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ABSTRACT

To assess the reading achievement of American school children, the National Assessment of Educational Progress (NAEP) surveyed nationally representative samples of approximately 13,000 students at grades 4, 8, and 12 attending public and private schools across the nation. Students read a variety of literary and informative passages and then answered a series of multiple-choice and open-ended questions designed to measure their ability to read and comprehend these passages. In addition, students provided background information about their reading experiences both in and out of school. To supplement this information, the teachers of fourth graders participating in the assessment completed a questionnaire about the instruction their students received. Findings indicated that: (1) the average reading proficiency of students increased substantially from grades 4 to 8 and less dramatically from grades 8 to 12; (2) at all three grade levels, there were great differences in reading proficiency according to socioeconomic status; (3) more proficient readers reported home and school environments that emphasized academic achievement; (4) students reported doing very little reading in school and for homework; (5) students' interest in books seems to decrease as they progress through school; (6) emphasis on beginning reading instruction in grades 1, 2, and 3 is overwhelmingly phonics-based; (7) instruction for most fourth graders is based on a single basal reader; and (8) reasoning activities are not emphasized in class. (Extensive tables of data are included; a procedural appendix and an appendix of data are attached.) (NKA)

ED317990

THE NATION'S REPORT CARD

Learning to Read in Our Nation's Schools:

INSTRUCTION AND ACHIEVEMENT IN 1988 AT GRADES 4, 8, AND 12

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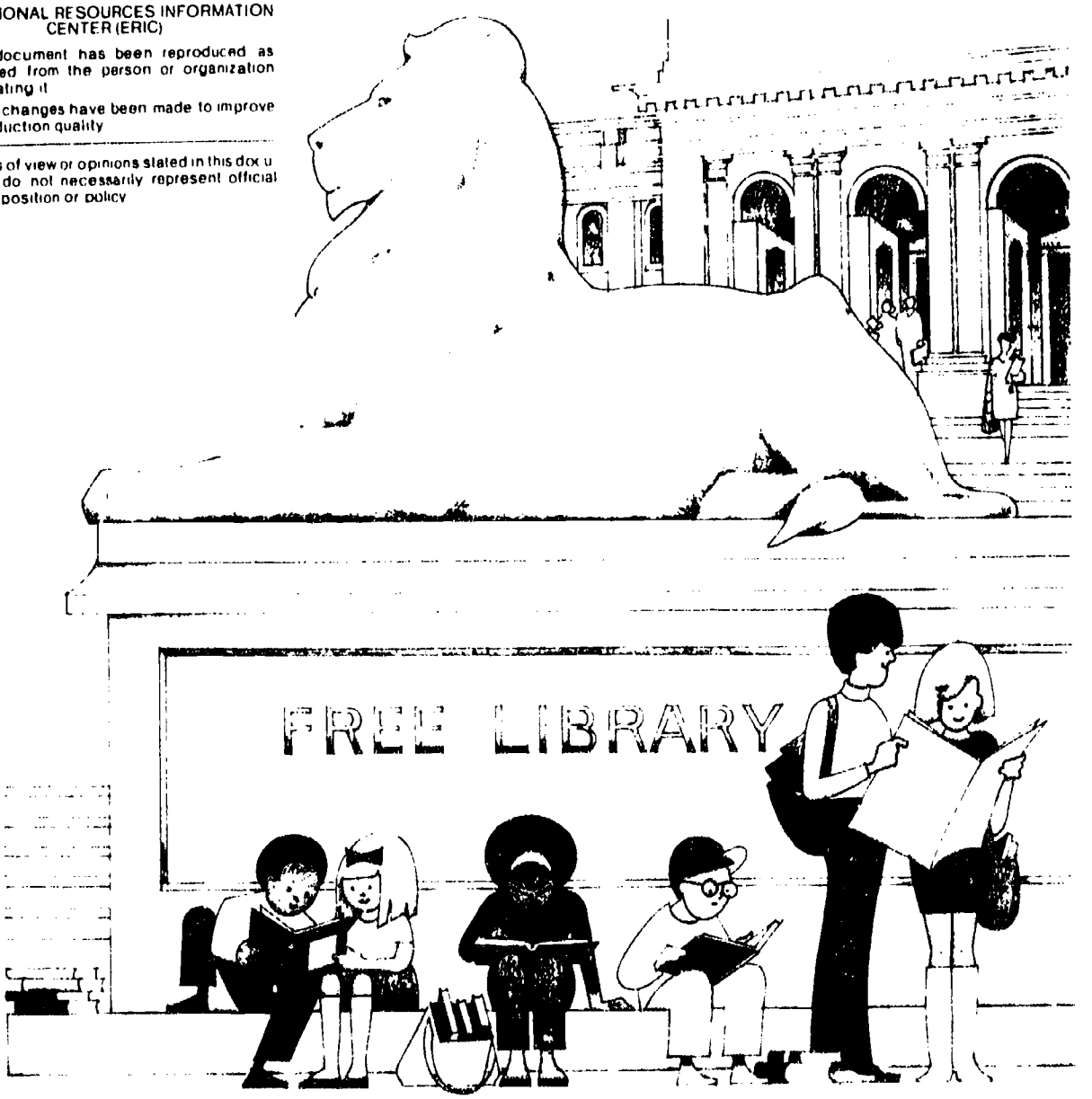

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What is The Nation's Report Card?

The Nation's Report Card, the National Assessment of Educational Progress (NAEP), is the only nationally representative and continuing assessment of what America's students know and can do in various subject areas. Since 1969-70, assessments have been conducted periodically in reading, mathematics, science, writing, history/geography, and other fields. By making objective information on student performance available to policymakers at the national, state, and local levels, NAEP is an integral part of our nation's evaluation of the condition and progress of education. Only information related to academic achievement is collected under this program. NAEP guarantees the privacy of individual students and their families.

NAEP is a congressionally mandated project of the National Center for Education Statistics, the U.S. Department of Education. The Commissioner of Education Statistics is responsible, by law, for carrying out the NAEP project through competitive awards to qualified organizations. NAEP reports directly to the Commissioner, who is also responsible for providing continuing reviews, including validation studies and solicitation of public comment, on NAEP's conduct and usefulness.

In the 1988 Amendments, Congress created the National Assessment Governing Board (NAGB) to formulate the policy guidelines for NAEP. The board is responsible for selecting the subject areas to be assessed, which may include adding to those specified by Congress; identifying appropriate achievement goals for each age and grade; developing assessment objectives; developing test specifications; designing the assessment methodology; developing guidelines and standards for data analysis and for reporting and disseminating results; developing standards and procedures for interstate, regional, and national comparisons; improving the form and use of the National Assessment; and ensuring that all items selected for use in the National Assessment are free from racial, cultural, gender, or regional bias.

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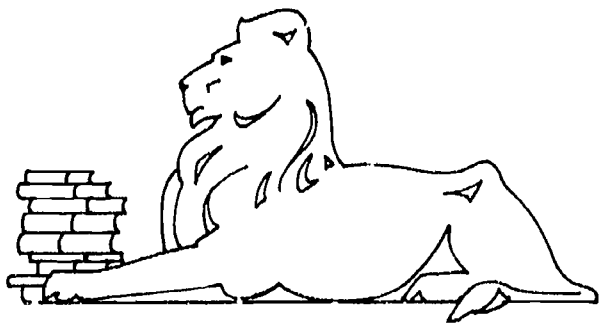

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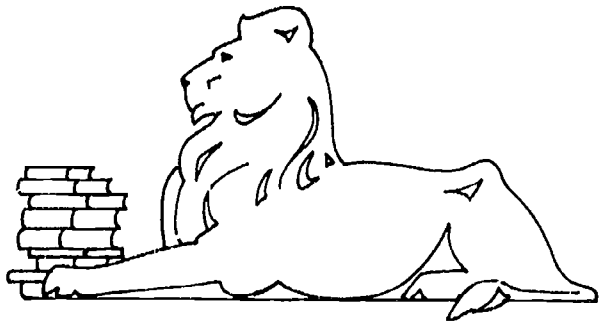
Learning to Read in Our Nation's Schools:

INSTRUCTION AND ACHIEVEMENT IN 1988 AT GRADES 4, 8, AND 12



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JUNE 1990

THE NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS

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OVERVIEW

This report from The Nation's Report Card is based on a 1988 assessment of the reading achievement of American schoolchildren conducted by the National Assessment of Educational Progress (NAEP). The survey involved nationally representative samples of approximately 13,000 students at grades 4, 8, and 12 attending public and private schools across the nation.

Students were asked to read a variety of literary and informative passages and then to answer a series of multiple-choice and open-ended questions designed to measure their ability to read and comprehend these passages. Some multiple-choice questions asked them to identify the overall message or author's purpose in a reading passage. Other questions asked them to identify specific information, such as plot elements. The open-ended questions required students to extend the meaning they initially constructed from the text — for example, by discussing the moral of a story or by describing the nature of certain events. In addition, students were asked to provide background information about their experiences with reading, such as the types of reading they did in and out of school, the nature of the instruction they received, and their home support for reading. This report focuses on the background factors that are thought to be most closely related to reading performance, including students' demographic characteristics, reading experiences, and reading instruction.

To supplement the information reported by students, the teachers of fourth graders participating in the assessment were asked to complete a questionnaire about the instruction their students received. The teachers were asked to identify the ability level of each student's reading class, and to provide information about assignments, resources, and instructional emphases. Thus, for the first time, NAEP can examine the relationship between students' reading performance and the instruction they receive, as reported by their teachers.

Major Findings

- The average reading proficiency of American schoolchildren increased substantially from grade 4 to grade 8, and somewhat less dramatically between grades 8 and 12. In general, students appeared to have great difficulty with tasks that asked them to explain or elaborate on what they had read, and less difficulty with questions asking about overall meaning and specific details.

- At all three grade levels assessed, there were large differences in reading proficiency according to socioeconomic status. Twelfth-grade students from disadvantaged urban schools performed, on average, below the level of eighth-grade students from advantaged urban schools. Similarly, Black and Hispanic students did less well than White students at all three grade levels assessed.

- More proficient readers reported home and school environments that emphasized academic achievement. More homework, more required reading, and more advanced coursework all seemed to be associated with higher reading performance, as did attendance in preschool and kindergarten.

- Students reported doing very little reading in school and for homework. At all three grade levels assessed, approximately half of the students (47 to 61 percent) reported reading 10 or fewer pages each day for schoolwork across the curriculum.

- Not all students are "hooked on books," and their interest in books seems to decrease as they progress through school. Three-quarters of the fourth-grade students reported reading for fun at least weekly, but only half of the twelfth-grade students reported doing so. Fewer students in the upper grades reported having more than 20 books of their own. Also, students at grades 8 and 12 reported using the library to take out books much less frequently than did fourth-grade students. Two-thirds of the fourth graders said they used the library at least weekly, compared to 24 percent of the eighth graders and 12 percent of the twelfth graders.

- Students seem to prefer television over books. Sixty-nine percent of the fourth graders reported watching three hours or more of television each day, while less than half (46 percent) reported reading for pleasure on a daily basis.

- Students who reported more access to reading materials — including books and magazines of their own, as well as other reading materials available in their homes — had higher average reading proficiency than students who did not report as much access to such reading materials.

- Approximately one-third of the eighth and twelfth graders reported never discussing reading at home, and these students had significantly lower reading proficiency.

- According to the fourth-grade teachers surveyed, the emphasis in beginning reading instruction in grades 1, 2, and 3 was overwhelmingly on phonics-based or eclectic approaches.

- Instruction for most fourth-grade students is based on a single basal reader, with other books and magazines available for supplementary reading. As part of their reading instruction, 79 percent of the students are assigned to ability-based reading groups. Of their instructional time, typically one hour each day, almost half is spent in small groups. Yet, 28 percent of the students are never or rarely asked to discuss their reading in small groups.

- According to their teachers, 28 percent of the fourth graders receive daily instruction on word-attack skills and 40 percent receive daily instruction on vocabulary. Fifty-seven percent receive workbook or skill-sheet assignments every day.

- Higher-level reasoning activities, such as discussing, analyzing, or writing about what they have read, are reportedly not emphasized routinely for students. Further, most students reported having little difficulty understanding their reading and literature texts.

- Additional information provided by fourth-grade reading teachers indicated they are experienced and well trained. They reported considerable autonomy in decisions about the sequence of classroom instruction, but little in their choices of what to teach. More students attending disadvantaged urban schools had teachers who reported limited autonomy.

The information provided by students and teachers gives an indication of how reading is being taught in American schools. Students across the grades appear to spend little time each week reading for school or for pleasure on their own. Fourth-grade teachers report using skill sheets and workbook exercises — particularly with students in lower ability classes — on a more regular basis than any other instructional resource. It may not be surprising, then, that students' performance was quite low on assessment items that required organizational skills and the ability to synthesize information.

A Note on Interpretations

Information about students' performance in the 1988 NAEP reading assessment was based on a wide range of reading materials, including literary and informational passages covering a number of subject areas. The passages varied in length from brief selections on a single concept to complex passages about specialized topics in science or social studies. Comprehension of these passages was assessed by items ranging from multiple-choice questions asking students to identify basic information to open-ended questions asking them to interpret and explain what they had read.

The Nation's Report Card presents information on the performance of groups of students, not individuals. The two measures of achievement included in this report are students' average reading performance on the NAEP reading scale, and the percentages of students responding correctly to particular subsets of the reading questions. The NAEP reading scale summarizes students' performance on a 0 to 500 scale that allows for direct comparisons across the grades and among subgroups of the population assessed. (See the Procedural Appendix for further information.)

Because achievement results are based on samples, they are necessarily estimates. Like all estimates based on surveys, they are subject to sampling error as well as measurement error. NAEP computes standard errors using a complex procedure that estimates the sampling error and other random error associated with the observed assessment results. The standard errors indicated in the tables in this report were used to construct 95 percent confidence intervals around the estimated results. Thus, it can be said with approximately 95 percent certainty that for each population of interest, the average reading proficiency is within ± 2 standard errors of the estimated value.

No one can control all the possible variables that influence a survey. Nor can all factors that influence achievement be considered in any particular interpretation of the data, because any particular relationship between students' achievement and their characteristics and experiences may be explained in more than one way. While the interpretive comments in this report represent the best professional judgments of NAEP staff and consultants, they must stand the tests of reason and critical discussion. It is hoped that the information contained in this report will stimulate interest in gaining a more thorough understanding of the results, and motivate educators and the general public to take appropriate action.

This report is divided into two parts. Part I focuses on the relationships between students' overall reading performance and a variety of demographic and academic factors. The chapters in this section also include information on the perceptions of teachers and students on current emphases and practices in reading, and on the relationship between these factors and students' reading performance. Part II presents an analysis of student performance on the individual reading tasks included in the 1988 assessment.

I WHO READS BEST?

Demographic, School, Home, and Instructional Factors Related to Reading Achievement

The first part of this report comprises four chapters that describe the average reading proficiency of fourth, eighth, and twelfth graders in relation to their background characteristics and the nature of the reading instruction they receive. Chapter 1 compares overall reading proficiency across the grades and across subpopulations defined by race/ethnicity, gender, and region, as well as by a variety of home and school characteristics. Chapter 2 summarizes information on students' reading experiences. Chapter 3 discusses student and teacher reports of reading instructional practices. For the first time, NAEP is able to link students' performance to descriptions of what happens in the classroom as reported by their teachers. Chapter 4 provides additional information about the characteristics of fourth graders' reading teachers.

1 Demographic and Academic Factors Related to Reading Achievement

To measure students' reading proficiency, NAEP based the 1988 assessment on a wide range of reading materials and tasks. The passages chosen were diverse, including literary and expository selections from a variety of subject areas and a variety of sources, such as books and periodicals. They ranged in length from brief passages expressing a single concept to long, complex articles about relatively specialized topics in science or social studies. Comprehension of these passages was assessed in a variety of ways, ranging from multiple-choice questions asking students to identify basic information to open-ended questions asking them to interpret and explain what they had read.

For the present report, NAEP used techniques based on item response theory (IRT) to estimate reading performance at the three grade levels on a common scale ranging from 0 to 500. The scale allows comparisons of performance between grade levels and among subgroups in the population. (See the Procedural Appendix for further information.)

NAEP assessments make it possible to examine the relationships between student proficiency and a wide variety of background factors, relating performance to one or several variables at a time. The selection of background questions included in the NAEP assessments is guided by the wide body of available research about factors influencing student learning. Thus, the NAEP survey results — based on large samples of students — often help to confirm our understanding of how school and home factors relate to achievement. Although the effects of schooling are of prime concern, these analyses do not reveal the underlying causes of the relationships between background factors and performance. Therefore, the NAEP assessment results are most useful when they are considered in light of other knowledge about the educational system, such as trends in instruction, in the school-age population, and in societal demands and expectations.

Results for the Nation and Demographic Subgroups

NAEP typically reports performance for the nation as a whole and for demographic subgroups defined by race/ethnicity, region, size and type of school community, and gender. The average reading proficiency results for these variables are summarized in TABLE 1.1.

TABLE 1.1

Average Reading Proficiency for Students in Grades 4, 8, and 12 for the Nation and Subpopulations

	Average Reading Proficiency		
	Grade 4	Grade 8	Grade 12
Nation	230.4 (1.1)	262.8 (1.0)	287.1 (0.8)
Race/Ethnicity			
White	238.1 (1.2)	269.2 (1.3)	292.6 (1.0)
Black	210.6 (1.9)	245.7 (2.0)	270.3 (1.6)
Hispanic	209.9 (2.4)	243.6 (2.1)	267.1 (2.4)
Region			
Northeast	233.1 (2.8)	268.1 (1.8)	287.0 (2.1)
Southeast	224.4 (2.5)	259.3 (1.8)	284.3 (1.1)
Central	234.6 (2.2)	264.3 (3.4)	289.3 (1.6)
West	230.2 (2.3)	260.1 (1.4)	287.7 (1.5)
Size and Type of Community			
Advantaged Urban	247.5 (2.9)	273.9 (2.8)	296.0 (2.6)
Disadvantaged Urban	208.3 (3.2)	247.4 (2.9)	269.4 (3.0)
Rural	228.3 (2.9)	270.5 (3.4)	287.7 (3.2)
Gender			
Male	226.6 (1.5)	256.4 (1.3)	282.9 (1.1)
Female	234.4 (1.2)	269.6 (1.1)	291.0 (1.1)

Standard errors appear in parentheses. It can be said with approximately 95 percent certainty that for each population of interest, the average reading proficiency is within ± 2 standard errors of the estimated value. **Note:** More detailed information on these subpopulations is provided in the Procedural Appendix.

