoken, and some had been buried, but were not at rest. She was headed back to claim them, as she had taken her name.

She could smell the burnt, sweet odor of the paper mill that sprawled across the edge of town, and as the train got closer, she remembered all that she saw. She felt herself entering the greens and reds and browns of her own paintings, pulling aside her brushstrokes as if they were curtains and stepping through. There were autumn trees on fire everywhere, and she moved beyond the surface of color and texture into the hidden layers of the past, from which she had learned to speak her life with paint.

The train passed through the part of town where she grew up. She watched as they left behind the neat, compact frame houses and hollow storage buildings. She was going back to piece together their family story of departure and return. She saw it all from the inside out, as native and exile, woman and child. From all that she remembered and all that she was. She was Girl Owens and Sister. She was Sunday, and she was headed home.

Waiting for Sunday's arrival, Delta Owens stepped out onto the front porch. She hoped she would be able to find the right way to approach Sunday, with whom she had only been in touch by mail for five years. She had tried to demonstrate a persistent bond with the help of words put together by experts, choosing for each birthday and holiday an oversized greeting card, depending on its ornate script and polished rhyme to express what she had never been able to say. Each one she had signed "Always, Delta" before addressing the envelope carefully and mailing it off to Chicago. She had heard back irregularly, receiving wood block prints or splashes of paint on wefts of heavy paper with ragged edges or on see-through skins. Each one she had turned round and round, looking for right-side up with the help of the signature. Each one she had saved. Though she hadn't known what, specifically, to make of any of them, she knew their appearance said something about the habit of love.

VOCABULARY: Beginning with the opening sentence—"There had been no words for naming when she was born"—the text uses fairly sophisticated syntax.

RICHNESS: Imagery abounds in the text, as in the third paragraph, when Sunday is said to have "felt herself entering the greens and reds and browns of her own paintings."

STRUCTURE: Here, the text shifts to mainly relating Delta's perspective after presenting Sunday's perspective.

They had kept up contact despite the differences that had accumulated over the years and finally erupted in accusations and insults after Nana's death. In the wide, post-funeral quiet, after the visitors had gone home, they had both uttered things huge and unerasable.

She had always known how Sunday felt about home. "I'm in a little box," she had often complained while growing up, trying to express to Delta how different she felt, how she was of it, but would never be able to stay. And Delta, who had fought anyone who criticized her sister, had listened and comforted her, but hadn't really understood. Sunday was the one she was different from.

"This place pulls you down and holds you," Sunday had said. "Delta, don't you see, it pulls you down and holds you, silent and safe."

What Sunday said that night was condemnation of a place, but Delta absorbed it all. She was of Wake County and caught in that understanding of herself. Intoxicated with saying what had long been felt, they both spoke freely and all barriers fell. Most of the things Sunday said had not surprised Delta, but one indictment had left her open-mouthed: "You don't even see my painting," Sunday had accused, "you don't even see me at all."

Delta had laughed callously at the accusation, for she knew, though she couldn't have said it, that for most of her life she had seen little else. She had answered by calling her a misfit who thought she was better than the folks she had left behind. And it was Delta's recognition of her own rancor, as much as the substance of what they said, that staggered and disgraced her. She hadn't even realized all the things for which she couldn't forgive Sunday, hadn't known her own smallness until she found herself measuring her sister out loud.

Finally, the rush of words had ended, and they had silently straightened up and gone upstairs without repairing their trespasses. Sunday had gathered and packed her things in a wild, tearful stupor of regret and relief, while Delta cried herself to sleep with bitter remorse.

Delta pushed that night from her mind, hoping that this visit might help them leave behind their troubled history.

STYLE; RELATIONSHIPS: As the narrator relates the argument, readers get not only the words used but also the motives and reactions.

VOCABULARY; RELATIONSHIPS: The concepts the author presents are often complicated, subtle, and abstract, such as the idea that being safe is a bad thing, or when the narrator notes that Delta "was of Wake County and caught in that understanding of herself."

RELATIONSHIPS: As the last two paragraphs reveal, the current state of Sunday's and Delta's relationship is a mixture of hurt, betrayal, hope, and love.

This text contains a great deal of information related to the idea of biological uniqueness, focusing on the "collaboration" between a particular species of medusa and a particular kind of nudibranch. The vocabulary in the text is often demanding and the concepts are subtly presented.

NATURAL SCIENCE: This passage is adapted from Lewis Thomas's *The Medusa and the Snail: More Notes of a Biology Watcher* (©1979 by Lewis Thomas).

We tend to think of our selves as the only wholly unique creations in nature, but it is not so. Uniqueness is so commonplace a property of living things that there is really nothing at all unique about it. Even individual, free-swimming bacteria can be viewed as unique entities, distinguishable from each other even when they are the progeny of a single clone. Spudich and Koshland have recently reported that motile microorganisms of the same species are like solitary eccentrics in their swimming behavior. When they are searching for food, some tumble in one direction for precisely so many seconds before quitting, while others tumble differently and for different, but characteristic, periods of time. If you watch them closely, tethered by their flagellae to the surface of an antibody-coated slide, you can tell them from each other by the way they twirl, as accurately as though they had different names.

Fish can tell each other apart as individuals, by the smell of self. So can mice, and here the olfactory discrimination is governed by the same H2 locus which contains the genes for immunologic self-marking.

The markers of self, and the sensing mechanisms responsible for detecting such markers, are conventionally regarded as mechanisms for maintaining individuality for its own sake, enabling one kind of creature to defend and protect itself against all the rest. Selfness, seen thus, is for self-preservation.

In real life, though, it doesn't seem to work this way. The self-marking of invertebrate animals in the sea, who must have perfected the business long before evolution got around to us, was set up in order to permit creatures of one kind to locate others, not for predation but to set up symbiotic households. The anemones who live on the shells of crabs are precisely finicky; so are the crabs. Only a single species of anemone will find its way to only a single species of crab. They sense each other exquisitely, and live together as though made for each other.

Sometimes there is such a mix-up about selfness that two creatures, each attracted by the molecular configuration of the other, incorporate the two selves to make a single organism. The best story I've ever heard about this is the tale told of the nudibranch and medusa living in the Bay of Naples. When first observed, the nudibranch, a common sea slug, was found to have a tiny vestigial parasite, in the form of a jellyfish, permanently affixed to the ventral surface near the mouth. In curiosity to learn how the medusa got there, some

PURPOSE: The text begins with a general discussion of the phenomenon of biological uniqueness, arguing, paradoxically, that "uniqueness is so commonplace a property of living things that there is nothing at all unique about it."

RELATIONSHIPS: In the third and fourth paragraphs, the author presents and then challenges the way "the markers of the self, and the sensing mechanisms responsible for detecting such markers, are conventionally regarded."

marine biologists began searching the local waters for earlier developmental forms, and discovered something amazing. The attached parasite, although apparently so specialized as to have given up living for itself, can still produce offspring, for they are found in abundance at certain seasons of the year. They drift through the upper waters, grow up nicely and astonishingly, and finally become full-grown, handsome, normal jellyfish. Meanwhile, the snail produces snail larvae, and these too begin to grow normally, but not for long. While still extremely small, they become entrapped in the tentacles of the medusa and then engulfed within the umbrella-shaped body. At first glance, you'd believe the medusae are now the predators, paying back for earlier humiliations, and the snails the prey. But no. Soon the snails, undigested and insatiable, begin to eat, browsing away first at the radial canals, then the borders of the rim, finally the tentacles, until the jellyfish becomes reduced in substance by being eaten while the snail grows correspondingly in size. At the end, the arrangement is back to the first scene, with the full-grown nudibranch basking, and nothing left of the jellyfish except the round, successfully edited parasite, safely affixed to the skin near the mouth.

It is a confusing tale to sort out, and even more confusing to think about. Both creatures are designed for this encounter, marked as selves so that they can find each other in the waters of the Bay of Naples. The collaboration, if you want to call it that, is entirely specific; it is only this species of medusa and only this kind of nudibranch that can come together and live this way. And, more surprising, they cannot live in any other way; they depend for their survival on each other. They are not really selves, they are specific *others*.

I've never heard of such a cycle before. [These creatures] are bizarre, that's it, unique. And at the same time, like a vaguely remembered dream, they remind me of the whole earth at once.