Results for the nation show, as would be expected, that reading proficiency increases between grades 4 and 8, and again between grades 8 and 12. The difference between grades 4 and 8 is somewhat larger than that between grades 8 and 12 (32 points versus 24 points, respectively, on the proficiency scale), indicating that the growth of reading skills slows somewhat in the high-school years.

Students' average reading proficiency for subpopulations of interest provides a global look at differences in performance. In interpreting these differences, however, it should be recognized that averages tend to mask the full distribution of reading achievement within particular subpopulations. For example, in looking at results for White, Black, and Hispanic students, it is clear that the performance of minority groups historically at-risk for school failure is lower than that of White

students, on average. By grade 12, the average performance of Black and Hispanic students only reaches the level of eighth-grade White students. Nevertheless, at any given grade, some White students were among the least proficient readers and some Black and Hispanic students were among the most proficient. (See the Data Appendix for more detailed information on the distributions of performance for various subpopulations.)

The results indicate that growth in reading achievement across the grade levels is somewhat greater for Black and Hispanic students than for White students, particularly between grades 4 and 8. For example, whereas White students improved 31 points between grades 4 and 8, Black students improved 35 points. Thus, across the grade levels examined, the performance gaps observed between the two groups of minority students and their White counterparts did appear to narrow somewhat. At grade 4, for example, Black students' average reading proficiency was 28 points lower than that of White students; by grade 12, the gap was reduced to 22 points.

In large part, these differences in performance reflect differences in socioeconomic status. The relationships between socioeconomic status and reading proficiency are indicated in the comparisons of average reading proficiency for students who attend schools in advantaged urban, disadvantaged urban, and extreme rural communities. The average reading proficiencies of students from advantaged and disadvantaged urban communities differed by nearly 40 points at grade 4, a gap that decreased by as much as 14 points at grades 8 and 12. The average performance of students from rural community schools fell between performance by students from the two types of urban community schools at all three grade levels examined.

Regional differences in performance were also evident in the overall results. At grade 4, students from the Southeast averaged nearly 10 points lower in reading proficiency than students from the Central and Northeastern regions. Although average reading performance in the Southeast continued to be somewhat lower than that in other regions at grade 12, the gap was reduced to 5 points on the proficiency scale.

The final set of comparisons in Table 1.1 focuses on gender differences. As in previous NAEP assessments of literacy skills, the average reading proficiency of females is significantly higher than that of males at all three grade levels, with no reduction in the gap at the upper grade levels. The difference in performance went from 8 to 13 points between grades 4 and 8, and then returned to 8 points at grade 12.

Emphasis on Academic Achievement

Whatever subgroups they belonged to, students' levels of performance were related to the extent to which academic achievements were emphasized. Indeed, some of the principal recommendations in the recent school reform movement have focused on ways to increase the emphasis on academic skills. These recommendations have taken many forms, including broadening access to preschool or kindergarten programs, beginning school earlier, requiring more advanced courses, and requiring more homework. The assessment included a number of questions related to these issues; the results are summarized in this section.

Parents' Level of Education

Regardless of their level of education, parents are likely to want their children to do well in school, and to pursue academic careers at least as far as they were able, if not further. Students whose parents are better educated tend to perform better in the NAEP assessments in various subject areas — and the reading results followed this pattern. TABLE 1.2 relates fourth-, eighth-, and twelfth-grade students' average proficiency with information they reported on their parents' highest levels of education.

TABLE 1.2

Average Reading Proficiency by Parents' Highest Level of Education

Parents' Highest Level of Education	Average Proficiency		
	Grade 4	Grade 8	Grade 12
Did not graduate high school	204.4 (3.2)	244.8 (2.2)	271.4 (2.1)
Graduated high school	225.9 (2.1)	256.3 (1.5)	278.2 (1.1)
Some college	240.8 (2.1)	268.6 (1.4)	288.6 (1.2)
Graduated college	240.9 (1.3)	272.7 (1.2)	295.9 (1.2)

Standard errors appear in parentheses. It can be said with approximately 95 percent certainty that for each population of interest, the average reading proficiency is within ± 2 standard errors of the estimated value. **Note:** Parents' Highest Level of Education is a composite variable, developed from responses to two questions on the highest level of education attained by each parent.

At all three grades, there is a clear relationship between parents' level of education and students' reading proficiency. Students who reported that at least one parent had graduated from college averaged from 25 to 37 points higher in reading proficiency than did those who reported that neither parent graduated from high school.

Amount of Homework

Another set of questions related to an emphasis on academic achievement focused on the amount of homework required at grades 4, 8, and 12. Generally, students who reported receiving and completing homework tended to read more proficiently than their classmates who either did not have homework assigned or did not do their homework. However, as has been true in previous assessments, there were differences between grades in the amount of homework associated with the highest levels of reading proficiency (TABLE 1.3).

TABLE 1.3

Average Reading Proficiency and Percentage of Students Reporting Different Amounts of Time Spent on Homework Each Day

Time Spent on Homework	Percentage	Average Proficiency
Grade 4		
Have none	17.4	232.3 (2.2)
Don't do	3.5	203.6 (4.4)
1/2 hour or less	34.2	231.0 (1.4)
1 hour	26.9	235.3 (1.6)
More than 1 hour	18.0	226.1 (2.3)
Grade 8		
Have none	4.6	252.4 (3.7)
Don't do	5.8	238.8 (5.1)
1/2 hour or less	18.6	260.9 (1.5)
1 hour	41.8	265.6 (1.1)
2 hours	19.9	268.8 (1.2)
More than 2 hours	9.3	265.1 (2.0)
Grade 12		
Have none	10.2	269.1 (2.6)
Don't do	9.2	280.7 (2.4)
1/2 hour or less	19.0	287.7 (1.8)
1 hour	32.9	288.4 (0.9)
2 hours	18.3	292.6 (1.6)
More than 2 hours	10.5	296.2 (2.4)

Standard errors appear in parentheses. It can be said with approximately 95 percent certainty that for each population of interest, the average reading proficiency is within ± 2 standard errors of the estimated value.

At grade 4, the highest average reading proficiency was associated with one hour of homework. However, this level of proficiency did not differ extensively from the average proficiency of students who had no homework or who only did about one-half hour of homework each day. Fourth graders who reported working on their homework more than one hour each day tended to have lower reading proficiency than their classmates who reported doing less homework, perhaps because poorer readers take longer to complete their homework or are given additional work to help improve their reading skills. Reading teachers of fourth graders did report assigning less homework to better readers (see Chapter 3). The small percentage of fourth graders (4 percent) who reported not doing their homework had by far the lowest reading proficiency.

At grade 8, students who reported having and doing homework had higher average reading proficiency than their counterparts who reported having no homework or not doing it. Students who reported two hours of homework per day tended to have the highest reading proficiency; incrementally higher proficiencies were noted with increases in homework up to two hours.

By grade 12, the results indicate a clear relationship between amount of homework and reading proficiency. For students who are assigned homework and do it, the more homework they report completing each day, the higher their reading proficiency. High percentages of high-school seniors reported that they usually have no homework (10 percent) or that they have homework but do not do it (another 9 percent). Interestingly, compared to students in the lower grades, the students who reported no assigned homework had the lowest average proficiency, lower even than their classmates who reported not doing their homework. It appears that by grade 12, the poorest readers are taking courses that involve little homework.

Amount of Reading for School

Closely related to the amount of homework is the amount of reading that students do for their school work, whether at school or at home. Students' reports of the number of pages read per day at grades 4, 8, and 12 are summarized in TABLE 1.4. Especially at grades 8 and 12, there is an evident relationship between reading proficiency and amount of school reading, with those who do more reading having higher reading proficiencies.

Considering that students in the NAEP assessments of mathematics, science, civics, and U.S. history reported their instructors used textbooks as a primary instructional strategy, it is surprising to note the low amount of school reading reported by students.[1] At all three grade levels, approximately half the students reported reading 10 or fewer pages each day for their schoolwork across all curriculum areas. Curiously, students in the upper grades reported reading somewhat fewer pages each day for their schoolwork than did the fourth graders. Some 47 percent of the fourth graders, for example, reported reading 10 or fewer pages per day, compared with 61 percent of the eighth graders and 56 percent of the twelfth graders. The amount of reading associated with the highest reading proficiency did rise somewhat across the grades, however. At grade 4, the highest average proficiency occurred for students reading 11 to 15 pages per day, while at grades 8 and 12, it occurred for students reading more than 20 pages per day.

TABLE 1.4

Average Reading Proficiency and Percentage of Students Reporting Various Amounts of Reading for School Work

Number of pages read each day for school and homework	Grade 4		Grade 8		Grade 12	
	Percent	Average Proficiency	Percent	Average Proficiency	Percent	Average Proficiency
5 or fewer	23.3	220.6 (1.8)	31.5	254.1 (1.3)	31.0	276.5 (1.0)
6 to 10	23.6	234.3 (1.6)	29.9	265.9 (1.6)	25.1	287.1 (1.2)
11 to 15	14.8	237.4 (2.1)	16.6	267.8 (1.8)	16.8	293.0 (1.5)
16 to 20	16.2	232.2 (2.0)	10.3	269.2 (2.1)	12.1	293.6 (2.0)
More than 20	22.1	231.1 (2.1)	11.7	271.6 (2.2)	14.9	298.1 (1.8)

Standard errors appear in parentheses. It can be said with approximately 95 percent certainty that for each population of interest, the average reading proficiency is within ± 2 standard errors of the estimated value.

[1]John A. Dossey, Ina V.S. Mullis, Mary M. Lindquist, Donald L. Chambers, *The Mathematics Report Card* (Princeton, NJ: Educational Testing Service, National Assessment of Educational Progress, 1988).

Ina V.S. Mullis, Lynn B. Jenkins, *The Science Report Card* (Princeton, NJ: Educational Testing Service, National Assessment of Educational Progress, 1988).

David C. Hammack, Michael Hartoonian, John Howe, Lynn B. Jenkins, Linda S. Levstik, Walter MacDonald, Ina V.S. Mullis, Eugene Owen, *The U.S. History Report Card* (Princeton, NJ: Educational Testing Service, National Assessment of Educational Progess, 1990).

Lee Anderson, Lynn B. Jenkins, James Leming, Walter B. MacDonald, Ina V.S. Mullis, Mary Jane Turner, Judith S. Wooster, *The Civics Report Card* (Princeton, NJ: Educational Testing Service, National Assessment of Educational Progress, 1990).

An Early Start in School

It would seem likely that students who begin school earlier are also more likely to do well later on. To examine this, fourth-grade students in the assessment were asked whether they had attended preschool, nursery, or daycare, and whether they had attended kindergarten. Their responses are summarized in TABLE 1.5.

TABLE 1.5

Average Reading Proficiency and Percentage of Students Reporting Attendance in Kindergarten or in Preschool, Nursery, or Daycare, Grade 4

	Attended Preschool, Nursery, or Daycare				Attended Kindergarten			
	Yes		No		Yes		No	
	Percent	Average Proficiency	Percent	Average Proficiency	Percent	Average Proficiency	Percent	Average Proficiency
Nation	59.6	237.5 (1.3)	31.7	222.4 (1.4)	95.8	231.6 (1.1)	3.5	207.6 (4.9)
Race/Ethnicity								
White	61.1	244.5 (1.2)	30.7	230.1 (1.9)	97.0	238.9 (1.2)	2.4	219.3 (6.8)
Black	59.3	216.5 (2.6)	31.5	203.0 (2.9)	92.3	211.7 (1.9)	7.2	202.4 (9.7)
Hispanic	52.2	217.6 (2.8)	36.8	205.5 (2.9)	93.9	211.5 (2.5)	4.7	192.5 (10.5)

Standard errors are presented in parentheses. It can be said with approximately 95 percent certainty that for each population of interest, the average reading proficiency is within ± 2 standard errors of the estimated value.

Sixty percent of the fourth graders reported some sort of preschool experience, and 96 percent reported that they had attended kindergarten. In both cases, the average reading proficiency was higher for students who reported having an earlier start. These relationships were evident for Black and Hispanic students, as well as for their White counterparts.

High School and Beyond

At the high-school level, students have a variety of choices in coursework and programs, and they make decisions about whether they will continue their education after high school. TABLE 1.6 summarizes twelfth-grade students' responses to questions about the emphasis in their high-school program, as well as about their future plans.

TABLE 1.6

Average Reading Proficiency and Percentage of Students in Various High-School Programs and Their Plans After Graduation, Grade 12

Program of Study

	Academic		General		Vocational/ Technical	
	Percent	Average Proficiency	Percent	Average Proficiency	Percent	Average Proficiency
Nation	59.3	297.3 (0.8)	33.2	273.9 (1.3)	7.4	268.5 (2.2)
Race/Ethnicity						
White	61.8	301.8 (1.0)	31.5	278.6 (1.4)	6.8	275.1 (2.9)
Black	54.8	278.4 (1.7)	34.5	262.1 (2.6)	10.8	257.4 (3.9)
Hispanic	40.9	278.9 (3.4)	50.1	263.0 (3.2)	9.0	244.5 (6.3)

Future Plans

	4-year College		2-year College		Work		Other	
	Percent	Average Proficiency	Percent	Average Proficiency	Percent	Average Proficiency	Percent	Average Proficiency
Nation	54.7	298.8 (0.8)	21.4	277.4 (1.2)	15.0	272.7 (1.5)	8.8	271.0 (2.4)
Race/Ethnicity								
White	55.6	304.2 (1.0)	21.1	281.3 (1.4)	15.9	276.5 (1.6)	7.4	278.8 (3.0)
Black	55.0	278.7 (2.0)	19.8	266.7 (3.6)	13.0	260.6 (3.2)	12.3	254.2 (4.8)
Hispanic	40.0	279.7 (3.8)	30.9	264.1 (3.1)	14.4	256.7 (4.9)	14.7	256.5 (4.5)

Standard errors are presented in parentheses. It can be said with approximately 95 percent certainty that for each population of interest, the average reading proficiency is within ± 2 standard errors of the estimated value.

For the nation as a whole, 59 percent of the students at grade 12 reported being enrolled in an academic program of study, and 55 percent said they planned to go on to a four-year college. The expectations of Hispanic students were noticeably lower than those of their White or Black counterparts. Only 41 percent were enrolled in academic programs, and only 40 percent expected to go on to four-year colleges. In general, students in academic programs had higher average reading proficiency than those in general or vocational/technical programs.

TABLE 1.7 summarizes a related set of data on the courses that twelfth-grade students reported taking. Again, 55 percent of the students reported they were currently taking an advanced placement or college preparatory English course. Considerably fewer students reported taking advanced mathematics, science, or foreign language courses, however. For each of these sets of courses, students who reported more advanced coursework also tended to have higher average reading proficiency.

TABLE 1.7

Average Reading Proficiency and Percentage of Students Taking Various Courses, Grade 12

	Percent	Average Proficiency
Current English Course		
Advanced Placement	17.0	308.7 (1.7)
College Preparatory	37.7	294.6 (1.2)
General	38.3	277.6 (1.3)
None	5.3	274.5 (2.6)
Remedial	1.6	249.9 (7.0)
Years of Foreign Language		
4 or more years	10.5	304.6 (2.6)
3 years	18.8	299.7 (1.3)
2 years	33.1	294.7 (1.3)
1 year	16.4	278.9 (1.7)
None	21.2	270.3 (1.6)
Trigonometry		
Yes	41.6	303.5 (1.1)
No	58.4	279.9 (1.0)
Physics		
Yes	29.8	302.8 (1.5)
No	70.2	284.2 (0.9)

Standard errors are presented in parentheses. It can be said with approximately 95 percent certainty that for each population of interest, the average reading proficiency is within ± 2 standard errors of the estimated value.

Summary

The assessment results for the nation and for demographic subgroups indicate that reading proficiency increases between grades 4 and 8, and then rises somewhat more slowly between grades 8 and 12. In general, students attending schools in advantaged urban communities, White students, students from the Northeast and Central regions, and females had somewhat higher average reading proficiency than did students in rural or disadvantaged urban community schools, Black and Hispanic students, students from the Southeast, and males. These differences parallel those that have been found in previous assessments, but the magnitude of the differences in reading performance between more advantaged and less advantaged students remains unacceptably large.

Analyses of the degree of emphasis on academic achievement indicate that students who have more academically oriented and challenging experiences were likely to be more proficient readers. Those students who reported doing more homework and more reading for school had higher reading proficiency as did those students who reported an earlier start in school through day-care or kindergarten. High-school seniors with higher reading proficiency reported being enrolled in academic programs and taking more rigorous coursework. It is not known, however, whether low enrollments in advanced courses were due to students choosing not to take such courses, or the lack of such course offerings in their schools.

2 Students' Reading Experiences

In addition to their proficiency in reading, good readers develop an understanding of the purposes for reading, read a wide variety of materials on their own for interest and enjoyment, and learn to share their reading experiences with their friends and families. This chapter will explore how often students choose to read on their own, what kinds of reading they do, and the extent to which books and reading activities appear to be a part of their lives.

Independent Reading

As shown in TABLE 2.1, the extent to which students read for their own enjoyment is related to their reading proficiency. The more often that students reported reading for fun on their own time, the higher their reading proficiency was likely to be. Although NAEP data cannot be used to determine whether better readers simply enjoy reading more and, therefore, read for fun more often, or whether more frequent reading for enjoyment increases proficiency, conventional wisdom suggests that it is probably a combination of the two phenomena. The popular adage that "practice makes perfect" may be most apt for the younger students because literacy research suggests that children who grow up in environments that support reading activities develop better reading skills.[2]

[2]Dolores Durkin, *Children Who Read Early* (New York: Teachers College Press, Columbia University, 1966).

Shirley Brice Heath, *Ways With Words: Language, Life and Work in Communities and Classrooms* (Cambridge: Cambridge University Press, 1984).

TABLE

2.1 Average Reading Proficiency and Percentage of Students Reporting Reading for Fun

How often do you read for fun on your own time?

	Grade 4		Grade 8		Grade 12	
	Percent	Average Proficiency	Percent	Average Proficiency	Percent	Average Proficiency
Daily	45.7	237.5 (1.4)	27.3	276.8 (1.4)	24.4	297.9 (1.2)
Weekly	30.6	230.3 (1.4)	33.2	262.1 (1.3)	27.5	289.4 (1.4)
Monthly	8.2	228.2 (2.5)	17.5	262.1 (1.7)	19.4	285.7 (1.4)
Yearly	5.7	215.1 (3.2)	9.4	258.6 (2.5)	14.8	286.0 (1.8)
Never	9.8	209.1 (2.2)	12.6	240.3 (2.2)	13.9	267.4 (2.1)

Standard errors are presented in parentheses. It can be said with approximately 95 percent certainty that for each population of interest, the average reading proficiency is within ± 2 standard errors of the estimated value.

The frequency with which students read for pleasure seems to decrease as they grow older. Compared to approximately three-quarters of the fourth-grade students, only about half of the high-school seniors reported reading for fun on at least a weekly basis. Conversely, 16 percent of the fourth graders, 22 percent of the eighth graders, and 29 percent of the high-school seniors reported little or no time spent reading for pleasure.

Considering the well-known prevalence of television as a national pastime, it is not surprising to learn that compared to how often they read on their own, students report substantially larger amounts of daily television viewing (TABLE 2.2). Thus, while fewer than half the fourth graders (46 percent) and approximately one-fourth of the eighth and twelfth graders reported reading for pleasure as a daily activity, over two-thirds of the fourth and eighth graders and nearly half of the twelfth graders reported watching at least three hours of television on a daily basis. Students who reported watching television six or more hours each day had significantly lower average reading proficiency than their classmates who reported less television viewing.

TABLE 2.2

Average Reading Proficiency and Percentage of Students Reporting Various Amounts of Television Viewing Each Day

How much television do you watch each day?	Grade 4		Grade 8		Grade 12	
	Percent	Average Proficiency	Percent	Average Proficiency	Percent	Average Proficiency
0 to 2 hours	31.1	230.8 (3.7)	29.5	266.1 (3.7)	51.8	291.5 (2.2)
3 to 5 hours	41.6	236.2 (2.0)	53.0	263.1 (1.8)	40.8	281.9 (1.8)
6 hours or more	27.3	216.5 (1.6)	17.5	250.2 (1.6)	7.5	267.5 (2.4)

Standard errors are presented in parentheses. It can be said with approximately 95 percent certainty that for each population of interest, the average reading proficiency is within ± 2 standard errors of the estimated value.

Students at grades 8 and 12 were also asked about the kind of reading they preferred to do in their spare time. At both grades, more students showed an interest in reading fiction than in reading non-fiction. Approximately one-fourth of the eighth and twelfth graders reported reading both fiction and non-fiction in their spare time, as shown in TABLE 2.3. The proportion of eighth graders who reported reading primarily fiction in their spare time was twice as great as the proportion reporting reading primarily non-fiction material. By grade 12, however, students were somewhat more equally divided among those who reported reading primarily fiction, primarily non-fiction, a mixture of both, or hardly reading anything at all.

TABLE 2.3

Average Reading Proficiency and Percentage of Students Reading Fiction or Non-Fiction in Their Spare Time

Which best describes the kind of reading you do in your spare time?

	Fiction		Non-Fiction		Both		Read Rarely or Never	
	Percent	Proficiency	Percent	Proficiency	Percent	Proficiency	Percent	Proficiency
Grade 8								
Nation	37.3	272.6 (1.3)	16.5	258.5 (1.8)	27.4	269.1 (1.4)	18.8	241.1 (1.8)
Gender								
Male	29.2	265.7 (2.0)	21.6	259.1 (2.2)	22.7	265.7 (2.1)	26.4	238.8 (2.0)
Female	45.8	277.2 (1.5)	11.2	257.1 (3.1)	32.4	271.5 (1.6)	10.7	247.0 (3.0)
Grade 12								
Nation	32.0	293.6 (1.2)	24.1	283.6 (1.3)	25.9	295.6 (1.3)	18.1	269.3 (1.6)
Gender								
Male	24.6	288.5 (2.1)	31.6	283.0 (1.7)	22.1	294.0 (1.7)	21.6	265.5 (2.3)
Female	38.6	296.5 (1.3)	17.4	284.5 (1.8)	29.2	296.7 (1.6)	14.8	274.3 (2.2)

Standard errors are presented in parentheses. It can be said with approximately 95 percent certainty that for each population of interest, the average reading proficiency is within ± 2 standard errors of the estimated value.

At both grades 8 and 12, those students who reported reading fiction — alone or in combination with non-fiction — had higher average reading proficiency than those students who reported reading only non-fiction. The nearly one-fifth of the students who reported little or no reading as a leisure activity had the lowest average reading proficiency. It is also interesting to note that at both grades 8 and 12 more females than males reported reading fiction and fewer reported reading non-fiction.

NAEP asked high-school seniors three additional questions about what and how often they read. As shown in TABLE 2.4, approximately half the high-school seniors reported reading the newspaper on a daily basis, while fewer reported such frequent attention to magazines (about one-fourth) or novels (13 percent). On a weekly basis, both newspapers and magazines appeared to be read with equal frequency, while stories and novels still were the least reported.

TABLE
2.4

Average Reading Proficiency and Percentage of Students Reading Books, Newspapers, and Magazines, Grade 12

How often do you read a. . . .	Story or Novel		Newspaper		Magazine	
	Percent	Average Proficiency	Percent	Average Proficiency	Percent	Average Proficiency
Daily	13.3	303.4 (1.8)	53.1	290.9 (1.0)	25.8	287.7 (1.4)
Weekly	19.1	297.3 (1.6)	29.9	285.9 (1.2)	47.4	289.6 (1.1)
Monthly	27.6	286.0 (1.5)	9.2	281.3 (2.7)	20.8	286.7 (1.4)
Yearly	23.4	284.0 (1.3)	3.8	275.9 (3.6)	3.6	269.0 (4.3)
Never	16.4	268.8 (1.6)	3.9	270.8 (3.3)	2.4	266.2 (4.5)

Standard errors are presented in parentheses. It can be said with approximately 95 percent certainty that for each population of interest, the average reading proficiency is within ± 2 standard errors of the estimated value.

In summary, elementary students reported reading for fun more frequently than middle- or high-school students. However, for these fourth graders, reading was much less common than watching television. While 69 percent reported watching three hours or more of television each day, only 46 percent reported reading for pleasure on a daily basis.

Just as many eighth graders (71 percent) as fourth graders reported watching three or more hours of television a day, but even fewer reported reading for fun each day — only 27 percent.

High-school seniors reported both less television viewing and less reading than their younger counterparts. Eighteen percent reported hardly ever reading in their spare time and 29 percent reported reading some fiction in their spare time. The materials they reported reading most frequently were newspapers and magazines.

Availability of Reading Materials

To collect information about students' access to reading materials outside of their classrooms, NAEP asked students about the reading materials in their home and about their visits to the library.

Students at all three grade levels were asked in particular about their own magazines and books, and the results are presented in TABLE 2.5. Almost half of the fourth graders and two-thirds of the eighth and twelfth graders reported having their own magazine subscriptions, and these students tended to have higher reading proficiency than their classmates.

TABLE 2.5

Average Reading Proficiency and Percentage of Students Reporting Various Amounts of Reading in Home

Do you buy or get any magazines at home just for yourself?	Grade 4		Grade 8		Grade 12	
	Percent	Average Proficiency	Percent	Average Proficiency	Percent	Average Proficiency
Yes	47.5	235.3 (1.3)	64.8	266.6 (1.2)	67.5	289.8 (1.0)
No	52.5	225.9 (1.2)	35.2	256.3 (1.3)	32.5	281.7 (1.0)
About how many books, not counting your schoolbooks or comic books, do you have at home?						
10 or fewer	25.7	213.9 (1.6)	31.2	248.8 (1.2)	33.0	274.4 (1.3)
11 to 20	15.5	231.4 (1.8)	23.5	263.9 (1.4)	21.6	287.7 (1.2)
21 to 30	14.5	235.1 (2.6)	13.8	268.7 (1.8)	14.5	291.6 (2.0)
More than 30	44.3	238.1 (1.2)	31.5	273.9 (1.7)	30.9	298.5 (1.3)

Standard errors are presented in parentheses. It can be said with approximately 95 percent certainty that for each population of interest, the percentage of students and average proficiency are within ± 2 standard errors of the estimated value.

Students who reported having more of their own books at home also tended to have higher reading proficiency. At each grade level, the more books students reported having, the higher their average reading proficiency. In general, younger students reported having more books than the eighth and twelfth graders, a finding which parallels their reports of more daily reading. Forty-four percent of the fourth graders reported having more than 30 books, not counting schoolbooks or comic books. However, over one-fourth reported 10 or fewer such books, and their reading proficiency was substantially lower than their classmates who reported having more books at home.

The library can be a major resource in developing students' reading abilities. In addition to checking out books and obtaining reference information, students can use libraries as quiet places to read. Thus, as part of the assessment, NAEP asked students at all three grade levels about how often they borrowed books from the library. The results are presented in TABLE 2.6. The teachers of the fourth graders were also asked how often their classes visited the library (TABLE 2.7).

TABLE 2.6

Average Reading Proficiency and Percentage of Students Reporting Taking Books Out of the Library

How often do you take books out of the school or public library?

	Grade 4		Grade 8		Grade 12	
	Percent	Average Proficiency	Percent	Average Proficiency	Percent	Average Proficiency
Daily	7.5	211.9 (2.9)	3.1	245.3 (3.1)	1.9	273.9 (5.6)
Weekly	59.0	234.9 (1.2)	20.5	266.2 (1.8)	10.2	290.4 (2.1)
Monthly	17.0	239.1 (1.8)	39.4	269.8 (1.1)	34.7	293.1 (1.1)
Yearly	6.7	222.8 (2.9)	18.2	264.3 (2.1)	32.1	288.6 (1.1)
Never	9.8	208.3 (2.7)	18.8	247.6 (1.9)	21.2	275.1 (1.4)

Standard errors are presented in parentheses. It can be said with approximately 95 percent certainty that for each population of interest, the average reading proficiency is within ± 2 standard errors of the estimated value. **Note:** Grade 12 results did not differ substantially for students who reported they were in academically-oriented programs. Thirteen percent of the seniors who were in academic programs reported taking out library books on a weekly basis, 40 percent on a monthly basis, 31 percent on a yearly basis, and 15 percent never.

TABLE 2.7

Teachers' Reports of Frequency of Visits to the Library, Grade 4

How often do you take or send the class to the library?

	Percentage of Students	
	Percent	Average Proficiency
Daily	3.8	240.1 (3.7)
Weekly	75.2	231.2 (1.3)
Monthly	12.7	228.1 (3.8)
Yearly	4.9	232.7 (6.5)
Never	3.4	226.7 (9.1)

Standard errors are presented in parentheses. It can be said with approximately 95 percent certainty that for each population of interest, the average reading proficiency is within ± 2 standard errors of the estimated value.

Elementary-school students appear to make frequent use of the library. Almost two-thirds of the fourth graders reported taking out library books on at least a weekly basis and 79 percent had teachers who reported taking or sending their classes to the library on a weekly basis.

Students at grades 8 and 12 reported using the library to take out books much less frequently than did their fourth-grade counterparts. Further, using the library as a place to get books seems to decrease as students progress through school. Nearly one-fourth of the eighth graders reported taking out books at least weekly compared to only 12 percent of the twelfth graders. A majority of the twelfth graders reported taking out library books only yearly, if ever. In terms of the relationship between library usage and proficiency in reading, it appears that the small percentage of students who reported taking books out of the library on a daily basis had lower average proficiency than those who said they used the library somewhat less frequently. It may be the case that students who are less successful readers are encouraged to take books from the library as part of special instructional efforts to improve their reading ability.

In addition to asking students about their own reading materials and about their use of the library to take out books, NAEP asked students about other reading materials in their home. As shown in TABLE 2.8, the majority of students have access to some reading materials in the home. However, according to their reports, about 20 percent do not have access in their homes to a daily newspaper and 5 percent live in homes with fewer than 25 books.

TABLE 2.8

Average Reading Proficiency and Percentage of Students Reporting Availability of Reading Materials in Home

	Grade 4		Grade 8		Grade 12	
	Percent	Average Proficiency	Percent	Average Proficiency	Percent	Average Proficiency
Are there more than 25 books in your home?						
Yes	88.6	233.8 (1.1)	92.1	265.3 (1.0)	93.4	288.9 (0.8)
No	5.5	200.9 (2.9)	4.3	234.7 (3.0)	4.6	266.0 (3.0)
Does your family get a newspaper regularly?						
Yes	73.8	234.1 (1.1)	76.6	266.1 (1.1)	82.6	289.4 (0.8)
No	20.8	222.0 (1.7)	21.4	254.3 (1.6)	16.3	278.0 (2.0)
Does your family get magazines regularly?						
Yes	62.4	235.0 (1.3)	76.4	267.5 (1.0)	84.9	290.3 (0.8)
No	26.9	221.1 (1.3)	19.6	250.4 (2.0)	13.6	271.6 (1.7)
Is there an encyclopedia in your home?						
Yes	71.8	232.5 (1.1)	79.6	265.0 (1.1)	84.1	288.3 (0.8)
No	22.0	225.6 (1.9)	18.1	258.6 (1.6)	14.7	283.5 (2.0)

Standard errors are presented in parentheses. It can be said with approximately 95 percent certainty that for each population of interest, the average reading proficiency is within ± 2 standard errors of the estimated value. Response percentages do not total 100 percent because small percentages of students reported that they did not know about the reading materials in their homes.

Students with access in their homes to books, newspapers, magazines, and an encyclopedia had higher average reading proficiency than did students who did not have these materials in their homes.

In summary, elementary-school students seem to have a number of opportunities to read books, both from home and from their school libraries. However, contact with books — other than textbooks, perhaps — seems to decrease as students progress through school. Although 60 percent of the fourth graders reported owning at least 20 books, less than half of the students at grades 8 and 12 reported having as many books of their own. Only a quarter (24 percent) of the fourth-grade students reported taking out library books infrequently (monthly or yearly), compared to over half (58 percent) of the eighth graders and approximately two-thirds (68 percent) of the high-school seniors.

The Value of Reading

Studies have shown that many specific reading behaviors and a positive attitude toward literacy can be learned at home at an early age. Because of this intergenerational aspect of literacy — children tending to replicate their parents' skills and attitudes — NAEP asked students how often their parents read them stories as a child, and whether or not reading is a topic of conversation at home.

As shown in TABLE 2.9, the majority of students at all three grade levels reported that when they were children, stories were read to them on at least a weekly basis. Approximately the same percentage of students at grades 4, 8 and 12 reported being read to weekly or more often — 60 percent, 65 percent, and 62 percent, respectively. Students at all three grades who reported being read to at least weekly had an average reading proficiency that was 14 to 20 points higher than those who reported never being read to by someone at home. Relatively few students at all three grade levels (from 8 to 13 percent) reported that they were never read to, while approximately one-fourth said they could not remember.

TABLE 2.9

Average Reading Proficiency and Percentage of Students Reporting Being Read to in the Home

How often did someone at home read stories to you before you were in kindergarten?

	Grade 4		Grade 8		Grade 12	
	Percent	Average Proficiency	Percent	Average Proficiency	Percent	Average Proficiency
Daily	43.8	233.3 (1.4)	44.7	268.4 (1.3)	39.3	293.5 (1.0)
Weekly	16.2	235.0 (1.8)	19.9	263.4 (1.2)	23.0	287.2 (1.5)
Monthly	3.0	234.4 (4.1)	3.6	258.0 (3.7)	5.7	274.9 (3.1)
Never	12.6	219.4 (2.0)	7.8	247.8 (2.1)	9.5	275.9 (2.1)
I don't know.	24.4	227.3 (1.7)	24.0	258.5 (1.7)	22.4	284.3 (1.6)

Standard errors are presented in parentheses. It can be said with approximately 95 percent certainty that for each population of interest, the average reading proficiency is within ± 2 standard errors of the estimated value.

Although being read to seems to be a relatively common experience in childrens' lives, reading out loud to others appears much less prevalent. When asked how often they read out loud to someone at home, almost half (46 percent) of the fourth graders said they never did (TABLE 2.10). Similarly, discussing reading is not a common household practice for many of the students. Although 45 percent of the eighth and twelfth graders reported that they talked to someone at home about reading at least weekly, over 30 percent at both grades reported they never did so. The students who reported no discussion about reading at home had significantly lower average reading proficiency than their classmates.

TABLE 2.10

Average Reading Proficiency and Percentage of Students Reporting Reading Aloud and Discussing Reading at Home

How often do you read out loud to someone at home?

Grade 4

	Percent	Average Proficiency
Daily	17.1	217.0 (2.0)
Weekly	23.7	230.4 (1.5)
Monthly	13.4	242.5 (1.9)
Never	45.7	231.8 (1.6)

How often do you talk to someone at home about something you read?

	Grade 8		Grade 12	
	Percent	Average Proficiency	Percent	Average Proficiency
Daily	14.2	269.2 (2.1)	14.5	293.9 (1.8)
Weekly	30.7	268.6 (1.4)	30.0	292.8 (1.3)
Monthly	20.5	266.6 (1.4)	24.3	288.4 (1.4)
Never	34.6	253.7 (1.4)	31.2	277.8 (1.4)

Standard errors are presented in parentheses. It can be said with approximately 95 percent certainty that for each population of interest, the average reading proficiency is within ± 2 standard errors of the estimated value.

To further explore students' own attitudes toward reading and books, NAEP asked a series of questions about reading behaviors. For example, besides having books and taking them out of the library, people who enjoy reading tend to buy books, recommend good books to their friends, and develop a liking for particular authors. Students' answers to questions about these topics are presented in TABLE 2.11.

TABLE 2.11

Percentage of Students Reporting Engagement in Reading Related Activities

	Daily or Weekly	Monthly	Yearly	Never
How often do you tell a friend about a good book?				
Grade 4	38.3	20.4	11.9	29.3
Grade 8	25.2	27.4	16.1	31.3
Grade 12	19.1	29.8	23.9	27.3
How often do you spend your own money on books?				
Grade 4	10.4	21.9	23.1	44.5
Grade 8	9.4	23.5	24.6	42.5
Grade 12	8.3	23.6	29.3	38.8
How often do you read a book after you see a TV show or movie that was based on the book?				
Grade 8	7.5	15.8	26.5	50.2
Grade 12	3.9	11.2	30.1	54.8
How often do you read more than one book by an author you like?				
Grade 8	21.7	29.4	24.3	24.6
Grade 12	13.2	23.7	36.5	26.5

Similar to other responses previously discussed, older students were less likely than younger students to report frequently recommending books to friends, reading books by favorite authors, or following up a movie by reading the book. For example, 59 percent of the fourth graders, 53 percent of the eighth graders, and 49 percent of the twelfth graders reported recommending books to their friends at least on a monthly basis. Whereas 51 percent of the eighth graders reported reading more than one book by an author they liked on a monthly basis, only 37 percent of the high-school seniors reported reading books by favorite authors on such a regular basis.