RICHNESS: The heart of the text, the fifth and sixth paragraphs, is a discussion of the complicated medusa-nudibranch interaction, which serves mainly to help make the author's broader point about the commonness of uniqueness in biology.

STRUCTURE: The text ends, somewhat jarringly and cryptically, with a personal observation about how the medusa and the nudibranch remind the author of "the whole earth at once."

(2004), which examined the curricula of ten high schools that have been especially successful at graduating students who are ready for college and work. This study reported that many of the courses offered at these schools were characterized by reading loads greater than those required by similar courses at other schools. As one teacher who participated in the study observed, the reading material in the rigorous high school courses aimed at preparing students for college "is certainly more abundant, and at times a little more challenging" (p. 18) than in typical high school courses.

State Standards Do Not Address Text Complexity

In the previous chapter we saw that nearly 60 percent of states do not have grade-specific standards that define the expectations for reading achievement in high school. Our discussion of text complexity leads us to make another, more sobering observation about state standards. Although 10 of the 49 states with standards provide names of works or authors that could be used as indices of the complexity of recommended high school reading material, *none* of the state standards attempts to define explicitly the degree of complexity a specific grade-level text should have. Relationships, Richness, Structure, Style, Vocabulary, Purpose—none of these "RSVP" aspects is described in detail anywhere in any state's reading standards.

So, just as with grade-specific state reading standards, when it comes to defining and requiring certain specific levels of complexity in students' high school reading materials, we're getting what we're asking for. And students' college and workplace readiness is the worse for it.

3

Taking Action: How to Help All Students Become Ready for College-Level Reading

We can no longer afford to ignore reading instruction in high school. Something must be done to improve the reading proficiency of all students.

As we have seen, students who can't read and understand complex texts aren't likely to be ready for college or the workforce. And as we have also seen, students who aren't ready for college or work are less able to participate in, and contribute to, an increasingly global economy.

What can be done to improve the readiness of our high school students for college-level reading?

1. **Strengthen reading instruction in *all* high school courses by incorporating complex reading materials into course content.**
   The type of text to which students are exposed in high school has a significant impact on their readiness for college-level reading. Specifically, students need to be able to read complex texts if they are to be ready for college. All courses in high school, not just English and social studies but mathematics and science as well, must challenge students to read and understand complex texts. As we saw in the previous chapter, a complex text is typically complex with respect to:

▼ **Relationships** (interactions among ideas or characters are subtle, involved, or deeply embedded);

▼ **Richness** (a sizable amount of highly sophisticated information conveyed through data or literary devices);

> At ages 13 and 17, the percentage saying they read for fun almost every day was lower in 2004 than in 1984. This trend was accompanied by an increase over the same 20-year time period in the percentage indicating that they never or hardly ever read for fun.
>
> *—Perie, Moran, & Lutkus, 2005*

▼ **Structure** (elaborate, sometimes unconventional);

▼ **Style** (often intricate);

▼ **Vocabulary** (demanding and highly context dependent); and

▼ **Purpose** (implicit and sometimes ambiguous).

   In most cases, a complex text will contain multiple layers of meaning, not all of which will be immediately apparent to students upon a

single superficial reading. Rather, such texts require students to work at unlocking meaning by calling upon sophisticated reading comprehension skills and strategies. (In addition to those presented in Figures 13 and 14, other distinguishing features of complex texts are described in Figures 20 and 21 of the Appendix. Annotated examples of more challenging texts used on the ACT Reading Test are also included in the Appendix, as Figures 16 through 19.)

Certainly, students will need to make the effort, both inside and outside of school, to enhance their comprehension of complex texts. But in a nation where 13- and 17-year-olds have increasingly less exposure to or interaction with books outside of the classroom (Perie, Moran, & Lutkus, 2005), high schools must still play the primary role in providing students with the kinds of complex reading materials and experiences they need in order to be college and work ready and must continue to teach and reinforce reading strategies that deal with increasingly more complex reading tasks.

Students must have the opportunity to improve their reading skills and strategies at a time when they need to build upon the foundational skills in reading that they developed when they entered high school. They must be given more opportunities to read challenging materials across the curriculum so that they are better positioned to comprehend complex texts in all subjects once they enter college or the workplace.

2. **Revise state standards so that they both explicitly define reading expectations across the high school curriculum and incorporate increasingly complex texts into the English, mathematics, science, and social studies courses in grades 9 through 12.** Without specific reading standards across the curriculum, teachers cannot be expected to know what level of reading proficiency students should be expected to attain or what degree of text complexity is appropriate in each subject and grade. Reading standards that address text complexity should be embedded in English, mathematics, science, and social studies standards.

3. **Make targeted interventions to help students who have fallen behind in their reading skills.** As we strengthen high school courses and state standards with respect to text complexity, we must also address the reading skills of those students who begin high school with reading deficiencies. Such deficiencies need to be diagnosed much earlier, in upper elementary and middle school, so that earlier interventions can be made. If a greater number of students can be identified and helped before they
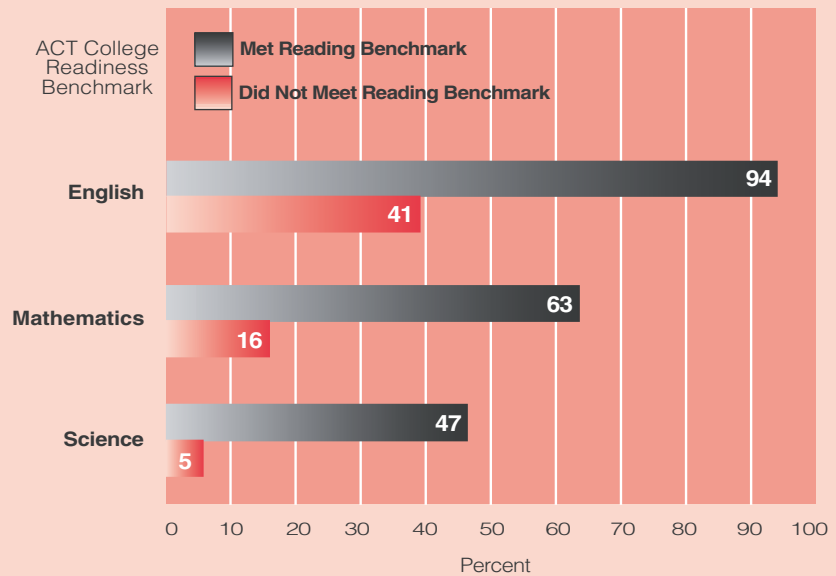
reach high school, they will be more likely to have developed the necessary foundational reading skills upon which college-ready skills can be based.

4. **Provide high school teachers with guidance and support to strengthen reading instruction and to incorporate the kinds of complex texts that are most likely to increase students' readiness for college-level reading.** Teachers need the support and professional development opportunities necessary to ensure that they understand the types of reading skills students need to have by the time they graduate from high school.

5. **Strengthen high school assessments so that they align with improved state standards and high school instruction across the curriculum.** As we strengthen the high school curriculum by incorporating complex reading materials into all courses as defined by improved state standards, so must we also reflect this greater degree of complexity in the high-stakes assessments that high school students take. These assessments need to reflect a wider range of reading materials by including complex texts in all subject areas.

Reading Achievement and Achievement in Other Academic Areas

Because reading is likely a strong intervening factor in academic areas across the high school curriculum, we examined the English, mathematics, and science achievement of students who met and did not meet the ACT College Readiness Benchmark for Reading. The figure at right shows, for students who met and did not meet the Reading Benchmark, the percentage of students meeting the ACT College Readiness Benchmarks for English, Mathematics, and Science.

ACT College Readiness Benchmark

■ Met Reading Benchmark
■ Did Not Meet Reading Benchmark

English 94 / 41
Mathematics 63 / 16
Science 47 / 5

Percent (0 10 20 30 40 50 60 70 80 90 100)

Of those who **met** the Reading Benchmark:

▼ 94 percent also met the ACT English Benchmark;

▼ 63 percent also met the ACT Mathematics Benchmark; and

▼ 47 percent also met the ACT Science Benchmark.

Of those who **did not meet** the Reading Benchmark:

▼ only 41 percent met the ACT English Benchmark;

▼ only 16 percent met the ACT Mathematics Benchmark; and

▼ only 5 percent met the ACT Science Benchmark.