Perhaps the most striking findings concern the large percentage of students who reported never engaging in these activities. At grades 8 and 12, approximately half the students reported never reading a book after they had seen the movie or television show, and one-fourth reported never reading a second book by an author they liked. At all three grades assessed, approximately 30 percent of the students said they never tell their friends about good books and approximately 40 percent reported never spending their own money on books.

In summary, a majority of students remember someone reading them stories, but the home emphasis on reading seems to decline as students grow older. About one-third of the eighth and twelfth graders reported that they never talk with people they live with about reading. Neither do students appear to discuss reading with their friends. For example, about 30 percent of the students at all three grade levels assessed reported that they never tell their friends about a good book.

Summary

Not all American students seem to be "hooked on books". A majority of the fourth graders reported positive reading experiences — being read stories by someone at home, having at least 20 books of their own, taking books out of the library every week, and telling their friends about a good book on a monthly basis — and nearly half (46 percent) reported reading for fun almost every day. However, students seem to be less book-oriented as they progress through school. In fact, by the time they near high-school graduation, students seem to have very little to do with reading activities beyond those required in school.

Over half of the twelfth-grade students reported reading for pleasure at least once a week, but nearly one-fifth reported never reading in their spare time. Slightly over half (53 percent) also said they read the newspaper every day; however, 40 percent reported that they never read stories or novels or only did so on a yearly basis. A majority of the high-school students said they rarely, if ever, took books out of the library or discussed reading at home.

Because better readers report reading more frequently and having access to a greater variety of reading materials, it is important to encourage young children to engage in a variety of reading experiences. Considering the seeming decline in students' interest in reading as they grow older, it may be equally important to continue support for reading experiences as students progress through school.

3 Reading Instruction

What instruction are students receiving to improve their reading and comprehension skills? To examine this, students at all three grades were asked questions about their teachers' instructional approaches in reading. Because of the emphasis in the elementary grades on learning to read, NAEP sought to expand the background information available about the fourth-grade students in the assessment by asking their teachers to respond to questionnaires.[3] The teachers of the assessed students were identified and asked to provide additional information about those particular students and the reading instruction they received. Specifically, they were asked the reading ability level of the students' class and about time spent on reading instruction, the organizational structure of the class, and the various reading skills emphasized. Thus, for the first time, NAEP is able to provide a relationship between students' reading performance and the instruction students receive as reported by their own classroom teachers.

Initial Reading Instruction

Teachers of fourth-grade students in the assessment were asked to comment on the type of initial reading instruction these students had received in grades 1, 2, and 3. TABLE 3.1 summarizes information on the early reading instruction received by fourth graders, as reported by their teachers.

The teachers were unable to comment on the initial reading instruction of a third of the students but for the remainder they reported almost equal emphasis on phonics-based and eclectic programs. Sight-word instruction and language experience approaches were rarely noted.

[3]For fourth graders participating in the assessment, NAEP collected information from their teachers. In the ensuing analyses, information on students' performance and demographic characteristics was linked with information provided by their teachers. Thus, the student -- rather than the teacher -- is the unit of analysis. This approach makes it possible to address questions such as, "What percentage of the students have teachers who help them work on comprehension skills during reading instruction?" More detailed information on the teacher questionnaire is contained in the Procedural Appendix.

TABLE 3.1

Teachers' Reports of Previous Reading Program, Grade 4

What kind of reading program did this student have in grades one, two, and three?

	Percentage of Students In Each Type of Program
Primarily phonics	28.6
Primarily sight words	3.5
Primarily language experience	3.6
An eclectic approach	31.0
Not known	33.3

Time Spent on Reading Instruction

To provide a context for their responses to questions about instructional practice, teachers were asked to characterize the ability level of each student's class. As shown in TABLE 3.2, 12 percent of the fourth graders were identified as being in high-ability classes, and their average proficiency was 256 on the reading scale. This was close to the average reading proficiency for eighth graders (263). Forty-three percent of the students were identified by their teachers as in classes of average ability. These students performed at about the national average for fourth graders (230), as did the 32 percent of the students in classes of mixed ability levels. The 14 percent of the students identified as being in low-ability classes had much lower reading proficiencies, on average, than did students in other types of classes.

TABLE 3.2

Teachers' Reports of the Reading Ability Levels of Students' Classes, Grade 4

What is the reading ability level of the students in this class?

	Percentage of Students	Average Proficiency
Mostly high ability	12.3	256.0 (2.6)
Mostly average ability	42.5	232.4 (1.7)
Mostly low ability	13.5	208.2 (3.0)
Mixed ability levels	31.7	229.0 (2.3)

Standard errors are presented in parentheses. It can be said with approximately 95 percent certainty that for each population of interest, the average reading proficiency is within ± 2 standard errors of the estimated value.

Teachers of the fourth-grade students in the assessment also were asked about how much time each day they devoted to reading instruction in each student's class. TABLE 3.3 summarizes their responses for the national sample of fourth graders, as well as for students in classes of different levels of reading ability.

TABLE 3.3

Teachers' Reports of Class Time Spent on Reading Instruction Each Day, Grade 4

About how much time do you spend with this class for direct instruction in reading on a typical day?

	Percentage of Students Receiving Different Amounts of Reading Instruction				
	Nation	Mixed Ability	High Ability	Average Ability	Low Ability
30 minutes or less	27.3	24.2	51.2	23.9	24.5
60 minutes	53.7	49.0	42.1	61.0	51.6
90 minutes or more	19.0	26.8	6.7	15.1	23.9

Overall, as reported by their teachers, the majority of fourth graders receive approximately 60 minutes of reading instruction each day. The amount of instructional time did show some variation with ability level: students in low-ability classes were likely to spend somewhat more time receiving reading instruction than were those in high-ability classes. For example, 17 percent more students in the low-ability group than the high-ability group receive 90 minutes or more of instruction each day.

In high school, the reading instruction that students are most likely to receive is in the context of reading literature. To examine this, twelfth-grade students were asked a related question about the proportion of class time spent on literature instruction. Their responses are summarized in TABLE 3.4, separately for students in academic, general, or vocational/technical programs.

TABLE 3.4

Percentage of Students Reporting That More Than Half the Time in English Class is Spent on Literature, Grade 12

About how much time have you spent in English class studying literature (for example, novels, short stories, poems)?

Nation		Type of School Program					
		Academic		General		Vocational/ Technical	
Percent	Average Proficiency	Percent	Average Proficiency	Percent	Average Proficiency	Percent	Average Proficiency
70.7	291.3 (1.2)	76.6	298.8 (1.3)	63.2	278.4 (2.1)	54.3	273.7 (3.9)

Standard errors are presented in parentheses. It can be said with 95 percent certainty that for each population of interest, the average reading proficiency is within ± 2 standard errors of the estimated value. **Note:** Fifty-eight percent of the high-school students assessed were enrolled in an academic high-school program, 34 percent were in a general program, and 8 percent in a vocational/technical program.

Overall, 71 percent of the students reported spending more than half of their English class time on literature instruction, with more students in academic high-school programs and somewhat fewer in vocational programs spending time this way. In terms of the relationship of literature instruction to average proficiency in reading, it appears that students enrolled in programs that emphasize literature instruction, such as academic programs, have higher reading proficiency than those in other types of programs.

Classroom Organization for Reading Instruction

TABLE 3.5 summarizes teachers' reports of how much time, on average, fourth graders spend in whole-class, small-group, or individualized instruction.

TABLE 3.5

Teachers' Reports of Time Spent in Different Types of Classroom Organization, Grade 4

What percent of your reading instruction with this class is conducted in the following modes?

	Average Percent of Time Students Spend in Whole Class, Small Group, or Individualized Instruction				
	Nation	Mixed Ability	High Ability	Average Ability	Low Ability
Whole-class instruction	38.3	34.1	48.8	37.8	40.2
Small-group instruction	43.7	48.8	32.2	43.7	41.8
Individual instruction	18.0	17.1	19.0	18.5	18.0

For the national sample as a whole, teachers reported that fourth graders spend, on average, 38 percent of their class reading time in whole-class instruction, with another 44 percent devoted to small-group work and 18 percent to individualized instruction. The emphasis shifted somewhat with classes of different ability levels, with teachers providing more whole-class time and less small-group instruction for students in high-ability classes and more small-group work and less whole-group instruction in classes of mixed ability.

Fourth-grade teachers were also asked about their use of reading groups. According to their responses, summarized in TABLE 3.6, an overwhelming majority of fourth-grade students — 79 percent — were being taught using reading groups, almost always based on the reading ability of the students. This pattern was relatively stable across classes of different ability levels.

TABLE 3.6

Teachers' Reports on the Use of Reading Groups, Grade 4

Are students in this class usually assigned to reading groups on the basis of ability?

	Percentage of Students Receiving Instruction in Reading Groups				
	Nation	Mixed Ability	High Ability	Average Ability	Low Ability
I don't form groups	14.5	13.5	14.8	15.6	13.5
Yes	79.2	78.5	82.6	79.7	77.5
No	6.3	8.0	2.6	4.7	9.0

Emphasis on Reading Skills

Within the classroom settings described above, what do fourth-grade teachers emphasize in reading instruction? To what extent do they focus on skills and activities likely to support students' efforts to understand what they read? A variety of questions were asked about teachers' emphasis on one or another skill.

TABLE 3.7 summarizes fourth-grade teachers' reports on the extent to which they emphasized a variety of skills and activities that are likely to support students' efforts to achieve basic comprehension of their reading materials.

TABLE 3.7

Teachers' Reports of Skills Emphasized, Grade 4

How often do you help this student work on the following things during reading instruction?

	Percentage of Students Receiving Daily Attention			
	Nation	Reading above grade level	Reading at grade level	Reading below grade level
Reading aloud	28.0	24.3	23.3	41.1
Comprehension skills	49.5	42.8	47.9	58.5
Word-attack skills	27.6	18.4	23.7	43.3
Vocabulary	40.4	35.7	38.1	49.5

Note: Percentages do not total 100 because there were three possible response categories daily, several times each week, and weekly or less and only the percentages for the daily category are presented here.

Among these skills and activities, teachers reported greatest emphasis on comprehension (emphasized daily for half of the students), followed closely by vocabulary (40 percent). Word-attack skills and reading aloud received somewhat less emphasis for students reading at or above grade level. Students reading below grade level were more likely to receive instruction on word-attack skills and reading aloud. All of these skills were more likely to receive daily emphasis for weaker students, and less likely to be emphasized so frequently for better readers.

Teachers' reports of the amount of homework in reading assigned to students on a daily basis are summarized in TABLE 3.8. The majority of students (52 percent) are reportedly assigned 15 minutes of homework per day. Students reading at or above grade level are more likely to be assigned no homework in reading (30 percent) than are students reading below grade level (21 percent). Students reading below grade level are more apt to receive a half-hour or more of daily homework (25 percent) than are those students reading at grade level (20 percent) and those students reading above grade level (24 percent).

TABLE 3.8

Teachers' Reports of Homework Assigned, Grade 4

How much homework in reading do you usually give each day?

	Percentage of Students Receiving Different Amounts of Homework			
	Nation	Reading above grade level	Reading at grade level	Reading below grade level
None	25.9	29.7	26.8	20.8
15 minutes	52.2	46.5	53.4	54.2
1/2 hour or more	21.9	23.8	19.8	25.0

TABLE 3.9 summarizes teachers' reports on a related set of instructional techniques. Two of these, discussing readings in small groups and writing about reading, seem likely to foster skills useful in examining texts from in-depth perspectives. Another technique, completing reading workbooks or skill-sheet assignments, seems more likely to provide initial help in constructing meaning. The final two techniques included in this set of questions (reading aloud to students and asking them to read books they choose themselves) are both advocated as ways to increase students' interest and motivation.

TABLE 3.9

Teachers' Reports of Instructional Techniques, Grade 4

How often do you do the following things as a part of reading instruction with this class?

	Percentage of Students Receiving Different Amounts of Various Types of Instruction				
	Nation	Mixed Ability	High Ability	Average Ability	Low Ability
Have students talk in pairs or small groups about what they read					
Daily	11.7	16.3	14.1	10.0	9.0
Weekly	33.1	33.0	30.5	34.8	32.1
Monthly	27.6	13.9	27.7	31.2	29.6
Yearly/Never	27.6	36.8	27.7	24.0	29.3
Have students write about what they read					
Daily	12.5	18.5	11.3	10.9	14.0
Weekly	46.7	37.0	47.5	50.4	42.5
Monthly	30.1	23.7	32.6	29.3	33.2
Yearly/Never	10.7	20.8	8.6	9.4	10.3
Have students complete reading workbooks or skill-sheet assignments					
Daily	57.4	49.7	54.2	60.2	61.6
Weekly	39.1	43.6	41.7	37.6	35.8
Monthly	2.2	1.2	3.2	1.6	1.7
Yearly/Never	1.3	5.6	0.9	0.6	0.9
Read aloud to students					
Daily	56.7	75.6	57.0	53.1	53.5
Weekly	32.5	17.1	35.3	35.0	31.8
Monthly	7.0	5.9	5.5	7.7	8.8
Yearly/Never	3.8	1.4	2.2	4.2	5.9
Have students read books they chose themselves					
Daily	54.9	66.8	53.0	53.9	52.8
Weekly	25.8	19.2	26.6	26.3	27.9
Monthly	14.5	7.3	15.6	15.6	14.9
Yearly/Never	4.8	6.7	4.8	4.2	4.5

Among these activities, workbooks and skill-sheet assignments appear to receive the heaviest use: 57 percent of the fourth-grade students were asked to complete such assignments on a daily basis, and 97 percent at least weekly. Small group discussions and writing about reading, on the other hand, received less emphasis. According to their teachers, only 12 percent of the fourth graders were given these opportunities on a daily basis, and only about half (40 percent) were asked to do so even weekly. Eleven percent of the students were rarely (yearly or never) asked to write about what they had read, and more than one-fourth (28 percent) were never or hardly ever asked to talk about what they read with small groups of their classmates.

Table 3.9 also summarizes the teachers' reports separately for students in high-, average-, and low-ability classes. Again, it is clear that regardless of the reading ability level of the class, students are likely to receive daily workbook or skill-sheet assignments, and are unlikely to be asked to examine their understanding through writing or discussion. Within this general pattern, however, students in low-ability classes seem somewhat more likely to be asked to do daily workbook assignments and somewhat less likely to engage in daily discussion or read books they choose themselves.

Teachers reported the two activities designed to increase student motivation — reading aloud to them and having them read books they choose — to be in daily use with over half of the students and in weekly use with more than 80 percent. Students in high-ability classes were less likely to read books of their own choice on a daily basis than students in any other ability group. Fourth graders were less likely than their teachers to think of themselves as reading books of their own choosing, however. In responding to a similar question, only 32 percent of the fourth-grade students indicated they did such reading daily, and 31 percent reported they never had such an opportunity (TABLE 3.10), as opposed to 55 and 5 percent, respectively, as reported by their teachers.

TABLE 3.10

Percentage of Students Reporting How Often Their Teacher Asks Them to Read Books They Choose, Grade 4

How often does your reading teacher ask you to read books you choose yourself during school?

	Percent	Average Proficiency
Daily	31.5	227.6 (1.8)
Weekly	24.9	229.9 (1.6)
Monthly	12.2	236.2 (2.6)
Never	31.4	231.7 (1.5)

Standard errors are presented in parentheses. It can be said with 95 percent certainty that for each population of interest, the average reading proficiency is within ± 2 standard errors of the estimated value.

Students at grades 8 and 12 were asked similar questions about the extent to which their English teachers asked them to write about or discuss what they read. Their responses are summarized in TABLE 3.11. Forty-one percent of the eighth-grade students reported that their teachers expected them to discuss what they had read "a lot," and only 38 percent reported writing about what they read at least weekly. Both of these activities showed some increase between grades 8 and 12. However, even for high-school seniors, discussing and writing about their reading does not appear to be routine. Only 65 percent of the seniors reported that their teachers expected them to discuss what they read "a lot", and only 41 percent reported being asked to write about their reading on a weekly basis.

TABLE 3.11

Percentage of Students Reporting That Their Teachers Ask Them to Analyze and Write About Reading, Grades 8 and 12

To what extent has your English teacher expected you to discuss and analyze what you read?

	Grade 8	Grade 12			
	Nation	Nation	Academic Program	General Program	Vocational/ Technical Program
A Lot	41.1	64.7	73.3	51.5	46.8
Some	48.4	30.8	24.0	41.5	45.2
Not at All	10.5	4.4	2.7	7.0	8.0

How often has your English teacher asked you to write about what you read for class?

	Grade 8	Grade 12			
	Nation	Nation	Academic Program	General Program	Vocational/ Technical Program
Daily	11.7	14.3	14.8	13.4	13.0
Weekly	26.4	40.7	44.4	34.9	33.1
Monthly	30.5	28.3	28.1	27.8	33.0
Yearly	13.6	10.3	8.0	14.7	11.6
Never	17.7	6.4	4.7	9.3	9.2

When the responses of twelfth-grade students in academic, general, and vocational or technical programs are compared, it is clear that students in academic programs are considerably more likely than those in general or vocational programs to be asked to extend their responses to reading through discussion or writing.

Instructional Materials for Reading

Recent years have seen a variety of calls for a broader-based instructional program in elementary-school reading, moving beyond the traditional basal series to the inclusion of multiple basals or even trade books as a fundamental part of the program. To examine the impact of these discussions, fourth-grade teachers were asked about their use of different reading books within the same class. Their responses are summarized in TABLE 3.12.

TABLE 3.12

Teachers' Reports of Reading Book Usage, Grade 4

Do you usually use the same reading book for all students in this class?

	Percentage of Students in Classes Using Same or Different Reading Books				
	Nation	Mixed Ability	High Ability	Average Ability	Low Ability
Yes, same book for all students	44.7	33.5	61.6	47.2	47.2
No, usually use different levels within same basal series	40.7	47.7	25.2	41.9	37.6
No, usually use different basal series	9.4	11.9	5.7	7.8	9.7
No, usually use other books or materials	5.1	6.9	7.5	3.1	5.5

Overall, 45 percent of the fourth graders were in classes where teachers reported using the same book for all students, and another 41 percent were in classes that used different levels of the same basal series. Only 9 percent were in classes where teachers made use of more than one basal series to meet the needs of different students, and only 5 percent were in classes where teachers reported that they typically or generally used other books or materials.

The responses also indicate some differentiation for classes of different ability levels. In high-ability classes, students were more likely all to be using the same reading book, while in mixed-ability classes, students were more likely to be using different levels of the same basal, or even different basal series. This pattern of results seems to suggest that teachers see students in mixed-ability classes as less homogeneous than other groups, and, thus, see the need for within-class differentiation of materials.

Other Instructional Resources

TABLE 3.13 summarizes teachers' reports on a number of other resources that can be used to add depth and variety to the instructional program. Of the classroom resources included in this series of questions, collections of children's books were the most popular, used for 76 percent of the fourth-grade students. Children's newspapers or magazines and reading kits were also available for the majority of students. Computers and accompanying software for reading instruction were less widespread and were used for only 35 and 29 percent of the students, respectively.

TABLE 3.13

Teachers' Reports of Resources Used in the Classroom, Grade 4

Do you use any of the following resources in the classroom?

	Percentage of Students in Classes Using Various Resources				
	Nation	Mixed Ability	High Ability	Average Ability	Low Ability
A children's book collection (trade books)	76.0	88.3	78.3	75.3	73.0
Children's newspaper and/or magazines	57.5	66.0	63.6	55.9	50.1
Reading kits	51.4	28.9	50.6	59.5	54.1
One or more microcomputers or terminals	35.3	31.8	36.7	36.8	36.2
Reading instruction software	29.2	16.3	30.9	31.9	31.6
None or only one of the above	23.2	18.0	8.2	20.6	27.7
Two or three of the above	53.7	57.0	57.6	57.2	51.5
Four or five of the above	23.1	25.0	34.2	22.3	20.9

Table 3.13 also summarizes how many of these resources were used in classes of different ability levels. Overall, students in low-ability classes were less likely to have multiple resources than were those in other classes. In the low-ability classes, for example, 21 percent of the students had access to four or five resources, compared with 34 percent of the students in high-ability classes.

Teachers' use of resources is inevitably constrained by the resources they have available. To examine the influence of such constraints on the instructional program, teachers were asked to what extent they got all of the resources and materials that they needed. Their responses are summarized in TABLE 3.14.

TABLE 3.14

Teachers' Reports of Availability of Resources and Instructional Materials, Grade 4

Which of the following statements best characterizes your situation with respect to getting instructional materials and other resources you use to teach your students?

	Percentage of Students Whose Teachers Reported Having Resources Available			
	Nation	Advantaged Urban Communities	Disadvantaged Urban Communities	Rural Communities
Get all that are needed	15.4	21.5	6.9	14.0
Get most that are needed	54.2	53.0	42.8	65.4
Get some or none of what is needed	30.3	25.5	50.3	20.5

Fully 70 percent of the fourth-grade students had teachers who reported getting all or most of the resources that they needed, with a fortunate 15 percent of these in situations where teachers got all that they needed. As would be expected, however, availability of resources was partially related to the socioeconomic status of the school community. The teachers of half the students in disadvantaged urban community schools claimed that they got just some or none of what they needed, and that only 7 percent of these students were in classes that received all of the resources needed. In contrast, the teachers of the students in advantaged urban areas reported getting all of the resources they needed for 22 percent of their students, and getting only some or none for 26 percent of their students.

Difficulty of Reading Materials

At grades 8 and 12, students were asked about how difficult it was to understand their reading or literature texts. Their responses are summarized in TABLE 3.15.

TABLE 3.15

Percentage of Students Reporting Difficulty in Understanding Their Reading or Literature Text

How much difficulty have you had understanding your reading or literature textbook?

	Grade 8	Grade 12			
	Nation	Nation	Academic Program	General Program	Vocational/ Technical Program
A lot	5.1	8.2	5.7	12.2	13.0
Some	48.7	53.5	53.7	53.6	52.9
None	46.2	38.3	40.7	34.3	34.0

Overall, few students at either grade reported having "a lot" of difficulty understanding their textbooks. At grade 12 there was some variation in the degree of difficulty reported by students in different programs, but the variation was slight. At least half of the eighth and twelfth graders reported some difficulty reading their literature text, but 46 percent of the students at grade 8 and between 34 and 41 percent of the students at grade 12 reported they had *no* difficulty — suggesting, perhaps, that much of what they are asked to read is not as challenging as it could be.

Emphasis on Testing

Formal testing has historically played an important role in reading instruction, both as a means of diagnosing students' needs and of evaluating the success of instruction.

Professional attitudes toward such testing have varied over time, and have recently been divided between those who feel that more testing is necessary as part of the process of raising academic standards, and those who feel that testing is already diverting too much time from instruction.

To examine the extent of testing, fourth-grade teachers were asked about the frequency of formal testing in their classrooms. Their responses, summarized in TABLE 3.16, indicate that formal testing is already quite pervasive for the majority of students. The teachers' reports indicate that 65 percent of fourth graders took a formal reading test at least once a month, and that 22 percent were tested at least once a week. The average reading proficiency results indicate that higher-achieving students were likely to be tested the least, while lower-achieving students were more likely to be tested at least weekly.

TABLE 3.16

Teachers' Reports of Amount of Formal Testing, Grade 4

How often do you use a formal reading test (reading series test, standardized test, school or district test, teacher-made test, etc.) with this student?

	Percentage of Students Receiving Specific Amount of Testing	
	Percent	**Average Proficiency**
Almost every day	2.1	228.4 (1.0)
Once or twice a week	20.2	227.4 (0.4)
Once or twice every two weeks	13.3	230.6 (0.8)
Once or twice a month	28.9	231.9 (0.6)
Less than once a month	35.5	233.0 (0.4)

Standard errors are presented in parentheses. It can be said with approximately 95 percent certainty that for each population of interest, the average reading proficiency is within ± 2 standard errors of the estimated value.

Recent Changes in Teaching Practices

The past few years have been marked by a variety of calls for higher academic standards and stricter discipline. To examine the extent to which these calls have influenced reading programs, fourth-grade teachers were asked to indicate what changes, if any, had taken place in their teaching during the past three years. Their responses, summarized in TABLE 3.17, suggest that changes in the past few years have been relatively modest — affecting from one-quarter to one-third of the students in any one area. Twenty-six percent of the fourth graders were being taught by teachers who reported making none of the changes listed. The changes affecting the most students, approximately 30 percent, were stricter discipline and more difficult coursework. Between 25 and 27 percent of the students were experiencing the effects of increased amounts of homework and/or testing. Only 6 percent were being held to stricter attendance requirements.

TABLE 3.17

Teachers' Reports of Changes in Teaching Practices, Grade 4

Which, if any, of the following changes have you made in your teaching practices over the past three years?

	Percentage of Students Affected by New Teaching Practices			
	Nation	Advantaged Urban Communities	Disadvantaged Urban Communities	Rural Communities
Increased the difficulty of courses	29.5	35.5	20.7	31.5
Increased the amount of homework	26.7	31.1	39.2	27.2
Increased the amount of testing	25.4	30.7	35.0	22.2
Enforced stricter discipline	30.3	19.4	33.7	35.8
Enforced stricter attendance requirements	5.7	3.1	11.8	2.0
None of the above	26.2	25.7	27.5	23.6
Was not teaching three years ago	12.8	11.4	10.3	15.8

Table 3.17 also summarizes differences in these changes for students attending schools in communities defined as advantaged urban, disadvantaged urban, and rural. The figures suggest that students attending schools in disadvantaged urban communities have seen somewhat more change in the amount of testing, discipline, homework, and attendance requirements, while students attending schools in advantaged urban communities have been more likely to notice an increase in the difficulty of their courses. All of these changes are modest, however, and their overall impact is unclear, since teachers were not asked about changing their requirements in the opposite direction and it is impossible to know the comparative practices of new teachers.

Summary

The portrait of reading instruction that emerges from this chapter is a very traditional one. Beginning reading instruction, at least as reported from the perspective of fourth-grade teachers, is apt to be based on phonics or eclectic approaches, as opposed to a language experience approach. At the fourth grade, the majority of teachers reported that students are given an hour of reading instruction on a typical day, dominated by a combination of whole-class instruction and ability-based reading groups. In almost all classes, instruction is based on basal readers, although collections of children's books (trade books) are usually used as supplementary materials. There is little evidence that more broadly based approaches, using newspapers, magazines, or even multiple series of basals, have been implemented in many classrooms.

The skills that are emphasized for all students are those that are most closely related to initial comprehension tasks of constructing meaning, and this emphasis increases for students in low-ability classes. Activities that are likely to foster students' abilities to examine and elaborate upon their understanding in more depth, however, receive relatively less emphasis for all students, and are used rarely in classes where students have lower reading proficiency.

Finally, in disadvantaged urban communities where resources are critical, teachers of half the students reported receiving some or none of the instructional materials they needed. This finding warrants careful attention and further study.

4 The Characteristics of Fourth-Grade Reading Teachers: A Closer Look

The special teacher questionnaire designed to examine the characteristics of fourth-graders' reading instruction also included a number of questions about the teachers' background and preparation. This chapter takes a closer look at the characteristics of the individuals who provide reading instruction to fourth-grade students.

Gender and Race/Ethnicity

TABLE 4.1 summarizes the distribution of fourth-grade students by their teacher's gender and race/ethnicity. The overwhelming majority of students are taught by female teachers (88 percent), and this is relatively constant across subgroups. Nationally, 88 percent of the students are taught by White teachers, but here the data suggest some differences across subgroups of students. A larger percentage of Black students than White students have Black teachers and a larger percentage of students attending schools in disadvantaged urban areas, for example, have Black teachers than do students in rural or advantaged urban community schools. This may reflect special efforts made by teacher colleges, state departments of education, and urban school districts to provide positive minority role models for minority students.

TABLE 4.1

Teachers' Reports of Their Gender and Race/Ethnicity, Grade 4

Student Groups	Percentage of Students with Teachers from Different Subpopulations				
	Teacher Gender		Teacher Race/Ethnicity		
	Female	Male	White	Black	Hispanic
Nation	88.2	11.8	88.0	9.3	1.4
Race/Ethnicity					
White	88.1	11.9	94.4	3.7	0.8
Black	91.1	8.9	63.6	34.0	0.9
Hispanic	87.4	12.6	79.8	11.9	5.4
Size and Type of Community					
Advantaged Urban	88.8	11.2	88.5	6.8	3.1
Disadvantaged Urban	89.3	10.7	67.9	26.1	2.4
Rural	91.8	8.2	97.7	1.8	0.5

Preparation to Teach

How well are these teachers formally prepared to teach reading? TABLE 4.2 summarizes the percentage of students whose teachers reported having at least a master's degree, the highest level of teaching certification offered by their state, and state certification in the teaching of reading.

TABLE 4.2

Teachers' Reports of Their Level of Training and Certification, Grade 4

	Percentage of Students Taught by Teachers with Advanced Degrees and Certification		
	Master's or Higher Degree	Highest Certificate in State	Certificate in Reading
Nation	43.0	59.9	50.3
Race/Ethnicity			
White	42.3	59.2	50.6
Black	51.5	61.1	54.6
Hispanic	36.0	61.2	42.1
Size and Type of Community			
Advantaged Urban	49.0	71.4	61.1
Disadvantaged Urban	48.2	61.4	49.6
Rural	22.7	41.7	55.0

For the nation as a whole, 60 percent of the fourth-grade students were taught by teachers who reported having the highest level of certification offered by their state, 50 percent by teachers specially certified in the teaching of reading, and 43 percent by teachers who had attained a master's degree or higher. The patterns were somewhat erratic for different subgroups of students, however. Black students, for example, were somewhat more likely to have teachers who reported higher degrees than were White or Hispanic students. Similarly, considerably fewer students in rural areas than students from either disadvantaged or advantaged urban communities had teachers with a master's degree or the highest level of teaching certificate offered by their state.

Teaching Experience

TABLE 4.3 summarizes teachers' reports of their number of years of teaching experience, as well as the number of years spent in their present school. In general, the data reflect a very stable and experienced teaching force. For the nation, 48 percent of the students assessed had teachers who reported 15 or more years of teaching experience, and 44 percent had teachers who reported being in their present school for 10 or more years.

TABLE 4.3

Teachers' Reports of Years of Teaching Experience and Years in Present School, Grade 4

	Percentage of Students with Teachers Having Different Years of Experience						
	Years of Teaching Experience				Years Teaching in this School		
	1-4	5-9	10-14	15+	1-4	5-9	10+
Nation	12.4	14.4	25.5	47.8	33.5	22.6	43.9
Race/Ethnicity							
White	10.9	14.5	28.6	46.1	31.5	21.8	46.8
Black	12.5	13.3	16.4	57.8	33.1	26.5	40.5
Hispanic	19.5	17.1	17.9	45.5	44.1	22.4	33.5
Size/Type of Community							
Advantaged Urban	10.7	17.5	22.0	49.9	27.2	26.1	46.7
Disadvantaged Urban	11.6	17.0	16.3	55.1	41.3	21.8	36.8
Rural	21.2	13.8	33.6	31.3	31.3	15.6	53.0

Again, some differences were apparent among students from different subgroups. Black students, for example, were somewhat more likely to have teachers with 15 or more years of experience, while Hispanic students and those attending schools in rural areas were more likely than other groups to have teachers in their first few years of teaching. Staffing was least stable in the disadvantaged urban communities, where 41 percent of the students had teachers who reported being in their present school for 4 years or less.

Teacher Autonomy

To be most effective, school administrators have to strike a balance between the degree of supervision they exercise over their teachers to ensure a coherent overall program, and the degree of autonomy and professional judgment needed by teachers to make their classrooms function effectively. To investigate the teachers' role in decision-making, they were asked about the extent of control they had over a variety of aspects of the instructional program in their schools as a whole, as well as in their particular classrooms. TABLE 4.4 summarizes their responses.

TABLE 4.4

Teachers' Reports of Their Role in Decision Making, Grade 4

How much control do you have in . . .	Percentage of Students With Teachers Having Complete or A Lot of Control Over Decisions			
	Nation	Advantaged Urban	Disadvantaged Urban	Rural
Setting school-wide standards for student behavior	25.0	26.9	20.9	34.8
Setting school-wide instructional goals and objectives	24.2	26.3	18.2	36.5
Selecting core instructional materials (textbook)	31.2	36.4	25.6	46.6
Deciding which content, topics, and skills will be taught	40.8	48.1	28.2	57.5
Deciding the sequence in which content, topics, and skills will be taught	66.9	71.6	44.2	79.9
Grouping students within the class for instruction	82.9	86.3	74.2	93.9
Deciding when and how to evaluate students	88.2	92.1	80.9	96.1
Deciding when and how to discipline students	89.5	88.2	83.5	98.7

As would be expected, the degree of control that teachers reported in decision-making became greater the closer they got to their own classrooms. For example, only a quarter of the students had teachers who felt they had control of school-wide standards for student behavior or school-wide instructional goals and objectives, but 88 to 90 percent had teachers who felt they had control of decisions about when and how to discipline and evaluate students in their classrooms. Only 41 percent of the fourth graders had reading teachers who felt they had control of the content of what they taught, although two-thirds had teachers who indicated control over sequencing that instruction. Only 31 percent of the fourth-grade students had teachers who felt they had control over selecting core instructional materials.

In general, students in rural schools had teachers who reported having considerably more control than those in urban settings. Students in disadvantaged urban settings were taught by teachers who reported the least autonomy. Only 28 percent of these students had teachers who indicated they had control of what they would teach (compared with 48 percent of their counterparts in advantaged urban communities), and only 44 percent of the students had teachers who said they had control of decisions about the sequence in which content, topics, and skills will be taught (compared with 72 percent of the students in advantaged urban settings).

Continuing Commitment to Teaching

Fourth-grade teachers were also asked whether they would still become a teacher, if they had the opportunity to step back to their college days and start over again. As shown in TABLE 4.5, this group of teachers reported a continuing commitment to teaching. Two-thirds of the students (68 percent) had teachers who said they probably would still choose to teach, and only 16 percent of the students had teachers who said they probably would not. Interestingly, teachers from groups that had reported the highest degree of autonomy in decision-making were also those most likely to report a continuing commitment to teaching. Thus, only 8 percent of the students in rural schools had teachers who said they probably would not teach if they had the chance to start over, but 34 percent of those in disadvantaged urban community schools had teachers who reported they would probably make a different choice.

TABLE 4.5

Teachers' Reports of Their Continuing Commitment to Teaching, Grade 4

Percentage of Students with Teachers Having Different Levels of Commitment to Teaching

If you could start over, would you become a teacher or not?

	Certainly or Probably	Maybe	Probably Not or Certainly Not
Nation	68.4	16.1	15.5
Race/Ethnicity			
White	72.0	15.6	12.4
Black	53.9	18.2	27.9
Hispanic	66.0	14.8	19.3
Size and Type of Community			
Advantaged Urban	65.4	18.7	15.9
Disadvantaged Urban	53.3	12.5	34.2
Rural	76.2	15.5	8.3

Summary

As reflected by the teachers of a national sample of fourth-grade students, the teaching force as a whole is well prepared and very experienced. Males and minority groups, however, are underrepresented — only 12 percent of the fourth graders had male reading teachers, and only about 22 percent were taught by either Black or Hispanic teachers. Some differences were evident among the teachers of different subgroups of students. In particular, students in disadvantaged urban schools had a higher proportion of Black teachers, which may in part reflect special efforts to provide positive minority role models for minority students.

The degree of professional autonomy reported by teachers varied with the closeness of the decisions being made to the immediate concerns of their own classrooms. Most students had teachers who reported little control over school-level standards and policies, but considerable control over the sequence of instruction, evaluation, and discipline within their own classrooms. However, the majority of students are taught by teachers who reported only some, little, or no control over decisions about the content they taught. Overall, students in rural schools and those in advantaged urban schools had teachers who reported more professional autonomy than those in disadvantaged urban schools, and also expressed the greatest continuing commitment to teaching as a career.

II HOW WELL DO STUDENTS READ?