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These are important and far-reaching missions that no one group of concerned individuals can accomplish alone. Teachers, school administrators, and policymakers have crucial roles to play. Following are a number of suggestions for educators and policymakers representing examples of the kinds of actions necessary to begin improving student readiness for college-level reading.

What Can Policymakers Do?

▼ Consistent with the National Governors Association's recommendation that comprehensive literacy plans be developed in each state (NGA Center for Best Practices, 2005), incorporate reading expectations into state standards across the curriculum so that they specify the inclusion, by grade level, of increasingly complex reading materials in English, mathematics, science, and social studies.

▼ Build support for a legislative focus on improving reading achievement in middle school and high school.

▼ Encourage local efforts to improve reading achievement at the school and district levels.

▼ Disseminate best practices found in middle schools and high schools that are achieving results and promote similar efforts on a wider scale.

▼ Increase funding for school or district programs that improve middle school and high school reading achievement.

▼ Provide resources for professional development opportunities for teachers so that they are equipped to provide the necessary reading instruction in their subject areas and grade levels.

▼ Make provisions both for assessing students' college readiness in reading to evaluate their progress and for making timely interventions when they encounter difficulties.

What Can Educators Do?

▼ Consistent with the National Governors Association's recommendation that schools and districts develop comprehensive literacy plans, incorporate reading expectations into state standards across the curriculum so that they specify the inclusion, by grade level, of increasingly complex reading materials in English, mathematics, science, and social studies.

▼ Diagnose reading deficiencies and intervene earlier, before high school.

▼ Incorporate complex reading materials into all high school courses, not just English and social studies, to strengthen students' reading skills throughout high school.

▼ Require all teachers in all courses to teach reading strategies so that students are able to progress from comprehension of simpler texts to comprehension of more complex texts.

▼ Push students to read texts that are personally challenging, and support their efforts by giving them a variety of critical reading strategies to use.

▼ Systematically assess students' college readiness in reading to evaluate their progress and make timely interventions when they encounter difficulties.

Conclusion

In *Crisis at the Core* (ACT, Inc., 2004) we wrote:

> Too few of our students are prepared to enter the workforce or postsecondary education without additional training or remediation when they graduate from high school. And far too many have to take remedial courses as part of their postsecondary educations. . . . As a consequence, first-year students are dropping out of school in alarming numbers: one in four freshmen at four-year institutions and one in two freshmen at two-year institutions fails to return for a sophomore year. (p. 22)

One year later, the situation is no less dire.

Reading is an essential part of readiness for college. Today's economy demands a universally higher level of literacy than at any time in history, and it is reasonable to expect that the demand for a literate workforce will only increase in the future (Snow, 2002). Studies have shown that, regardless of educational attainment, higher levels of literacy translate into higher earnings (Barton, 2000; Kaestle, Campbell, Finn, Johnston, & Mickulecky, 2001), and the fastest-growing jobs also require the highest levels of literacy (Carnevale & Desrochers, 2003; Barton, 2000). Yet too many young people cannot read well enough to get a job with a career path, participate in civic responsibilities, or simply enjoy a good book (U.S. Department of Education, 2003).

ACT data suggest that the readiness of the nation's high school students for college-level reading is far too low. But ACT data also show that, while it is important for students to be able to comprehend both explicit and implicit material in texts and understand how various textual elements (such as main ideas, relationships, or generalizations) function in a text,

what matters most in reading achievement is the ability to comprehend complex texts. We must find ways to help all students to read at the level of proficiency necessary to ensure that they are ready to succeed in college without remediation. Students must be able to read and comprehend texts that are complex with respect to "RSVP": Relationships, Richness, Structure, Style, Vocabulary, and Purpose.

If we help all students to become better readers, they can become ready to succeed in college and work. It's a difficult goal, but a worthy one. And with greater effort on the part of students, teachers, school administrators, and policymakers, it's a goal we can achieve.

Appendix

The conclusions in this report are based on large samples of students in the nation's schools who participated in ACT's college readiness programs: EXPLORE, PLAN, and the ACT. The students taking the ACT in 2004–2005 represented about 40 percent of all graduating seniors across the country. While this may not constitute a nationally representative sample, we believe that we cannot ignore what the data are telling us.

This appendix provides detailed information on the data sources and methodologies used in this report.

ACT's EPAS™

The data in this report come primarily from administrations of ACT's Educational Planning and Assessment System (EPAS™), a system that integrates three aligned programs:

▼ **EXPLORE**, for students in grades 8 and 9, provides baseline information on the academic preparation of students that can be used to plan high school coursework.

▼ **PLAN**, for students in grade 10, provides a midpoint review of students' progress toward their education and career goals while there is still time to make necessary interventions.

▼ **The ACT**, for students in grades 11 and 12, measures students' academic readiness to make successful transitions to college and work after high school. The ACT is the most widely accepted and used test by postsecondary institutions across the U.S. for college admission and course placement.

ACT is uniquely qualified to report on the nation's level of college readiness. We have been measuring the academic achievement of eleventh-grade and twelfth-grade students since the first administration of the ACT in 1959, their career aspirations since 1969, and their academic preparation since 1985. We have tracked each of these three areas for tenth-graders since the debut of PLAN in 1987, and for eighth-graders since 1993, when EXPLORE was added as the newest component of EPAS. Most recently, in 2003 and 2005, we established ACT's College Readiness Benchmarks, which are defined and discussed in detail in this section.

For more than forty years the ACT has served as the "gold standard" for measuring achievement because, unlike other large-scale assessments of academic ability, it is first and foremost an achievement test. It is a measure whose tasks correspond to recognized high school learning experiences, but which at the same time does not precisely duplicate the high school curriculum. The ACT measures not an abstract quality, such as intelligence or aptitude, but rather what students are able to do with what they have learned in school.

All three components of EPAS (EXPLORE, PLAN, and the ACT) measure achievement because each is firmly based in the curriculum of the grade level for which it is intended. Every 3 to 4 years, we conduct the ACT National Curriculum Survey, in which we ask more than 20,000 educators nationwide across grades 7–14 to identify the knowledge and skills that are important for students to know to be ready for college-level work. We examine the objectives for instruction in grades 7 through 12 for all states that have published such objectives. We also review textbooks on state-approved lists for courses at these grade levels. We then analyze the information to refine the scope and sequence for each section of each EPAS assessment. In this way, rather than imposing a test construct without empirical support, EPAS is able to represent a consensus among educators and curriculum experts about what is important for students to know and be able to do.

EPAS Tests

Each component of EPAS (EXPLORE, PLAN, and the ACT) consists of four tests: English, Mathematics, Reading, and Science. Students who take the ACT are also given the option of taking the ACT Writing Test. The skills assessed in each of these five tests are summarized below.

English. The questions in the English tests assess six elements of effective writing in the two broad categories of usage and mechanics (punctuation, grammar and usage, sentence structure) and rhetorical skills (strategy, organization, style). Spelling, vocabulary, and rote recall of rules of grammar are not tested. The revising and editing issues posed by the questions offer a certain richness and complexity. While some questions require students to apply their knowledge of standard written English to the task of deciding the best way to write a sentence or sentences, the surrounding context makes the overriding issue that of clear and effective communication of meaning.

Mathematics. The questions in the Mathematics tests cover four cognitive levels: Knowledge and Skills, Direct Application, Understanding Concepts, and Integrating Conceptual Understanding. Knowledge and Skills questions require the student to use one or more facts, definitions, formulas, or procedures to solve problems that are presented in purely mathematical terms. Direct Application questions require the student to use one or more facts, definitions, formulas, or procedures to solve straightforward problems set in real-world situations. Understanding Concepts questions test the student's depth of understanding of major concepts by requiring reasoning from a concept to reach an inference or a conclusion. Integrating Conceptual Understanding questions test the student's ability to achieve an integrated understanding of two or more major concepts to solve non-routine problems.

Reading. The questions in the Reading tests require the student to derive meaning from texts by referring to what is explicitly stated and reasoning to determine implicit meanings and to draw conclusions, comparisons, and generalizations. Questions do not test the rote recall of facts from outside the text, isolated vocabulary items, or rules of formal logic. Rather, the tests focus upon the complementary and mutually supportive skills that readers must bring to bear in studying written materials across a range of subject areas.