Performance on Individual Reading Tasks

The chapters comprising Part I of this report described the average reading proficiency of students in relation to a number of their background characteristics and the type of reading instruction they had received. Part II describes students' performance on individual reading tasks included in the 1988 assessment.

The description of students' performance focuses on two aspects of students' reading behavior: Their ability to construct meaning from text and their ability to examine that meaning by extending, elaborating, and critically judging the information contained in a passage.

In addition to examining passage characteristics and passage-item interactions, a panel of reading experts carefully studied each question included in the assessment to determine the types of reading behavior that would be demonstrated by correct responses. These analyses suggested that readers work with text in a variety of ways to build understanding, extend meaning, and respond critically.

Because students encounter a variety of texts in their school and personal lives, both literary and informational passages were used in the assessment. Each type of text required readers to use different comprehension and interpretive abilities. Literary tasks included understanding a complex essay and interpreting a literary work. Informational tasks ranged from reading a science article to understanding an advertisement. Students were required to read and write about these different types of materials.

Multiple-choice questions in the 1988 NAEP reading assessment were designed to tap students' ability to construct the meaning of a passage by focusing on specific information or the overall message. Open-ended questions also assessed students' ability to construct meaning as well as examine and extend their initial understanding of a passage. These tasks required students to present their constructed meanings in writing and go beyond, providing evidence for their ideas. The responses to open-ended reading questions were evaluated by trained readers who used detailed scoring guides.

The guides delineated four levels of task accomplishment in common: Not Rated, Unsatisfactory, Adequate (reflecting success in constructing an initial interpretation), and Elaborated (reflecting the ability to examine the text and provide evidence to support an interpretation). (See the Procedural Appendix for a description of the scoring procedure for the open-ended questions.)

Success in answering questions seemed to be related to a number of factors, such as question and passage type. In general, students were successful in answering questions that required getting the gist of passage information. However, they seemed to have the greatest amount of difficulty answering questions that required them to go beyond the text and provide evidence for their responses. In addition, response format seemed to play a role in students' performance: Tasks requiring students to put their answers in writing tended to be more difficult than multiple-choice questions.

Understanding a text results from an interaction among the text's features, the reader's prior knowledge, and the reading task. Task demands are shaped by the relationship between the complexity of the passage and the way in which the reader must go about finding the answer to a question. The 1988 NAEP reading assessment was designed to capture these interactions in a meaningful way.

The following chapter summarizes students' performance on tasks requiring them to construct meaning from a passage, including understanding the overall message and specific information, and describes students' ability to examine the meaning of a selection more closely in order to provide details and evidence in support of their interpretation. Levels of task accomplishment are presented for various tasks, and for illustrative purposes, examples of students' written responses to certain tasks are provided.

The following analysis of students' performance on individual items differs from previous reports, where NAEP has used the reading scale to describe levels of proficiency.[4] Those earlier analyses indicated that students performing at the lower levels of the scale were able to carry out simple reading tasks and understand specific or sequentially related information. Students at the upper levels could find, understand, summarize, and explain relatively complicated information. Few students perform at the highest proficiency levels, which are characterized by the ability to synthesize and learn from specialized reading materials.

Trends in 9-, 13-, and 17-year-olds' reading performance from 1971 to 1988 have been monitored using the NAEP reading scale, and results were published in *The Reading Report Card, 1971-1988*. Because the assessment on which the present report is based included reading tasks and evaluation methods that differ from those used in the reading trend assessment, and involved students at different grade levels, NAEP has taken this opportunity to investigate responses to individual reading tasks in more detail.

[4]Ina V.S. Mullis and Lynn B. Jenkins, *The Reading Report Card, 1971-88* (Princeton, N.J.: Educational Testing Service, National Assessment of Educational Progress, 1990).

5 An Analysis of Performance on Individual Reading Tasks

Reading involves the interaction between a reader, a text, and a situation. Thus, comprehension is influenced by the type of text or material read and the specific purposes for reading. For example, readers may focus on particular parts of informational texts to build on what they know or read literary texts to become involved in a new experience.

Readers are guided by the special characteristics of a text — by their expectations of how the text will be organized and by their knowledge of what an author might do in a specific genre — as well as by their purposes for reading. For this reason, the 1988 assessment considered students' performance in situations that involved reading different kinds of texts for different purposes. Reading tasks in the 1988 assessment included both literary and informational texts, and were designed to assess two purposes for reading: *constructing meaning* and *examining meaning*. Both purposes require a range of cognitive abilities. For instance, in *constructing meaning*, readers reach an understanding of the text by forming an initial impression of it, and then filling in or developing their understanding. In *examining meaning*, readers extend their understanding by adopting a critical stance — by analyzing a text, or by judging its quality or its plausibility, and supporting these judgments with evidence.

Constructing Meaning involves understanding what is read by focusing on either specific information or the overall message. Reading to understand *specific information* occurs when readers find and use details that appear either within or across the sentences of a text. Readers locate certain information and make a variety of text-based inferences. In contrast, reading to get the *overall message* occurs when readers go beyond the details, to infer important concepts and link them across parts of a text, interpret the author's purpose, or reflect on dominant stylistic features. It requires that readers consider the text as a whole. Although they are distinguished in the assessment for purposes of analysis and reporting, many school-based reading experiences involve a blending of both behaviors. For example, using a reference book to locate and take notes on relevant material for a book report may involve locating and understanding particular information as well as the overall point.

Examining Meaning requires the reader to go beyond the initial impression to develop a more complete understanding of what was read. It involves shifting to more intense and analytical reading. Readers try to build on or look critically at the meaning of a text, by standing apart from the text. Examining meaning involves a range of tasks, including comparing and contrasting ideas, evaluating the motives underlying a character's actions, and analyzing the quality or effectiveness of a story.

In addition to reflecting different purposes for reading, the reading tasks included in the 1988 assessment presented students with literary and informational passages dealing with a number of different topics, at a range of difficulty levels. Multiple-choice questions that required students to construct meaning — understand specific information or to get the overall message — were developed for each passage. In addition, several open-ended questions were developed that assessed students' ability to construct and examine meaning, by asking them to arrive at thoughtful interpretations and explain them. Thus, NAEP's report on reading comprehension provides a profile of students' abilities to construct and examine meaning.

Overview of the Results

Overall, the results suggest that students are much more proficient at constructing meaning than examining meaning, with approximately two-thirds to three-fourths of the students giving correct answers to the constructing meaning tasks and only small percentages answering the examining meaning questions in an elaborated way (TABLE 5.1).[5]

The results also indicate that more students understand the details of what they read than the overall message, particularly for informative passages. Nearly three-fourths of the students responded correctly to questions about specific passage information, but only about half to two-thirds answered the overall message questions correctly. This suggests that students know something about the information that supports the main argument of a passage, but seem to know considerably less about the main argument itself. These findings are discussed in greater detail in the sections that follow.

[5]The average percentage of students constructing meaning is based on the number of correct responses to the multiple-choice questions. The examining meaning percentages are based on correct responses to the open-ended questions.

TABLE 5.1

Average Percentage of Students Constructing and Examining Meaning at Grades 4, 8, and 12

	Constructing Meaning				Examining Meaning
	Literary		Informative		
	Specific Information	Overall Message	Specific Information	Overall Message	Literary and Informative
Grade 4	73.8 (1.1)	64.2 (1.2)	73.3 (1.1)	54.6 (1.3)	6.3 (0.7)
Grade 8	72.0 (1.0)	67.9 (1.0)	67.5 (1.0)	60.2 (1.1)	1.4 (0.4)
Grade 12	71.5 (1.0)	69.8 (1.2)	73.5 (1.2)	63.2 (1.1)	4.9 (0.5)

Standard errors are presented in parentheses. It can be said with 95 percent certainty that the average percentage of students responding correctly to the questions in each category is within ± 2 standard errors of the estimated value.

Constructing Meaning

Grade 4

Fourth graders were asked to read and respond to questions pertaining to 24 passages — 11 literary and 13 informational. The literary passages consisted of short stories, folk tales, and poems, while the informational passages focused on social studies, science, and history. For each passage, the questions were classified as requiring students to comprehend specific information or global information, and performance was averaged across the questions within each type. TABLE 5.2 summarizes the average percentages of fourth graders who responded correctly to both types of constructing-meaning questions for each reading passage — questions on specific information and those on overall message.

TABLE 5.2

Average Percentage of Fourth Graders Successfully Constructing Meaning

	Questions on Specific Information	Questions on Overall Message
Literary Passages		
Cold	66.6 (1.0)	53.9 (1.1)
Meredith	78.4 (1.0)	78.6 (1.0)
Ant and Dove	80.7 (1.1)	—
Mr. Andrews	69.1 (1.5)	—
Jimmy Jet	75.1 (1.2)	51.8 (1.3)
Yvonne	76.0 (1.1)	—
Scott	78.5 (0.8)	—
Sarah	66.9 (1.1)	64.7 (1.4)
Big Wind	71.8 (1.2)	—
Silky	—	78.7 (0.9)
Nuts	75.7 (1.0)	57.6 (1.3)
Informational Passages		
Picture Dog	94.3 (0.6)	—
Drawing	92.5 (0.4)	—
Description-Unhappy	88.7 (0.7)	—
Quicksand	76.9 (1.1)	74.3 (1.1)
Frontier Women	59.9 (1.2)	56.7 (1.2)
Bike	71.2 (1.3)	—
Dinosaurs	71.3 (1.4)	50.4 (1.3)
Harrison	67.2 (1.2)	45.5 (1.5)
Naomi	62.9 (1.2)	—
Mosquito	—	44.9 (1.4)
Web of Life	72.9 (1.2)	60.8 (1.2)
1st Americans	55.4 (1.3)	49.8 (1.4)
Bethune	66.0 (1.2)	—

Standard errors are presented in parentheses. It can be said with approximately 95 percent certainty that the average percentage of students responding correctly to the questions in each category is within ± 2 standard errors of the estimated value. The "-" symbol indicates that no questions of this type were given.

The majority of fourth graders were able to read and comprehend the literary passages included in the assessment. The findings indicate that between 67 and 81 percent of the fourth graders were able to understand specific information when they read literary passages — for example, selecting and linking details and identifying plot and character elements. Between 52 and 79 percent could also get the overall message. The questions that accompanied the passage titled "Meredith" illustrate the different types of questions included.

Meredith

Meredith looked at the coin. The face on it was frowning again. Meredith remembered that Mrs. Fleming had a desk drawer full of things people had brought to class. There were a lot of baseball cards, several pea shooters and water guns, and at least one set of jacks in the drawer. Mrs. Fleming kept it locked. She was going to give the things back on the last day of school. That was almost three months away.

If Mrs. Fleming thought Meredith was playing with the coin she might lock it up in her drawer. Meredith picked it up and put it back into her pocket.

Specific Information

1. What did Meredith do with the coin?

   A Gave it to Mrs. Fleming.
   B Played with it during class.
   71% *C Put it in her pocket.
   D Hid it in her desk.

Overall Message

2. Why do you think Mrs. Fleming kept toys in her desk drawer?

   A Because she collected old toys
   B So that some children could play with them at recess
   87% *C To keep children from playing with them during lessons
   D To show them to the other teachers

Specific Information

3. Where was Meredith?

   A In the park
   B On a bus
   C At home
   91% *D At school

Overall Message

4. How does the writer show that the coin is a magic coin?

   A By telling about where Meredith put the coin
   B By telling about what was in Mrs. Fleming's drawer
   70% *C By telling about what the face on the coin was doing
   D By telling when the last day of school would be

Specific Information

5. Which of these things was in Mrs. Fleming's desk drawer?

   A A baseball
   73% *B A set of jacks
   C A coin
   D A yo-yo

Questions 1, 3, and 5 deal with specific information, while questions 2 and 4 tap overall meaning such as motivations for a character's actions and the manner in which an author conveys information. On average, 78 percent of the fourth graders responded correctly to questions about specific information in the Meredith passage, and 79 percent responded successfully to questions that tapped their ability to understand more global information.

Although students, in general, tended to perform more poorly on global items than specific information items, students who read the Meredith passage performed similarly on both types of items. This "equality in performance" may best be explained by looking more closely at the task demands of the assessment questions. For example, the overall meaning questions for the Meredith passage tapped students' understanding of the teacher's motives and the special nature of the coin — both critical aspects of the piece. Such inferential questions were sometimes easier for them to answer than text-based questions that conflicted with their expectations, such as "What did Meredith do with the coin?" Only 71 percent of the students answered this detail-level question correctly, while 87 percent correctly answered the more global second question, "Why do you think Mrs. Fleming kept toys in her desk drawer?"

Similar to their performance on the literary passages, fourth graders had more difficulty understanding the overall messages of the informational passages than they did finding specific information. However, compared to their performance on the literary passages, most of the fourth graders were able to understand specific information in response to the informational pieces (60 to 94 percent), while more than half were able to get the overall meaning (45 to 74 percent). For the informational passage titled "Dinosaurs," for example, an average of 71 percent of the students responded successfully to the specific information questions and 50 percent to the overall meaning questions. Of the five questions, the second and third tap overall meaning (in this case, the main idea and author's purpose); the others tap the students' ability to understand specific information. The third question, asking about the purpose of the passage, posed the greatest difficulty for students. Only 34 percent answered it correctly.

Dinosaurs

There were two groups of dinosaurs that lived on Earth long ago. The first group of dinosaurs was the plant eaters that lived near swamps. Because these dinosaurs had soft teeth, or no front teeth at all, they could only eat the tender plants that grew in water. These dinosaurs would swim slowly through the water with their mouths open wide until their bellies were filled with food. The plant eaters died out because the large swamps dried up and they could not eat the plants that grew on the land.

The second group of dinosaurs was the meat eaters that lived only on land. These dinosaurs had very sharp teeth and small front legs that were used for tearing food. These dinosaurs would try to catch the plant-eating dinosaurs before the plant eaters had a chance to escape into the swamps. In time, the meat eaters died because they depended on the plant eaters for food.

Specific Information

1. Where did the plant eaters live?
   - A Only on land
   - B In the forests
   - 82% *C Near the swamps
   - D Near the ocean

Overall Message

2. How were the meat eaters different from the plant eaters?
   - A They were bigger and stronger than the plant eaters.
   - 67% *B They had sharp teeth and lived only on land.
   - C They had small front legs and no front teeth.
   - D They were faster and lived near water.

Overall Message

3. The purpose of the passage is to
   - A describe how dinosaurs died out
   - B describe the life of early dinosaurs
   - C tell what life was like long ago
   - 34% *D compare two kinds of dinosaurs

Specific Information

4. Why did the plant eaters die out?
   - 68% *A They had no food.
   - B They got sick.
   - C The meat eaters ate them all.
   - D They killed each other.

Specific Information

5. According to the passage, the meat eaters used their small front legs to
   - A kill the plant eaters
   - B collect plants and bugs
   - 64% *C tear up their food
   - D catch other animals

Grade 8

Eighth graders read and responded to 27 passages — 6 literary and 21 informational. The literary passages consisted of short stories and excerpts from longer stories, while the informational passages included a newspaper report, an article dispelling job hunting myths, several science passages, and advertisements. TABLE 5.3 presents the average percentages of eighth graders who responded correctly to constructing meaning questions for each passage, for both specific information and overall meaning questions.

TABLE 5.3

Average Percentage of Eighth Graders Successfully Constructing Meaning

	Questions on Specific Information	Questions on Overall Message
Literary		
Big Wind	83.3 (0.9)	—
Captain Botchik	70.1 (1.2)	63.2 (1.2)
Old Jim Bridger	61.9 (1.0)	61.0 (1.1)
A Childhood Memory	57.3 (1.2)	46.3 (1.1)
Silky	—	89.4 (0.6)
Nuts	87.6 (0.8)	79.7 (0.8)
Informational		
Naomi	85.1 (0.9)	—
Bicycles	74.9 (1.2)	75.6 (1.1)
Soccer	73.0 (1.0)	59.9 (1.0)
Young Workers	75.1 (1.0)	77.1 (1.1)
Cereals	42.2 (1.3)	52.6 (1.4)
Business	84.7 (0.7)	48.7 (1.1)
Bethune	86.3 (0.8)	—
Goods to Market	77.6 (0.9)	—
Mosquito	—	78.3 (1.1)
Web of Life	82.7 (0.9)	70.1 (1.2)
1st Americans	71.1 (1.2)	74.9 (1.1)
Wish	66.4 (1.5)	68.4 (1.4)
Summer Job	65.5 (1.0)	—
Meow-wow	62.6 (1.0)	—
Arts	32.0 (0.9)	26.8 (1.0)
Supreme Court	31.2 (0.8)	—
Viruses	34.0 (1.0)	45.1 (1.2)
Garden in Park	82.5 (0.8)	61.3 (0.9)
Skunk Cabbage	81.3 (0.8)	57.5 (0.9)
Breathers	77.9 (0.8)	48.2 (1.1)
Elephant Seals	64.1 (1.1)	58.1 (1.1)

Standard errors are presented in parentheses. It can be said with approximately 95 percent certainty that the average percentage of students responding correctly to the questions in each category is within ± 2 standard errors of the estimated value. The "-" symbol indicates that no questions of this type were given.

Similar to the performance at grade 4, a majority of the eighth graders were able to gain specific and global understanding from the literary passages they were asked to read. However, compared to the grade 4 results, eighth graders' performance across the two types of questions was more closely comparable. Average performance on the questions asking about specific information ranged from 57 to 88 percent correct, while performance on questions measuring global understanding of aspects of passages averaged from 46 to 89 percent correct.

Old Jim Bridger, an old-time tale, appears to have been accessible to most of the students. The Bridger passage follows.

Old Jim Bridger

Old Jim Bridger was a mountain man. Way back when, in the days before cowboys and desperados and the Pony Express, the only living beings out West were animals and Indians and a handful of mountain men. These last were fur trappers. They traveled on foot through the Rocky Mountains collecting beaver skins for the dudes back East to make hats out of. Old Jim Bridger was the travelingest of the lot.

When the U.S. Army sent out its surveyors to map the Rockies, those young men were in for disappointments. Whenever they found what they thought was a brand-new, A-one, undiscovered mountain pass or river fork or salt lick, they soon learned that Old Jim had already been there.

Once Jim heard a report of a strange valley where the ground heaved and spouted steam through its cracks — where the mud puddles boiled. John Colter, the mountain man who had discovered the valley, had thought it was the Gateway to Hell! He had got out of there before the Devil could rake him down under. And he had never gone back.