The Reading tests measure reading skills by means of questions about passages excerpted from works in the humanities, prose fiction, social sciences, and (in the ACT only) natural sciences. Test questions are designed to measure reasoning by logical inference, analysis, and synthesis, and ask students to apply many different strategies in the act of comprehending, interpreting, and evaluating texts (ACT, 2003). The three Reading tests are integrated and aligned with one another and permit a valid and informative examination of changes in reading achievement from middle school through high school.

Questions on the Reading tests are classified in the general categories of Referring and Reasoning. Referring questions ask about material that is stated explicitly in a passage and are designed to measure literal comprehension. Reasoning questions ask about meanings that are implicit in a passage and require cogent reasoning about a passage. Questions on the Reading tests are also categorized according to the five kinds of textual elements they cover: 1) main idea or author's approach, 2) supporting details, 3) relationships (sequential, comparative, or cause and effect), 4) meaning of words, and 5) generalizations and conclusions.

Main Ideas and Author's Approach questions focus on identifying or inferring the key ideas or purposes of paragraphs or entire texts, as well as determining the perspectives from which texts are written.

Supporting Details questions focus on the location, recall, and interpretation of facts in a text and the purposes that details or elements of a passage serve within the text as a whole (for example, to support or undermine a main point).

Relationships questions focus on identifying or inferring the interrelationships (sequential, comparative, or cause and effect) among people, ideas, facts, or perspectives within texts.

Meaning of Words questions focus on determining the meaning of words, phrases, or statements in context. Questions do not ask for the rote recall of definitions of vocabulary words; rather, they ask students to determine how particular words, phrases, and statements are used within a given piece of writing. Students may have to distinguish between literal and figurative uses of language, between words with subtle differences in connotation, or between everyday and specialized uses of words or phrases.

Generalizations and Conclusions questions focus on using information in a text to come up with general statements or reasoned judgments about people, ideas, concepts, facts, or perspectives. These questions can be based on as little as a single sentence within a text or as much as the entire text.

Science. The questions in the Science tests measure students' mastery of the interpretation, analysis, evaluation, reasoning, and problem-solving skills required in the natural sciences. The questions require students to recognize and understand the basic features of, and concepts related to, the provided information; to examine critically the relationships between the information provided and the conclusions drawn or hypotheses developed; and to generalize from given information to gain new information, draw conclusions, or make predictions. The questions emphasize scientific reasoning skills rather than recall of scientific content, skill in mathematics, or pure reading ability. The tests pose the kinds of questions that college students of science must answer in planning, carrying out, and evaluating scientific investigations and in studying scientific theories.

Writing. The ACT Writing Test is an achievement test designed to measure students' writing proficiency. It was developed to reflect the type of writing found in rigorous high school writing curricula and expected of students entering first-year college composition courses. The Writing Test consists of one writing prompt that briefly states an issue and describes two points of view on that issue. Students are

asked to write in response to a question about their position on the issue described in the writing prompt. In doing so, students may adopt one or the other of the perspectives described in the prompt, or they may present a different point of view on the issue. Students' scores are not affected by the point of view they take on the issue. Prompts are designed to be appropriate for response in a 30-minute timed test and to reflect students' interests and experiences.

EPAS Score Scales

The English, Mathematics, Reading, and Science tests within EPAS are each scored on a common score scale ranging from 1 (lowest) to 25 for EXPLORE, 32 for PLAN, and 36 for the ACT. The optional ACT Writing Test is scored on a scale ranging from 2 (lowest) to 12. Students receive both total test scores and subtest scores in each of the EPAS programs. For example, the ACT reports a minimum of 12 scores: 4 test scores (English, Mathematics, Reading, and Science), one composite score, and 7 subscores (2 in English, 3 in Mathematics, 2 in Reading). The ACT also reports 3 additional scores to students who take the optional Writing Test: Writing Test score, combined English/Writing score, and narrative comments offered to help students improve their writing.

ACT's Recommended Core Curriculum

The core curriculum recommended by ACT is based on the curriculum proposed in *A Nation at Risk* (National Commission on Excellence in Education, 1983). ACT has long held that the core curriculum best prepares students for college or other forms of postsecondary training. The courses that constitute ACT's definition of the core curriculum, by subject area, are:

▼ English (four years or more)—One year credit each for English 9, English 10, English 11, and English 12;

▼ Mathematics (three years or more)—One year credit each for Algebra I, Algebra II, and Geometry. One half-year credit each for Trigonometry, Calculus, or other mathematics courses beyond Algebra II (e.g., Computer Mathematics, Computer Science);

▼ Social studies (three years or more)—One year credit each for U.S. History, World History, and U.S. Government. One half-year credit each for Economics, Geography, Psychology, and other History (e.g., European, State); and

▼ Natural sciences (three years or more)—One year credit each for General/Physical/Earth Science, Biology, Chemistry, and Physics.

ACT's College Readiness Benchmarks

ACT works with colleges to help them develop guidelines that place students in courses that are appropriate for their level of achievement as measured by the ACT. In doing this work, ACT has gathered course grade and test score data from a large number of first-year students and across a wide range of postsecondary institutions. These data provide an overall measure of what it takes to be successful in a standard first-year college course. Data from 98 institutions and more than 90,000 students were used to establish ACT's College Readiness Benchmarks, which are median course placement scores that are directly reflective of student success in a college course.

Success here is defined as approximately a 75 percent chance that a student will earn a grade of C or better, and approximately a 50 percent chance that a student will earn a grade of B or better. The courses are the ones most commonly taken by first-year college students in the areas of English, mathematics, social sciences, and natural sciences, namely English Composition; Algebra; History, Psychology, Sociology, Political Science, and Economics; and Biology, respectively. The ACT scores established as College Readiness Benchmarks are 18 on the English Test, 22 on the Mathematics Test, 21 on the Reading Test, and 24 on the Science Test.

ACT College Readiness Benchmarks

College Course	EXPLORE	PLAN	ACT
English	13	15	18
Mathematics	17	19	22
Reading	15	17	21
Science	20	21	24

The entry-level courses that were used to establish the College Readiness Benchmark for Reading (History, Psychology, Sociology, Political Science, and Economics) are each typically reading intensive. As such, course success is often based upon a student's ability to comprehend, analyze, and synthesize both the content and the context of the material presented.

The College Readiness Benchmarks were based upon a sample of postsecondary institutions from across the U.S. The data from these institutions were weighted to reflect postsecondary institutions nationally. The Benchmarks are median course placement values for these institutions and as such represent a *typical* set of expectations. ACT will work with individual postsecondary institutions, or groups of institutions within a state, to conduct validation studies to establish local benchmarks that take specific institutional and student characteristics into account.

We have also established scores on EXPLORE and PLAN that correspond to the College Readiness Benchmarks for the ACT, these scores indicating, based on their performance on EXPLORE (grade 8) and PLAN (grade 10), whether students are on track to being ready for college-level work when they graduate from high school. In EXPLORE these scores are 13 on the English Test, 17 on the Mathematics Test, 15 on the Reading Test, and 20 on the Science Test; in PLAN, the scores are 15 on the English Test, 19 on the Mathematics Test, 17 on the Reading Test, and 21 on the Science Test.

ACT's College Readiness Standards

ACT's College Readiness Standards provide a description of the knowledge and skills students are likely to possess based on their scores on EXPLORE, PLAN, and the ACT. The particular College Readiness Standards associated with the ACT College Readiness Benchmarks identify the knowledge and skills students must have in order to succeed in first-year college courses in English, mathematics, natural sciences, and social sciences. The Standards are a set of statements that interpret EPAS scores according to the knowledge and skills students in each score range have likely mastered. The Standards relate the scores to the types of skills needed for success in high school and beyond. On the following pages, Figure 15 shows the ACT College Readiness Standards for Reading. (College Readiness Standards for all the EPAS tests are available on the Internet at **www.act.org/standard/index.html**.)

These standards refer to the knowledge and skills students demonstrate on EPAS Reading tests in various score ranges and as such demonstrate the increasing complexity of skills across the Reading Test score ranges. Provided with the Standards are statements that suggest learning experiences from which students in a particular ACT score range are likely to benefit. These statements were developed as suggested learning strategies to support and facilitate progress between the Standards in one score range and those in the next higher score range.

College Readiness Standards—Reading

	Main Ideas and Author's Approach	Supporting Details	
13-15	Recognize a clear intent of an author or narrator in uncomplicated literary narratives	Locate basic facts (e.g., names, dates, events) clearly stated in a passage	
16-19	Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives	Locate simple details at the sentence and paragraph level in uncomplicated passages Recognize a clear function of a part of an uncomplicated passage	
20-23	Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages	Locate important details in uncomplicated passages Make simple inferences about how details are used in passages	
24-27	Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages Infer the main idea or purpose of straightforward paragraphs in more challenging passages Summarize basic events and ideas in more challenging passages Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages	Locate important details in more challenging passages Locate and interpret minor or subtly stated details in uncomplicated passages Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages	
28-32*	Infer the main idea or purpose of more challenging passages or their paragraphs Summarize events and ideas in virtually any passage Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in virtually any passage	Locate and interpret minor or subtly stated details in more challenging passages Use details from different sections of some complex informational passages to support a specific point or argument	
33-36**	Identify clear main ideas or purposes of complex passages or their paragraphs	Locate and interpret details in complex passages Understand the function of a part of a passage when the function is subtle or complex	

Descriptions of the EPAS (EXPLORE, PLAN, and ACT) Reading Passages

Uncomplicated Literary Narratives refers to excerpts from essays, short stories, and novels that tend to use simple language and structure, have a clear purpose and a familiar style, present straightforward interactions between characters, and employ only a limited number of literary devices such as metaphor, simile, or hyperbole.

More Challenging Literary Narratives refers to excerpts from essays, short stories, and novels that tend to make moderate use of figurative language, have a more intricate structure and messages conveyed with some subtlety, and may feature somewhat complex interactions between characters.

Complex Literary Narratives refers to excerpts from essays, short stories, and novels that tend to make generous use of ambiguous language and literary devices, feature complex and subtle interactions between characters, often contain challenging context-dependent vocabulary, and typically contain messages and/or meanings that are not explicit but are embedded in the passage.

* PLAN only
** PLAN and ACT only

Sequential, Comparative, and Cause-Effect Relationships	Meanings of Words	Generalizations and Conclusions
Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages Recognize clear cause-effect relationships described within a single sentence in a passage	Understand the implication of a familiar word or phrase and of simple descriptive language	Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives
Identify relationships between main characters in uncomplicated literary narratives Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives	Use context to understand basic figurative language	Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages
Order simple sequences of events in uncomplicated literary narratives Identify clear relationships between people, ideas, and so on in uncomplicated passages Identify clear cause-effect relationships in uncomplicated passages	Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages	Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages Draw simple generalizations and conclusions using details that support the main points of more challenging passages
Order sequences of events in uncomplicated passages Understand relationships between people, ideas, and so on in uncomplicated passages Identify clear relationships between characters, ideas, and so on in more challenging literary narratives Understand implied or subtly stated cause-effect relationships in uncomplicated passages Identify clear cause-effect relationships in more challenging passages	Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages	Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives Draw generalizations and conclusions about people, ideas, and so on in more challenging passages
Order sequences of events in more challenging passages Understand the dynamics between people, ideas, and so on in more challenging passages Understand implied or subtly stated cause-effect relationships in more challenging passages	Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts	Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on
Order sequences of events in complex passages Understand the subtleties in relationships between people, ideas, and so on in virtually any passage Understand implied, subtle, or complex cause-effect relationships in virtually any passage	Determine, even when the language is richly figurative and the vocabulary is difficult, the appropriate meaning of context-dependent words, phrases, or statements in virtually any passage	Draw complex or subtle generalizations and conclusions about people, ideas, and so on, often by synthesizing information from different portions of the passage Understand and generalize about portions of a complex literary narrative

Uncomplicated Informational Passages refers to materials that tend to contain a limited amount of data, address basic concepts using familiar language and conventional organizational patterns, have a clear purpose, and are written to be accessible.

More Challenging Informational Passages refers to materials that tend to present concepts that are not always stated explicitly and that are accompanied or illustrated by more—and more detailed—supporting data, include some difficult context-dependent words, and are written in a somewhat more demanding and less accessible style.

Complex Informational Passages refers to materials that tend to include a sizable amount of data, present difficult concepts that are embedded (not explicit) in the text, use demanding words and phrases whose meaning must be determined from context, and are likely to include intricate explanations of processes or events.

Additional Annotated Examples of More Challenging and Complex Texts Used on The ACT Reading Test

Figure 16: More Challenging Text (Humanities)

STRUCTURE: While students are likely to be familiar with the question-and-answer format, which is often found in popular magazines, these questions and responses are more abstract and focused on a subject—computer art—with which many students are unlikely to be familiar.

HUMANITIES: This passage is adapted from "When M.I.T. Artist Shouts, His 'Painting' Listens," an interview with Professor John Maeda conducted by Claudia Dreifus that appeared in the July 27, 1999, edition of *The New York Times* (©1999 by The New York Times).

Within the art world, Prof. John Maeda, 32, is an anomaly—a prize-winning graphic designer and kinetic artist with a fistful of engineering degrees from the Massachusetts Institute of Technology.

VOCABULARY: The text uses some difficult general and specialized terms whose meaning is discernible from context: for example, *anomaly* and *kinetic artist*.

From his base in M.I.T.'s Media Laboratory, Professor Maeda uses the computer as a tool and medium to create art that can be produced only digitally and that has the specific look of the new technology. One of his best-known pieces is a drawing called "Time Paint," in which colors fly through space. Another piece, "The Reactive Square," is about squares that change shape when a viewer shouts at them.

Q. *Your last book,* Design by Numbers, *is an art book that is also a manual for a new computer language that you invented to help artists understand the guts of computer design. Why create a whole new computer language?*

A. One reason was that programming languages are made for people to write programs—big applications. For someone just starting out making art on their computers, they don't want this big truck of a system. They just want a simple bicycle that they understand. So I designed the visual equivalent of a simple bicycle. Design by Numbers, D.B.N., was an attempt to demystify the technology behind computer art, to show how simple it is, and that people can do it.

RICHNESS: Maeda makes a rather sophisticated metaphorical comparison between a "big truck of a system" (most programming languages) and "a simple bicycle" (the language Maeda developed) in order to argue that his language fills a need felt by novice computer artists for some basic tools.

Q. *When you are creating your own computer art pieces, do you ever use prepackaged drawing programs?*

A. Oh, yes, all the time. There are all kinds of fine touches that prepackaged software makes easy. I could invent my own finishing system, but this is faster. Of course, the basic ideas, I create.

The problem is that most people can't just "finish" things with this software. They have to use it to start them, also. For much of recent history, people have created with brush, ink, paper—the materials of art. Now that they have begun creating with software and computers, the styles that emerge are homogeneous because the software is universal. Without being able to know how to program, you can't break out of the technology—just like if you don't know how to use brush and ink, you're limited.

For most people, this really isn't a problem; they aren't necessarily looking for anything new. But for people who are seeking the next step, the prepackaged becomes an impossible barrier to break free from.

I make everything I do. Many people are surprised that I don't have a programmer making things for me. And others are surprised that I don't have an artist controlling me, telling me how to program. Because today, people don't realize that it is possible to think and create on the computer. Artists are used to thinking that programming is very hard—impossible.

And technologists are used to thinking that they can never become artists. Me, I just make things. It's just a natural flow of action and thought. If people see, "Oh, he does that," then maybe they'll think, "I can do it too."

Q. *But lots of nonartists use computers for creating images . . .*

A. They are using it as a tool, but not as a material. And to use it as a tool, you need to understand the medium, which means understanding the technology. Young people are changing this, because they have grown up with computers.

Q. *If a conventional artist produces an object on a computer, does that automatically make it art?*

A. It's art, but it's just a painting and no different than conventional art.

It's not intrinsically different or superior just because it was created digitally and it's not digital art. Because digital art starts with an understanding and appreciation of the medium—which, unfortunately, is today programming.

Q. *What did studying in Japan teach you?*

A. The most important thing was to not be embarrassed about who I was. I had always been embarrassed about coming from a manual-labor family. In Japan, I was studying conventional art, and I used my hands all the time. That made me feel in touch with my human side, which I had lost when I came to M.I.T.

Q. *Does the new technology mean the end of art as we know it?*

A. Yes, it does. It represents a new dimension to the way art will be understood or perceived.

It's a departure from appreciating a singular moment. What that means is . . . the reason why we can appreciate art is because most art has a single resting point: canvas.