When he had told his friends about his adventure, they thought he was either drunk or crazy. But to humor him, they called the place "Colter's Hell," and let it go at that.

Eventually Jim Bridger heard the story and decided to visit the valley for a look-see. He found the place, all right. The wonders were all John Colter had claimed — and then some!

There were ponds of pink and white mud boiling like mush in a kettle. When bubbles rose to the surface and burst, burning mud splattered fifty feet around. Jim had to look sharp to keep from being scalded. There were spouts of steam that spurted up thicker than a man's body and higher than a flagpole and then were sucked back into the ground. There were lakes that had no bottom.

Jim found one spring that appealed to him particularly. It was icy at the bottom and boiling at the top. He let down his fishing line and hooked a good-sized trout. Then he pulled his catch very slowly through the hot water. By the time he landed it, the trout was cooked to perfection.

On the second day he spent in the valley, he had a remarkable experience. Directly ahead of him, say, about a hundred yards away, a fine elk grazed in a meadow. Jim had a good appetite. If there was one thing he loved to eat, it was elk meat. He put his rifle to his shoulder, took aim, and pulled the trigger. The elk went right on grazing.

Now Jim was a good shot. Something must have gone wrong for him to miss an elk at a hundred yards. He checked his gun, reloaded it, aimed, and shot again. Nothing happened. The elk went right on grazing.

Jim couldn't understand this. For the third time he loaded his rifle, aimed carefully, and fired. And still the elk kept on grazing. It didn't even look up at the sound of the shot.

This gave Jim an inkling as to what was the matter. The elk must be deaf. The thing to do was to sneak up on it from the rear and club it over the head with his gun. He started forward at a jog trot. All of a sudden, smack! He ran into something as hard as a rock that he couldn't see. He was knocked back onto the ground.

When he picked himself up, he groped his way forward cautiously. His hand touched the invisible substance. It was a wall of glass. He had run into a mountain of glass, so clear that it acted like a telescopic lens. Instead of being a hundred yards away and within easy gunshot, the elk was actually twenty-five miles from its hunter.

A young newspaperman heard about the discoveries and went west to interview Jim. He wrote a long article about the strange valley for his paper, but his editor refused to print it. He said Jim Bridger was pulling the reporter's leg.

Many years later that editor was sorry. He learned from the U.S. Army officers who made the official survey of the area that Jim had been telling the truth.

The region that John Colter discovered and Old Jim Bridger explored we know as Yellowstone National Park. It has its share of boiling springs and towering geysers. Right in the middle of it is a hill of obsidian -- volcanic lava that cooled so fast it turned into dark, transparent rock. That hill is the mysterious mountain of glass.

Perhaps Jim did exaggerate a little, but what he said was essentially true, sure enough!

Specific Information

1. What kind of people were the mountain men?

   A Cowboys
   B Desperadoes
73% *C Fur trappers
   D Indians
   E I don't know.

Overall Message

2. Which statement best describes Jim Bridger's stories about the strange valley?

   A He invented everything he said.
   B He described things exactly as he saw them.
53% *C He sometimes stretched the truth.
   D He forgot how things really were.
   E I don't know.

Overall Message

3. In their writing, authors sometimes make use of similes — direct comparisons of two unlike things. The following is an example of a simile:

   The girl ran as fast as a deer.

   Which of the following lines from the story is an example of a simile?

65% *A There were ponds of pink and white mud boiling like mush in a kettle.
   B Eventually Jim Bridger heard the story and decided to visit the valley for a look-see.
   C He said Jim Bridger was pulling the reporter's leg.
   D But to humor him, they called the place "Colter's Hell," and let it go at that.
   E I don't know.

Specific Information

4. According to the story, who discovered the land which is now known as Yellowstone National Park?

   A Jim Bridger
60% *B John Colter
   C U.S. Army surveyors
   D A young newspaperman
   E I don't know.

Specific Information

5. According to Jim Bridger's story, why did his shot miss the elk?

   A Jim was a poor shot with a rifle.
53% *B The elk was actually out of gunshot range.
   C The elk moved too quickly.
   D The elk was probably deaf.
   E I don't know.

Overall Message

6. In their writing, authors sometimes make use of hyperbole — language characterized by excessive exaggeration. The following is an example of hyperbole.

   The boy was so tall his head touched the clouds.

   Which of the following lines from the story is an example of hyperbole?

   A Old Jim Bridger was the travelingest of the lot.
   B When he had told his friends about his adventure, they thought he was either drunk or crazy.
   C It has its share of boiling springs and towering geysers.
   65% *D There were lakes that had no bottom.
   E I don't know.

Questions 1, 4, and 5 on the Bridger story tap students' understanding of specific information — such as the type of person exemplified by the characters, a detail about who discovered Yellowstone National Park, and the relationship between a particular cause and its outcome. Questions 2, 3, and 6, on the other hand, focus on global understandings that involve plot summary and literary conventions. More than 60 percent of the students, on average, demonstrated good meaning construction abilities, responding successfully to both specific information and overall meaning questions based on this reading passage.

In general, eighth-grade students performed only somewhat less well on the informational than on the literary passages, in response to questions about specific information as well as about the overall message: Between 31 and 86 percent answered specific information questions correctly, and between 27 and 78 percent successfully answered questions requiring understanding the overall message.

As was to be expected, passages with the most technical vocabulary — "Arts", "Supreme Court", and "Viruses" — posed the greatest difficulty for students. In contrast, passages such as the "Young Workers" posed only moderate difficulty, with approximately three-quarters of the students correctly answering both types of questions. The "Young Workers" passage follows.

Young Workers

Addie, New York, Lower East Side District, 1900

My father made only four dollars a week and there were six children, so my mother took in work. She would get bundles of unfinished pants from this factory. There would be maybe twenty-five, thirty pants to a bundle. And she would bring them home and finish them, and she would keep my sister and me out of school to help. When she started this, I was eight years old.

All day we would sit in the kitchen and sew. We would turn up the bottoms and sew them, and we would put a lining in the waist and sew that. The next morning she would take the bundle back and get another one. I would go to school maybe once, twice a week.

Jess, Western Nebraska, 1906-1910

Starting when I was fourteen, I spent every summer working on farms. I packed my suitcase and took a train and would be gone for three months.

Every morning I got the team ready. Then the farmer would drive a binder through his wheat and cut it and bind it into bundles. And I would follow behind and stack the bundles on end in shocks so they wouldn't get wet. When the shocking was over, I'd help with the threshing. And when that was done, the summer was gone.

Martha, Philadelphia, 1903

When I was twelve years old my mother came to me, and she said I had to leave school and get a job. We needed the money. So I got a job makin' buttonholes in vests.

It was the same. Day after day. Start at seven, work till six, six days a week. I was worn out. I got three cents for every two buttonholes, and I made them by hand. Oh, you had to make an awful lot. The first week I made two hundred and sixty-five, and they gave me four dollars.

Joe, Northern Maine, 1885-1899

The first year I worked in the woods I was fifteen years old. This logging camp was twenty-five, thirty miles from the nearest town.

There were about eighty of us in that camp, and we all slept in log cabins. On each side there'd be bunks and in the middle there'd be a stove and a pile of wood. And they had a cook's room and an eatin' room and that sort of thing.

At night, we'd get together in the eatin' room. And some would play the mouth harp (harmonica) and maybe some would sing or step dance or tell stories. And there'd always be some clown carrying on — like me. Just in fun, I'd go over and throw a dipper of water on somebody. Well, that would always start a roughhouse.

But you had to do things like that to keep your spirits up. Takin' to the woods that way all winter, you worked hard and you never got to town. That first winter I was up there two months straight. When I was eighteen, I stayed five months and eight days before I came out.

Overall Message

1. What did Martha think about her job?

   A It was better than going to school.
   B It was too difficult for children.
   C It was different and exciting.
   75% *D It was tiresome and uninteresting.

Specific Information

2. What was one thing Joe found hard about his work?

   A Getting along with the loggers who liked to roughhouse
   B Learning how to cook food on a wood stove
   72% *C Staying in the woods for several months without going to town
   D Showing the men on the job that he was strong enough to work

Specific Information

3. Which person had a job at home?

   78% *A Addie
   B Jess
   C Martha
   D Joe

Overall Message

4. What did Jess do every day at his job?

   A He cut wood and cooked food for the loggers.
   B He fed the cows and pigs on a farm.
   C He worked in a factory making clothes.
   72% *D He stacked and threshed bundles of wheat.

Overall Message

5. What do all of the people in the passages above have in common?

   A They worked in the country on farms.
   85% *B They went to work when they were young.
   C They worked in factories.
   D They were from the country.

Questions 2 and 3 accompanying the "Young Workers" passage tap students' understanding of specific information regarding characterization, while questions 1, 4, and 5 focus on overall meanings such as drawing a conclusion, summarizing information, and exploring similarities and differences. The last question, designed to tap global knowledge, asked students to identify a common theme across all passages. This was apparently easier to answer than any of the other questions, since 85 percent of the students answered it correctly.

Grade 12

The twelfth graders read and responded to 26 passages — 4 literary and 22 informational. The literary passages consisted of historical fiction, short stories, and a personal recollection. The informational passages included science selections, an advertisement, business selections, an historical piece, and a passage dispelling common misconceptions about job hunting. TABLE 5.4 contains the average percentages of twelfth graders who responded correctly to both specific meaning and overall message questions for each reading passage.

As at grade 8, student performance varied according to the particular passage; however, differences in understanding between the informational and literary passages was limited. For the literary passages, high-school seniors found questions about specific information and overall message to be of comparable difficulty. Approximately 70 to 72 percent, on average, tended to answer both types of assessment questions correctly.

Between 69 and 78 percent of the students responded successfully to the specific information questions on the literary passages. These questions focused on students' understanding of details about events, settings, and characters. Similarly, between 62 and 75 percent responded correctly to questions tapping their knowledge of the overall message (such as identifying the main idea or the author's purpose, or demonstrating familiarity with particular literary genres and conventions).

TABLE 5.4

Average Percentage of Twelfth Graders Successfully Constructing Meaning

	Questions on Specific Information	Questions on Overall Message
Literary		
Old Jim Bridger	73.1 (0.8)	72.3 (0.8)
A Childhood Memory	77.5 (1.0)	62.0 (1.1)
Small Fruits	68.5 (1.2)	70.0 (1.5)
Toaster	—	74.9 (1.3)
Informational		
Business	80.4 (0.8)	70.5 (0.9)
Platina	78.0 (1.2)	64.1 (1.0)
Mosquito Food	66.5 (1.3)	81.3 (1.0)
Atmosphere	80.2 (1.1)	84.2 (1.0)
Oceans	75.8 (1.1)	43.5 (1.4)
Job Myths	67.3 (1.3)	—
Naomi	92.0 (0.7)	—
Lark & Alpine	77.9 (1.3)	56.2 (1.2)
Voting	72.0 (1.6)	81.5 (1.1)
High Tech	63.0 (1.5)	—
Summer Job	84.4 (0.5)	—
Meow-wow	76.7 (0.9)	—
Arts	43.1 (1.2)	43.1 (1.2)
Supreme Court	44.8 (1.2)	—
Viruses	57.7 (1.4)	59.1 (1.0)
Garden in Park	90.9 (0.5)	65.6 (1.2)
Skunk Cabbage	88.3 (0.7)	68.3 (1.2)
Breathing	87.4 (0.7)	62.0 (1.2)
Elephant Seals	79.4 (1.0)	70.1 (1.0)
Hawaii	75.0 (1.0)	—
Migration	74.2 (1.0)	60.9 (1.0)
Expectation	62.1 (1.1)	37.5 (1.0)

Standard errors are presented in parentheses. It can be said with approximately 95 percent certainty that the average percentage of students responding correctly to the questions in each category is within ± 2 standard errors of the estimated value. The "-" symbol indicates that no questions of this type were given.

A literary passage titled "A Childhood Memory" is presented as an example.

A Childhood Memory

Yes, summer was rituals, each with its natural time and place. The ritual of lemonade or iced-tea making, the ritual of wine, shoes, or no shoes, and at last, swiftly following the others, with quiet dignity, the ritual of the front-porch swing.

On the third day of summer in the late afternoon, Grandfather reappeared from the front door to gaze serenely at the two empty eye rings in the ceiling of the porch. Moving to the geranium-pot-lined rail, he wet his finger to test the wind, and shucked his coat to see how shirt sleeves felt in the westering hours. He acknowledged the salutes of other captains on yet other flowered porches, out themselves to discern the gentle ground swell of weather.

"All right, Douglas, let's set it up."

In the garage they found, dusted, and carried forth the howdah, as it were, for the quiet summer-night festivals, the swing chair which Grandpa chained to the porch-ceiling eyelets.

Douglas, being lighter, was first to sit in the swing. Then, after a moment, Grandfather gingerly settled his pontifical weight beside the boy. Thus they sat, smiling at each other, needling, as they swung silently back and forth, back and forth.

Ten minutes later Grandma appeared with water buckets and brooms to wash down and sweep off the porch. Other chairs, rockers and straight-backs, were summoned from the house.

"Always like to start sitting early in the season," said Grandpa, "before the mosquitos thicken."

About seven o'clock you could hear the chairs scraping back from the tables, someone experimenting with a yellow-toothed piano, if you stood outside the dining-room window and listened. Matches being struck, the first dishes bubbling in the suds and tinkling on the wall racks, somewhere, faintly, a phonograph playing. And then as the evening changed the hour, at house after house on the twilight streets, under the immense oaks and elms, on shady porches, people would begin to appear, like those figures who tell good or bad weather in rain-or-shine clocks.

Uncle Bert, perhaps Grandfather, then Father, and some of the cousins; the men all coming out first into the syrupy evening, blowing smoke, leaving the women's voices behind in the cooling-warm kitchen to set their universe aright. Then the first male voices under the porch brim, the feet up, the boys fringed on the worn steps or wooden rails where sometime during the evening something, a boy or a geranium pot, would fall off.

At last, like ghosts hovering momentarily behind the door screen, Grandma, Great-Grandma, and Mother would appear, and the men would shift, move, and offer seats. The women carried varieties of fans with them, folded newspapers, bamboo whisks, or perfumed kerchiefs, to start the air moving about their faces as they talked.

What they talked of all evening long, no one remembered next day. It wasn't important to anyone what the adults talked about; it was only important that the sounds came and went over the delicate ferns that bordered the porch on three sides; it was only important that the darkness filled the town like black water being poured over the houses, and that the cigars glowed and that the conversations went on, and on. The female voices moved out, disturbing the first mosquitoes so they danced in frenzies on the air. The male voices invaded the old house timbers; if you closed your eyes and put your head down against the floor boards you could hear the men's voices rumbling like a distant, rumbling earthquake, constant, unceasing, rising or falling a pitch.

Overall Message

1. What is the main reason the writer wrote this story?

   A To describe the hanging of the porch swing
   B To describe a child's view of adult conversation
   C To describe Grandfather's relationship with his family
   60% *D To describe details of a summertime custom
   E I don't know.

Overall Message

2. What was special about the front porch in the summer?

   A It was a place where the children could entertain their friends.
   80% *B It was a comfortable place to gather and chat.
   C It was a place for dancing, music, and loud jokes.
   D It was the only front porch in the neighborhood.
   E I don't know.

Specific Information

3. Which word best describes the family life in this story?

   79% *A Close-knit
   B Independent
   C Hostile
   D Disorganized
   E I don't know.

Specific Information

4. What does **SYRUPY** mean in the phrase "the men all coming out first into the syrupy ever ing"?

76% *A humid
B rainy
C cold
D breezy
E I don't know.

Overall Message

5. In the second paragraph, what image does the writer create as the grandfather begins to set up the porch swing?

A Women appearing as ghosts
46% *B Ships sailing on the ocean
C A rumbling earthquake in the distance
D People acting like wooden figures in a clock
E I don't know.

Questions 3 and 4 of the passage query students about specific information such as a descriptive word to characterize the family in the story, and the meaning of a particular word — "syrupy" — as it is used in the context of the story. Questions 1, 2, and 5, on the other hand, ask students about more global meanings such as the author's purpose, main idea, and imagery. The imagery question seemed to pose the greatest difficulty for students, with just 46 percent answering the question correctly. Perhaps the era and particular cultural customs described were sufficiently far removed from the students' experiences and the author's style so unfamiliar that this piece was more difficult to comprehend.

In response to the informational passages, twelfth graders found the global questions somewhat more challenging than those eliciting particular pieces of information. Between 43 and 92 percent of the twelfth-grade students responded successfully to the specific information questions and between 38 and 84 percent to the questions tapping overall comprehension.

A science passage titled "Oceans" is presented as an example. In general, this passage was the most technical of the informational passages included in the assessment. The first, second, and third questions focus on specific information regarding a distinguishing characteristic of sea level at the equator, factual information about distance, and the most salient feature of an ocean. Questions 4 and 5 focus on the overall message, asking about the novel application of a scientific principle and the topic of the passage.

Oceans

The waters of the sea are always going somewhere. This fact is true quite apart from the movement of the tides. If you dive into the surf at Na icket, some of the water particles that cling to your back may have just arrived, after a journey of many years, from Antarctica 9,000 miles away. The surface waters drift — in mighty whirlpools half an ocean in size. The deep waters creep — in journeys that may take centuries to complete.

This restlessness is a trait of the sea almost as basic as its wetness. The best way to understand it is to take a long-range view of what the Earth does in space. As it swings round the Sun in almost circular orbit, it whirls on its axis in such a way that the seas near the equator receive the direct rays of the Sun and consequently much more heat than the polar seas get. That fact alone would be enough to set the oceans stirring. When the Sun warms the surface water at the equator, this warm water expands, and the sea level actually tends to be a few inches higher at the equator. This expansion is not much, but it does produce a tiny slope. As a result, the surface water near the equator tends to stream "downhill" toward the North and South poles. And the heavier cold water (heavier because water contracts as it cools to about 39 degrees Fahrenheit) sinks below the warm and tends to spread slowly along the bottom toward the equator.

The interchange of warm equatorial waters for cold polar waters is one of the most important of the ocean's movements. However, it is complicated by the sweep of other great forces that are also set in motion by the whirling of the Earth.

As the Earth spins, at 1,000 miles an hour at the equator, it tends to spin right out from under the oceans and leave them behind. Since the spin is eastward, the waters tend to pile up along western shores of the oceans. But that is not all. The Earth's spin has a curious effect on wind and water, and for that matter, on all moving objects — a boat, a ballistic missile, or even a thrown ball. This spin effect causes them to turn slightly to the right in the Northern Hemisphere and to the left in the Southern. This is called the "Coriolis effect," after the French mathematician who first described it more than a century ago. Artillery soldiers have learned that they must make allowance for the Coriolis effect if they wish to be accurate with long-range guns.