It's painted. It's dried. It aspires to be perfect. The medium of the computer is continually shifting. It can shift at will, in a microsecond. Or an hour. There's no limit on how it can be taught to change.

> **RELATIONSHIPS**: Maeda discusses the fairly subtle distinction between "art created digitally" and "digital art."

STRUCTURE: Most of the text is given over to a summary of recent findings related to siblicide among hyena cubs, particularly the mother's role. In the process, readers have to learn a fair amount about hyena society and theories attempting to explain the reasons for the siblicide.

NATURAL SCIENCE: This passage is adapted from Vicki Croke's article "Hyenas Trade One Bad Reputation for Another," which appeared in *The Chicago Tribune* on March 4, 1992 (©1992 by Chicago Tribune Company).

After years of close scientific observation in the wild and in captivity, the spotted hyena, long regarded as one of nature's more loathsome creations, is getting a fresh image. But if anything, the new portrait is even more chilling than the old. To their credit, we now know that spotted hyenas hunt as often as they scavenge, so they're not the cowards we had believed them to be. On the other hand, in one of the most startling findings to date, researchers now know that infant cubs often try to kill each other, only moments after birth, and they think the mother may play a biased role in determining the outcome of the battles. How she does this remains a mystery.

STYLE: The author uses a fairly accessible style and an engaged tone to help draw readers in. Such phrases as "even more chilling" are designed to spark a reader's interest. Nevertheless, the author uses such devices as a tool to help convey a rather substantial amount of information about hyenas and their first minutes as cubs.

The spotted hyenas are the only mammals known to habitually commit what researchers call siblicide, says zoologist Laurence G. Frank of the University of California at Berkeley, who discovered the practice during his study of a captive hyena colony in California. Scientists speculate that this form of sibling rivalry may be nature's way of ensuring a healthier adulthood for one cub.

RELATIONSHIPS: The first paragraph summarizes the rest of the text and, as a result, contains a relatively complicated set of statements about hyenas. Important here is a comparison between the old image of hyenas and the "fresh" one. Readers have to keep in mind both the old image and the new information being presented.

The mother gives birth at the opening of a den—usually an abandoned aardvark burrow with a system of tunnels too narrow for her to enter. She often has twins, born about an hour apart. The infants arrive with their eyes wide open and, unlike any other known mammals, with their incisor and canine teeth fully in place. Using its precocious strength, the firstborn will typically sink its teeth into its sibling's back and shake it furiously. Often that encounter is lethal, and if it's not, the aggression continues through the cubs' four-week stay in the den, though with less intensity.

Despite that antisocial beginning, hyenas generally belong to a larger, complex and rigidly structured society called a clan. Females and their offspring occupy the upper rungs of the social ladder. One female has alpha status, meaning she is dominant over all clan members. Males occupy the lowest rungs. Hyenas inherit their mothers' social rank, so even a cub can dominate the lowly adult males. And while females usually stay with their clan for life, most males disperse when they reach puberty at 2, though sons of high-ranking females tend to stay until they are 3 to 5.

VOCABULARY: Most of the language in the text should be fairly accessible to students. Some terms, however, such as *alpha status*, are likely new to many students, and their meanings will have to be gathered from context and definitions provided in the text.

From observing this social system over a period of years, scientists are beginning to understand the reasons for female dominance and siblicide, and they are beginning to guess at a role the mother plays in the outcome of the cubs' rivalry.

Frank has been observing spotted hyenas in the wild for 14 years and, since 1984, in a captive colony in the hills overlooking the Berkeley campus. In the wild, where the cubs spend some time outside the den, Frank had noticed many mixed-sex sets of twins, but few twins of the same sex. He was puzzled, but without easy access to the dens, there were no answers. When he established the captive colony, however, he began to observe some revealing behavior. Within minutes of birth, the older sibling would attack the younger one, often inflicting fatal wounds.

There are a few theories about this lethal competition. Because females stay in the clan and inherit their mother's rank, sisters eventually will compete with one another for dominance. And for males, killing off a brother means sole access to the mother's milk and therefore better health and larger size. For them, size and strength are important to survival and success in joining a strange clan. "The survivor grows faster; that's clear, but that's expensive evolutionarily," Frank says. The killer cub is destroying some of his own gene line, and the mother loses 25 percent of her offspring this way, he explains.

Frank thinks that even though the mother cannot enter the den where the siblings are battling, she may be influencing the outcome. He doesn't know how, but he speculates she may have a biological reason for rearing more sons. Low-ranking females try to ensure the survival of both cubs, Frank says, but alpha females have a preponderance of singleton male cubs. To him, that suggests alpha females may be gambling on a son that, by having many mates, can spread her genes further than a daughter.

All females breed, but there is stiff competition among males for breeding rights. A very fit and strong male can obviously produce more offspring, and spread more of his genetic material. Because an alpha female gets the greatest share of the kill, her offspring do also. That means her sons are more likely to be larger and healthier.

> **RELATIONSHIPS**: Readers have to sort out fact from theory and conjecture in this text. For instance, the author presents as a fact the idea that spotted hyenas hunt as often as they scavenge (see paragraph one), but she identifies as theories the explanations behind the "lethal competition" between cubs.

PURPOSE: The narrator's goal in the text is relatively straightforward: to present a character sketch of her mother.

PROSE FICTION: This passage is adapted from the short story "Mother" by Andrea Lee (©1984 by Andrea Lee).

It was easy for me to think of my mother in connection with caves, with anything in the world, in fact, that was dimly lit and fantastic. Sometimes she would rivet Matthew and me with a tale from her childhood: how, at nine years old, walking home through the cobblestone streets of Philadelphia with a package of ice cream from the drugstore, she had slipped and fallen down a storm drain accidentally left uncovered by workmen. No one was around to help her; she dropped the ice cream she was carrying (something that made a deep impression on my brother and me) and managed to cling to the edge and hoist herself out of the hole. The image of the little girl—who was to become my mother—hanging in perilous darkness was one that haunted me; sometimes it showed up in my dreams.

RICHNESS: The narrator uses rather a large number of images throughout the text, but these images usually have a connection to everyday things in a way that makes them still easily accessible to students. For instance, the first paragraph's scene describing the narrator's mother "hanging in perilous darkness" is made more concrete and vivid by noting that "she dropped the ice cream she was carrying" in order to save herself from falling.

Perhaps her near-fatal tumble was responsible for my mother's lasting attraction to the bizarre side of life. Beneath a sometimes prudish exterior, she quivered with excitement in the same way her children did over newspaper accounts of trunk murders, foreign earthquakes, graves hidden in the New Jersey pine barrens. When she commented on these subjects, she attempted a firm neutrality of tone but gave herself away in the heightened pitch of her voice and in a little breathy catch that broke the rhythm of each sentence she spoke. This was the voice she used to whisper shattering bits of gossip over the phone. "When Mr. Tillet died," I heard her say once, with that telltale intake of breath, "the funeral parlor did such a poor job that his daughter had to *wire her own father together.*"

At home Mama was a housekeeper in the grand old style that disdains convenience, worships thrift, and condones extravagance only in the form of massive Sunday dinners, which, like acts of God, leave family members stunned and reeling. Her kitchen, a long, dark, inconvenient room joined to a crooked pantry, was entirely unlike the cheerful kitchens I saw on television, where mothers who looked like June Cleaver unwrapped food done up in cellophane. This kitchen had more the feeling of a workshop, a laboratory in which the imperfect riches of nature were investigated and finally transformed into something near sublimity. The sink and stove were cluttered with works in progress: hot plum jelly dripping into a bowl through cheesecloth; chocolate syrup bubbling in a saucepan; string beans and ham bones hissing in the pressure cooker; in a vat, a brownish, aromatic mix for root beer.

The instruments my mother used were a motley assemblage of blackened cast-iron pots, rusty-handled beaters, graters, strainers, and an array of mixing bowls that included the cheapest plastic variety as well as tall, archaic-looking stoneware tubs inherited from my grandmother, who had herself been a legendary cook.

STYLE: The richness of the text comes mainly from its specificity. For example, to illustrate that the narrator's mother was an extravagant cook, we are told that she had a "motley assemblage" of cooking devices. Each broad trait described is supported by numerous such details.

Mama guarded these ugly tools with jealous solicitude, suspicious of any new introductions, and she moved in her kitchen with the modest agility of a master craftsperson.

Like any genuine passion, her love of food embraced every aspect of the subject. She read cookbooks like novels, and made a businesslike note in her appointment book of the date that Wanamaker's received its yearly shipment of chocolate-covered strawberries. Matthew and I learned from her a sort of culinary history of her side of the family: our grandfather, for instance, always asked for calf brains scrambled with his eggs on weekend mornings before he went out hunting. Grandma Renfrew loved to drink clabbered milk, and was so insistent about the purity of food that once when Aunt Lily had served her margarine instead of butter, she had refused to eat at Lily's table for a year. My mother's sole memory of her mother's mother was of the withered woman scraping an apple in the corner of the kitchen, and sucking the pulp between her toothless jaws.

Mama took most pleasure in the raw materials that became meals. She enjoyed the symmetry, the unalterable rules, and also the freaks and vagaries that nature brought to her kitchen. She showed me with equal pleasure the handsome shape of a fish backbone; the little green gallbladder in the middle of a chicken liver; and the double-yolked eggs, the triple cherries, the peculiar worm in a cob of corn. As she enjoyed most the follies, the bizarre twists of human nature and experience, so also she had a particular fondness for the odd organs and connective tissues that others disdained. "Gristle is delectable," she would exclaim as Matthew and I groaned. "The best part of the cow!"

STRUCTURE: Adding somewhat to the richness of the text is that stories are sometimes told within the larger story. For instance, the fifth paragraph recounts part of the family "culinary history": how the narrator's grandfather liked calf brains and how her grandmother was picky enough about food to create a yearlong squabble between her and Aunt Lily.

RICHNESS: The text includes a good deal of historical information about the commons in England and elsewhere.

SOCIAL SCIENCE: This passage, which describes land practices in the commons (tracts of land that belonged to and were used by a community as a whole), and the enclosure movement (when the commons were taken over by private interests and fenced off), is adapted from the essay "The Place, the Region, and the Commons" by Gary Snyder, which is included in his book *The Practice of the Wild* (©1990 by Gary Snyder).

I stood with my climbing partner on the summit of Glacier Peak looking all ways round, ridge after ridge and peak after peak, as far as we could see. He said: "You mean there's a senator for all this?" It is easy to think there are vast spaces on earth yet unadministered, perhaps forgotten, or unknown, but it is all mapped and placed in some domain. In North America there is a lot that is in the public domain, which has its problems, but at least they are problems we are all enfranchised to work on.

American public lands are the twentieth-century incarnation of a much older institution known across Eurasia—in English called the "commons"—which was the ancient mode of both protecting and managing the wilds of the self-governing regions. It worked well enough until the age of market economies, colonialism, and imperialism. Let me give you a kind of model of how the commons worked.

Between the extremes of deep wilderness and the private plots of the farmstead lies a territory which is not suitable for crops. In earlier times it was used jointly by the members of a given tribe or village. This area, embracing both the wild and the semi-wild, is of critical importance. It is necessary for the health of the wilderness because it adds big habitat, overflow territory, and room for wildlife to fly and run. It is essential even to an agricultural village economy because its natural diversity provides the many necessities and amenities that the privately held plots cannot. It enriches the agrarian diet with game and fish. The shared land supplies firewood, poles and stone for building, clay for the kiln, herbs, dye plants, and much else. It is especially important as seasonal or full-time open range for cattle, horses, goats, pigs, and sheep.

In the abstract the sharing of a natural area might be thought of as a matter of access to "common pool resources" with no limits or controls on individual exploitation. The fact is that such sharing developed over millennia and always within territorial and social contexts. In the peasant societies of both Asia and Europe there were customary forms that gave direction to the joint use of land. They did not grant free access to outsiders, and there were controls over entry and use by member households. The commons is both specific land *and* the traditional community institution that determines the carrying capacity for its various subunits and defines the rights and obligations of those who use it, with penalties for lapses. Because it is traditional and *local,* it is not identical with today's "public

PURPOSE: The first paragraph might lead a reader to assume that this will be a personal narrative about the author's experience, but in fact the text quickly veers away from direct experience into a history and explanation of the concept of the commons.

STYLE: After the opening paragraph, the text adopts a formal, informative tone in the process of explaining the history and nature of the commons. By the end of the text the tone becomes somewhat more critical as the author relates some of the negative consequences of the enclosure movement. These shifts make reading the text somewhat of a challenge.

VOCABULARY: The text uses a number of terms and concepts related to the commons that are unlikely to be familiar to many students: for example, *agricultural village economy.* The author provides the needed context to understand these terms, but students will likely have to read carefully to understand them.

domain," which is land held and managed by a central government. Under a national state such management may be destructive (as it is becoming in Canada and the United States) or benign, but in no case is it locally managed. One of the ideas in the current debate on how to reform our public lands is that of returning them to regional control.

An example of traditional management: what would keep one household from bringing in more and more stock and tempting everyone toward overgrazing? In earlier England and in some contemporary Swiss villages, the commoner could only turn out to common range as many head of cattle as he could feed over the winter in his own corrals. This meant that no one was allowed to increase his herd from outside with a cattle drive just for summer grazing.

There is a well-documented history of the commons in relation to the village economies of Europe and England. In England from the time of the Norman Conquest the knights and overlords began to gain control over the many local commons. From the fifteenth century on the landlord class increasingly fenced off village-held land and turned it over to private interests. The enclosure movement was backed by the big wool corporations who found profit from sheep to be much greater than that from farming. The wool business had a destructive effect on the soils and dislodged peasants. The arguments for enclosure in England—efficiency, higher production—ignored social and ecological effects and served to cripple the sustainable agriculture of some districts.

The enclosures created a population of rural homeless who were forced in their desperation to become the world's first industrial working class. The enclosures were tragic both for the human community and for natural ecosystems. The fact that England now has the least forest and wildlife of all the nations of Europe has much to do with the enclosures.

RELATIONSHIPS: The last two paragraphs detail a rather subtle sequence of events involving the enclosure movement and some of its consequences. Readers not only have to pay attention to what happened but also to cause-effect relationships such as the ecological damage done to England as a result of enclosure.

PURPOSE: While this story has some familiar narrative elements, such as characters and suspense, its real purpose is to illustrate a larger point: that a person can connect "the interior life" and the outer world or, for a time anyway, choose to live inside his or her mind.

HUMANITIES: This passage is adapted from the essay "The Interior Life" by Annie Dillard, which appeared in her book *An American Childhood* (©1987 by Annie Dillard).

The interior life is often stupid. Its egoism blinds it and deafens it; its imagination spins out ignorant tales, fascinated. It fancies that the western wind blows on the Self, and leaves fall at the feet of the Self for a reason, and people are watching. A mind risks real ignorance for the sometimes paltry prize of an imagination enriched. The trick of reason is to get the imagination to seize the actual world—if only from time to time.

When I was five, I would not go to bed willingly because something came into my room. My sister Amy, two years old, was asleep in the other bed. What did she know? She was innocent of evil. There was no messiness in her, no roughness for things to cling to, only a charming and charmed innocence that seemed then to protect her, an innocence I needed but couldn't muster. Since Amy was asleep, furthermore, and since when I needed someone most I was afraid to stir enough to wake her, she was useless.

VOCABULARY: Much of the language the author uses—"charming and charmed innocence," for example—is both difficult and self-consciously artistic, requiring students to read carefully and to reason the meaning of many words and phrases from context.

I lay alone and was almost asleep when the thing entered the room by flattening itself against the open door and sliding in. It was a transparent, luminous oblong. I could see the door whiten at its touch; I could see the blue wall turn pale where it raced over it, and see the maple headboard of Amy's bed glow. It was a swift spirit; it was an awareness. It made noise. It had two joined parts, a head and a tail. It found the door, wall, and headboard; and it swiped them, charging them with its luminous glance. After its fleet, searching passage, things looked the same, but weren't.

STRUCTURE: This text has a sophisticated structure. At the center of the text is a narrative about how the author came to realize that the "transparent, luminous oblong" that had come into her childhood bedroom at least once a night, and that she had so feared, was in fact the headlights of a passing car.

I dared not blink or breathe. If it found another awareness, it would destroy it.

Every night before it got to me it gave up. It hit my wall's corner and couldn't get past. It shrank completely into itself and vanished. I heard the rising roar it made when it died or left. I still couldn't breathe. I knew that it could return again alive that same night.

Sometimes it came back, sometimes it didn't. Most often, restless, it came back. The light stripe slipped in the door, ran searching over Amy's wall, stopped, stretched lunatic at the first corner, raced wailing toward my wall, and vanished into the second corner with a cry. So I wouldn't go to bed.

It was a passing car whose windshield reflected the corner streetlight outside. I figured it out one night.

Figuring it out was as memorable as the oblong itself. Figuring it out was a long and forced ascent to the very rim of being, to the membrane of skin that both separates and connects the inner life and the outer world. I climbed deliberately from the depths like a diver who releases the monster in his arms and hauls himself hand over hand up an anchor chain till he meets the ocean's sparkling membrane and bursts through it; he sights the sunlit, becalmed hull of his boat, which had bulked so ominously from below.

I recognized the noise it made when it left. That is, the noise it made called to mind, at last, my daytime sensations when a car passed—the sight and noise together. A car came roaring down hushed Edgerton Avenue in front of our house, stopped, and passed on shrieking as its engine shifted up the gears. What, precisely, came into the bedroom? A reflection from the car's oblong windshield. Why did it travel in two parts? The window sash split the light and cast a shadow.

Night after night I labored up the same long chain of reasoning, as night after night the thing burst into the room where I lay awake.

There was a world outside my window and contiguous to it. Why did I have to keep learning this same thing over and over? For I had learned it a summer ago, when men with jackhammers broke up Edgerton Avenue. I had watched them from the yard. When I lay to nap, I listened. One restless afternoon I connected the new noise in my bedroom with the jackhammer men I had been seeing outside. I understood abruptly that these worlds met, the outside and the inside. "Outside," then, was conceivably just beyond my windows.

The world did not have me in mind. It was a coincidental collection of things and people, of items, and I myself was one such item—a child walking up the sidewalk, whom anyone could see or ignore. The things in the world did not necessarily cause my overwhelming feelings; the feelings were inside me, beneath my skin, behind my ribs, within my skull. They were even, to some extent, under my control.

I could be connected to the outer world by reason, if I chose, or I could yield to what amounted to a narrative fiction, to a show in light projected on the room's blue walls.

RICHNESS: Concepts such as "I could yield to what amounted to a narrative fiction, to a show in light projected on the room's blue walls"—even the very idea of an interior life as the author defines it—are likely unfamiliar to many students.

RICHNESS: The text is replete with names, terms, and concepts.

SOCIAL SCIENCE: Adapted from Ronald W. Smith and Frederick W. Preston, *Sociology: An Introduction*. © 1977 by St. Martin's Press, Inc.

Discussions over whether or not human behavior differs from all other forms of animal behavior have been a part of sociology from its beginning. During the late 1930s, when sociology finally became accepted in the academic establishment, the question took on new importance. George A. Lundberg, the most famous and articulate spokesperson for the school that views sociology as a pure science (like physics), was roundly criticized by Robert M. MacIver, a sociologist who for many years had maintained that human life is unique and that therefore the methods of a science of society must be distinct from those of other sciences. . . .

That particular debate has never been fully resolved, nor can it be. The behavior of human beings is, no doubt, exceedingly complex when compared to that of many other forms of life. Yet even if we accept the notion that human behavior is unique, many of the assumptions of a science of society are still valid. The scientific demands for rigor and careful collection of data are very much a part of sociology. It is in this sense that almost all scholars agree sociology is a science. Practitioners of the discipline are careful to back their statements about behavior with observations. It is not enough to state that you feel or think that the middle class believes this or that. It is necessary, if you are acting as a scientist, to (1) define what you mean by "the middle class" and (2) describe the procedures you used in collecting and analyzing the data that led you to make a particular statement about the beliefs of that group.

What we are noting here is that science is, in part, a system which requires rigorous and precise definitions as well as empirical (observational) evidence. Utilizing such a system of organized facts, collected in an agreed-upon and repeatable manner, sociologists have gathered an impressive amount of information over the years. They can explain what groups tend to behave in certain ways and why. They can demonstrate that much of what is thought to be common sense and "a known fact" may really be nonsensical and factually inaccurate when examined in a scientific manner. . . .

Despite the impressive collection of data sociology has available to it today, MacIver's reservations about the possibility of a science of society are still shared by a number of sociologists. Many feel that sociologist can understand the critical elements in human interaction only by taking the role of the other—by perceiving the world from one point of view of the subject of their investigation. This perspective, of course, does not mean that one must *be* the subject of investigation. To use two analogies from pure science, one does not have to *be* a molecule to understand the relationships of chemical equations; nor does one have to give birth to understand the process of birth. . . .

PURPOSE: The text is complex in no small part because it lacks an immediately obvious thesis statement or clear-cut controlling purpose. The first paragraph might lead readers to think that the focus of the text is on human versus animal behavior, but the true focus is revealed later on when the authors move to the question of to what degree sociology is a science.

STRUCTURE: Like the purpose, the structure is revealed only by a careful reading. The first paragraph might suggest that the text will present two sides of a debate on the uniqueness (or lack thereof) of human behavior, with Lundberg and MacIver playing central roles. But that debate is only a backdrop for the central issue: to what degree sociology is a science.

VOCABULARY: There are a large number of both uncommon and familiar words used in specialized ways in the text: for example, *empirical* and *repeatable*.

Sociologists who stress taking the role of the other consider their subject more an art than a science. They emphasize the difference between scientific knowledge and artistic understanding. *Knowledge* pertains to what we grasp intellectually—facts. *Understanding* refers to what might be called gut-level acquaintance. . . .

The distinction between knowledge and understanding is a major difference between sociology as science and sociology as art. In addition, there are important differences in method. Sociologists as scientists are more concerned with certain criteria of formal scientific inquiry. In particular, they feel they must conduct their investigations in such manner that another person could exactly duplicate, or *replicate*, the process. . . .

Sociologists as artists, by contrast, are less concerned with factual data and the ability to have an investigation replicated. In a study on alcoholism, they might utilize literary works, informal interviews, participant observation (the researcher lives among and observes the subjects), and other techniques more geared to feeling as an alcoholic feels than to describing alcoholics. They would not make the assumption that anyone trained in such techniques of investigation could duplicate the process and achieve the same results. However, the sociologist as artist does not ignore the principles of scientific inquiry. . . . The investigator may perceive this world as an artist, but he or she must describe it in an orderly and rigorous manner as a scientist.

RELATIONSHIPS: In the last three paragraphs, the authors contrast the concepts of knowledge and understanding, two words that are often used interchangeably in everyday speech. Appreciating the subtle distinction the authors make is critical to appreciating the difference between sociology as art and sociology as science.

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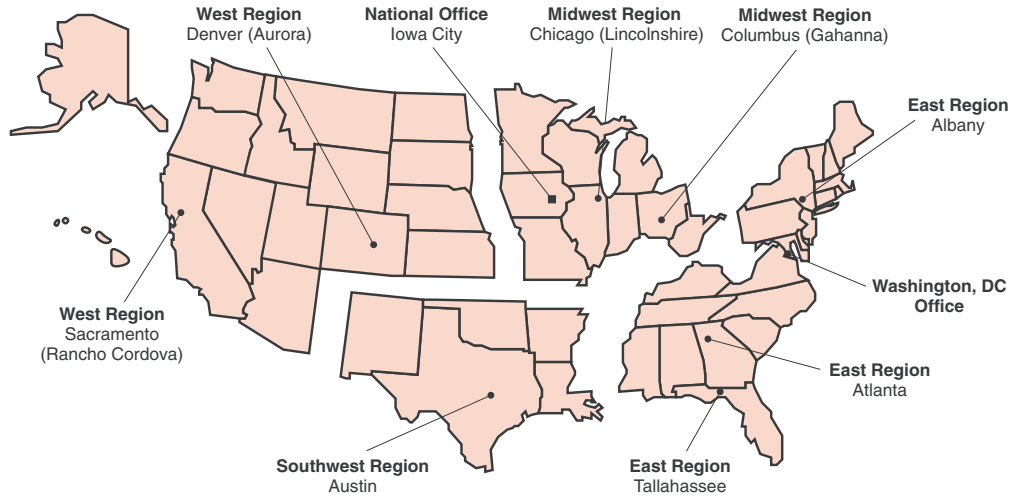
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