Specific Information

1. What distinguishes sea level at the equator from sea level at the poles?

   A It is lower.
67% *B It is higher.
   C It streams uphill.
   D It is made up of heavier water.

Specific Information

2. How many miles is Nantucket from Antarctica?

   A 1,000
   B 4,000
   C 8,000
93% *D 9,000

Specific Information

3. According to the passage, what is considered to be one of the most important of the ocean's movements?

68% *A The interchange of warm equatorial waters for cold polar waters
   B The movement of water along western shores of the ocean
   C The drifting of surface waters and creeping of deep waters

Overall Message

4. A person who was shooting a long-range gun in the Southern Hemisphere could compensate for the Coriolis effect by pointing the gun slightly to which side of the target?

   A The left
49% *B The right
   C Above
   D Below

Overall Message

5. Which of the following topics receives the most emphasis in the passage?

   A The influence of the Sun's heat on tides
   B Characteristics of surface water at the equator
38% *C Causes of water currents between the equator and the poles
   D The influence of the Earth's spin on global tides

The findings for the "Oceans" passage show that question 2, which asks about information easily located in the passage, was answered correctly by 93 percent of the students, while the fifth question, about the topic of the passage, was answered correctly by only 38 percent of the students.

Thus, across all ages and passages, it seems that reading proficiency is passage-specific, dependent on the topic and structure of the passage as well as on the question type. Although students at all three grades tended to find the global information questions slightly more difficult than questions about specifics, this generalization was not true for all of the passages. In response to passages or content with which students were likely to be familiar, the percentage of students who showed overall comprehension of the message was comparable to (and sometimes higher than) the percentage who showed comprehension of specific information. In general, close to three-fourths of the students at all grade levels successfully constructed meaning from specific information and nearly two-thirds appeared to have an overall understanding of what they had read. Further, although students did so in response to both literary and informational texts, in general, it appeared that informational passages were slightly more difficult than literary passages for students to understand from the point of the overall message, particularly for fourth graders.

Cross-Grade Comparisons

A number of passages were administered at more than one grade level, and students' responses to these passages are summarized in TABLE 5.5. Findings indicate sizable growth in students' ability to respond to both specific information and overall meaning questions. Performance increased substantially from grade 4 to grade 8, particularly in response to the informational passages. During these years, students experience substantial growth in school-type expository reading and writing abilities, suggesting that they have had less experience with expository writing than with the story forms they have heard since early childhood.[6] Between 10 and 33 percent more students answered both types of questions correctly at grade 8 than at grade 4.

Similar, but less substantial, gains occurred for most passages between grades 8 and 12. With the exception of questions asking for specific information in response to the "Business" passage, between 7 and 22 percent more students responded correctly at grade 12 than at grade 8.

[6]Judith A. Langer, *Children Reading and Writing: Structures and Strategies* (Norwood, NJ: Ablex, 1986).

TABLE

5.5 Cross-Grade Comparisons of the Average Percentage of Students Successfully Constructing Meaning

	Specific Information			Overall Message		
	Grade 4	Grade 8	Grade 12	Grade 4	Grade 8	Grade 12
Literary						
Big Wind	71.8	83.3	—	—	—	—
Old Jim Bridger	—	61.9	73.1	—	61.0	72.3
A Childhood Memory	—	57.3	77.5	—	46.3	62.0
Silky	—	—	—	78.7	89.4	—
Informational						
Naomi	62.9	85.1	—	—	—	
Business	—	84.7	80.4	—	48.7	70.5
Bethune	66.0	86.3	—	—	—	—
Mosquito	—	—	—	44.9	78.3	—
1st Americans	55.4	71.1	—	49.8	74.9	—
Web of Life	72.9	82.7	—	60.8	70.1	—
Summer Job	—	65.5	84.4	—	—	—
Meow-wow	—	62.6	76.7	—	—	—
Arts	—	32.0	43.1	—	26.8	43.1
Viruses	—	34.0	57.7	—	45.1	59.1
Garden in Park	—	82.5	90.9	—	61.3	65.6
Skunk Cabbage	—	81.3	88.3	—	57.5	68.3
Breathing	—	77.9	87.4	—	48.2	62.0
Elephant Seals	—	64.1	79.4	—	58.1	70.1
Supreme Court	—	31.2	44.8	—	—	—

The "-" symbol indicates that a passage was not given at a particu ar grade level.

Constructing and Examining Meaning

To examine students' abilities to go beyond their initial understandings, they were prompted to write their responses to questions on three passages: "Ant and Dove", "Big Wind", and "High Tech Pizza". A description of each passage follows.

> *"**Ant and Dove**" is a fable, leading to the moral that one good turn deserves another. Students were asked to write about connections they were able to make between what happens in the story and the moral.*
>
> *"**Big Wind**" is a tall tale told by grandpa, who reminisces about the mayhem created by an incredibly big wind. Students were asked to indicate whether they thought the story was true or not, and to tell why — supporting their interpretation with evidence from the story.*
>
> *"**High Tech Pizza**" is an article describing the ingredients and preparation of precooked pizza. Students were asked to write a paragraph describing the ways in which pizza is prepared in an automated factory.*

In general, students' written responses to these passages reflected three levels of understanding. *Unsatisfactory* responses reflected, at most, partial understanding of the passage and task. Though details of the passage might be cited, they reflected incomplete or partial comprehension. *Adequate* responses included enough detail to indicate that students had successfully constructed an initial understanding of the passage, providing at least a generally appropriate response to the question that was asked. *Elaborated* responses went beyond the initial construction of meaning, including evidence to support the analyses and interpretations. Such responses indicated that the students had been successful in examining meaning

The findings, summarized in TABLE 5.6, indicate that the majority of students (51 to 88 percent) were successful in constructing meaning in response to these passages, providing either adequate or elaborated responses. They had a great deal more difficulty in examining meaning (and writing about it). At most, 13 percent of the open-ended responses to any of the passages were rated as elaborated, reflecting the ability to analyze and examine meaning in order to provide evidence for the understanding that has been reached.

TABLE 5.6

Ratings of Responses to Open-Ended Questions by Grade Level

	Percentage of Student Responses		
	Unsatisfactory	Adequate	Elaborated
Grade 4			
Ant and Dove	49.3	38.2	12.5
Big Wind	27.2	72.3	0.1
Grade 8			
Big Wind	11.7	86.9	1.4
Grade 12			
High Tech Pizza	40.2	54.9	4.8

Ant and Dove

Students' written responses to the "Ant and Dove" passage were evaluated according to their ability to describe relevant actions of the ant and the dove. Unsatisfactory papers failed to indicate how the characters helped each other, adequate papers provided evidence that meaning had been constructed, and elaborated papers provided support relating in detail how both the ant and dove helped each other.

In response to the "Ant and Dove" task, half the students at grade 4 provided unsatisfactory responses, and only 13 percent were able to provide detailed evidence from the text to support the moral, reflecting a successful attempt to examine meaning. The other 38 percent provided partial information, reflecting an initial construction of meaning. Sample responses provided by fourth graders follow.

Unsatisfactory: *Now a dove was sitting on a branch over the water.*

The ant was tring to reach the water so she could take a drink. Unluckily, she slipped.

Adequate: *because both the ant and the dove helped each other*

I think that if the dove saved the ant the ant should try to help the dove, because the dove saved the ant's life.

Elaborated: *In this story the ant slips into the spring. The dove threw a leaf into the spring. The hunter in the bush was going to catch the dove. Then the ant bit the hunters bare foot and saved the dove.*

the dove threw a leaf in the water to save the ant the ant saw the dove in the net and bit the hunters toe

Big Wind

Responses to "Big Wind" were scored as unsatisfactory when they provided no overall interpretation or support, adequate when they provided a literal or non-inferential interpretation (reflecting an initial construction of meaning), and elaborated when they provided an inferential interpretation supported with evidence (reflecting successful examining of meaning).

Responses to the "Big Wind" task were mostly of the "constructing initial meaning" variety, as 72 percent of the students at grade 4 and 87 percent at grade 8 provided an interpretation supported with little or no detail. Twenty-seven percent of the fourth graders and 12 percent of the eighth graders supplied unsatisfactory responses, while only 1 percent at grade 4 and 5 percent at grade 8 wrote elaborated responses, reflecting success at examining meaning. Examples of students' responses follow.

Unsatisfactory: *It made the story more true when they said that they lived on a far n*

I think the story has a lot of meaning and alot is true it makes me think of it happening to my Grampas farm I think some of it could realy happen.

Adequate: *Parts that I think made this story fictional were:*

1) *the cow flying around in the wind;*
2) *the grandfather throwing wood at the wind;*
3) *the wind giving grandpa the barn and then getting the doors;*
4) *the wind putting the pigeon house on top of the barn.*

Elaborated: *I thought this story was made up for many reasons. First, because he said the wind blew a well out of the ground. Second, he ran out of the house and threw a piece of wood at the wind instead of blowing away. Third, when the barn landed in his yard it didn't have doors the man got mad so the wind blew it away and back. When it came back it had door. All of these things are unbelievable or fictional.*

High Tech Pizza

Responses to "High Tech Pizza" were scored as unsatisfactory when they did not give evidence of pulling information from the passage or when they overgeneralized without any reference to the steps depicted in the passage. Essentially, unsatisfactory responses provided no real evidence that the student comprehended the passage even though related information was included. Adequate responses described one or more of the critical steps, indicating successful construction of initial meaning. Elaborated responses provided cohesive, detailed descriptions of all the steps used to "fabricate" pizza. Some of these papers also offered a commentary or interpretation, reflecting the ability to examine meaning.

Results indicate that twelfth graders had difficulty explaining the information in this passage about factory production of pizza. Although a slim majority of the high-school seniors' responses to the "High Tech Pizza" task fell into the adequate category (55 percent), 40 percent provided unsatisfactory responses, and only 5 percent provided elaborated answers that might indicate some ability to examine meaning. The following sample responses were provided by twelfth graders.

Unsatisfactory: *fabrication is the making of FAKE Pizza*

Adequate: *The fabrication of a pizza in an automated factory is in 5 stages.*

1. *Milling — wheat grain milled & become grain, refined flour becomes raw materal for pizza*
2. *Chemical Treatment — refined flour treated w/ chemicals so can last longer, cornstarch used in cheese & sauce so can resist heat.*
3. *Intermediate Fabrication — products fabricated into artificial cheese, tomatos & sausage to make each ingredient real like.*
4. *Final Fabrication — putting everything together & partially cook it.*
5. *is reheating and cooking over & over.*

These are the 5 stages in in making a high-tech pizza.

Elaborated: *Pizzas made in a automatic factory are not as simple as one think. Instead of just making dough, adding sauce and putting on the toppings. First, wheat is milled and the flour fractured to yield bran, germ and starch. Second, the refined flour is treated with an oxidizing agent to improve the stretchability of the flour when made into dough, which is called chemical treatment. Third we have the immediate fabrication where the chemically modified basic products are fabricated into the artificial toppings. So that each ingredient contributes the traditional aroma, flavor and mouth feel. The last there is the final fabrication where at last the intermediate ingredients are fashioned into a pizza that will be partially or fully cooked, then frozen and packaged.*

Summary

Looking at the results across various passages, it becomes apparent that, in general, a large percentage of the students can understand the particular details of what they read, but somewhat fewer students get the overall meaning and even fewer can examine their understanding. Analysis of questions representing steps in constructing meaning indicated that, by and large, students performed well on the specific information questions, indicated that they understood a number of details and, to some extent, how these details were related to the topic. Approximately two-thirds of the students performed well on the overall meaning questions, indicating that they could go beyond the parts of a passage to comprehend the main argument that details were meant to support, and that they could accommodate general notions of what the text was about.

The results discussed here also suggest that many students at all three grades have difficulties going beyond their overall understandings, to write about and explain what they read. As with the multiple-choice questions, the responses of the majority of students to open-ended questions indicated some ability to construct initial meanings. Far fewer, however, indicated an ability to examine meaning by providing details or arguments to support their interpretations.

PROCEDURAL APPENDIX

A Description of the 1988 NAEP Reading Assessment

An Introduction to The Nation's Report Card

The Nation's Report Card, the National Assessment of Educational Progress (NAEP), is an ongoing, congressionally mandated project established in 1969 to obtain comprehensive and dependable data on the educational achievement of American students. From its inception until 1980, NAEP conducted annual assessments of 9-, 13-, and 17-year-olds attending public and private schools, and it has carried out biennial assessments since then. It remains the only regularly conducted educational survey at the elementary-, middle-, and high-school levels. To date, approximately 1.5 million American students have participated in the NAEP assessments.

Across the years, The Nation's Report Card has evaluated students' proficiencies in reading, writing, mathematics, science, and social studies, as well as literature, art, music, citizenship, computer competence, and career and occupational development. Several of these subjects have been assessed many times, permitting an analysis of trends in student achievement. In the 1987-88 school year, U.S. history, writing, civics, and geography were assessed, in addition to reading. In total, these assessments involved approximately 130,000 elementary-, middle-, and high-school students from 1,500 schools across the country.

NAEP assessments are developed through a broad-based consensus process involving educators, scholars, and citizens representative of many diverse constituencies and points of view. Panels of experts developed the 1988 reading assessment objectives, proposing goals that they felt students should achieve in the course of their education. After extensive reviews, the objectives were given to item writers who developed assessment questions to fit the specifications set forth in the objectives. A limited set of reading background questions was prepared, in addition to the general background and cognitive questions, to provide a basis for examining policy-relevant issues. These background questions asked students for information on the kinds of reading instruction they had received, as well as on their reading activities, attitudes, and resources. Teachers of the fourth-grade students also completed questionnaires about their instructional practices and background.

All items for the 1988 assessment — cognitive and background alike — underwent intensive reviews by subject-matter and measurement specialists and by sensitivity reviewers whose purpose was to eliminate any material potentially biased or insensitive toward particular groups. The items were then field tested, revised, and administered to a stratified, multi-stage probability sample selected so that the assessment results could be generalized to the national population.

Following each NAEP assessment, the results are published in reports that describe patterns and trends in achievement in a given subject area. The NAEP reports are widely disseminated to legislators, educators, and others concerned with improving education in this country.

The Nation's Report Card is supported by the U.S. Department of Education, Office of Educational Research and Improvement, and directed by the National Center for Education Statistics. Educational Testing Service has been the grantee for the project since 1983. NAEP is governed by the National Assessment Governing Board, an independent, legislatively-defined board.

The 1988 Reading Assessment

The objectives and items for the 1988 reading assessment were developed using a broad-based consensus process involving university professors, classroom teachers, social science researchers, school administrators, and curriculum specialists from across the country.[7]

For the 1988 reading assessment, the first objective — "Comprehends What is Read" — was considered central to the reading process, and the other objectives were outgrowths of this one. Encompassing the type of material, the reader's purpose, and the reader's background knowledge, comprehension was described as an interactive process by which the reader constructs meaning from a text.

Objective Two, Extends Comprehension, included the ability to analyze, interpret, and evaluate what had been read. Managing the reading experience was the focus of Objective Three, which included using the structure and organization of the text, readers' aids, flexible approaches to the task, and materials appropriate to the reading purpose. Objective Four comprised various aspects of valuing reading and engaging in reading experiences.

[7] *1986 and 1988 Reading Objectives* (Princeton, NJ: Educational Testing Service, National Assessment of Educational Progress, June 1987).

Sampling, Data Collection, and Scoring

The overall structure of the 1988 assessment used a focused-BIB spiral matrix design whereby not all students respond to all items in the assessment. This enables broad coverage of the subject area being assessed while minimizing the burden for any one student. Each assessment booklet required about one hour of student time. Students at grades 8 and 12 were given five minutes to complete each of two background questionnaires — one requesting general background information and the other requesting information on their reading experiences at home and in the classroom — and 45 minutes for the reading passages and accompanying questions. At grade 4, the background questions were read to students, which took about 15 minutes. Fourth graders were given 30 minutes to respond to the reading content questions. Most of the content questions were multiple choice, but some open-ended questions were also included. Eighty-three cognitive questions were administered at grade 4, 100 questions at grade 8, and 110 questions at grade 12. Some of the items were given only at one grade, while others were given at more than one grade.

Seven 15-minute blocks of cognitive reading items were prepared at grades 8 and 12, and seven 10-minute blocks at grade 4. The balanced incomplete block or "BIB" part of the 1988 NAEP design assigned these seven reading blocks to booklets in such a way that each block appeared in three booklets in each of the three possible positions and each pair of blocks appeared in one of seven booklets. Approximately 1,800 students responded to each question. The "spiralling" part of the method cycled the booklets for administration with booklets from the other subject areas assessed in 1988 so that typically only a few students in any one session received the same booklet.

Sampling and data collection activities for the 1988 assessment were conducted by WESTAT, Inc. As with all NAEP assessments, the 1988 assessment was based on a deeply stratified, three-stage sampling design. The first stage involved stratifying primary sampling units (typically aggregates of continuous counties, but sometimes a single county) by region and community type and making a random selection. Second, within each selected unit, public and private schools were enumerated, stratified, and randomly selected. Finally, students were randomly selected from each school for participation in NAEP and then randomly assigned to assessment sessions. TABLE A.1 presents the student and school sample sizes for the 1988 reading assessment of fourth, eighth, and twelfth graders, as well as the school cooperation and student response rates.

TABLE A.1

Student and School Sample Sizes: 1988

Grades	Number of Students	Number of Schools	Percent Schools Participating	Percent Student Completion
4	4,534	327	83.7	92.8
8	4,404	399	86.6	87.8
12	4,250	304	82.8	78.5
Total	13,188	1,030		

Note: These figures were obtained from the **Reports on NAEP Field Operation and Data Collection Activities**, prepared by Westat, Inc. Although sampled schools that refused to participate were replaced, school cooperation rates are computed based on the schools originally selected for participation in the assessments. The student completion rates represent the percentage of students assessed of those invited to be assessed, including students assessed in follow-up sessions when necessary.

All data were collected by a trained field staff. Some students sampled (less than 5 percent) were excluded from the assessment because of limited English proficiency or severe handicap. In 1984, NAEP began collecting descriptive information on these excluded students.

Following the session, the assessment administrators sent completed materials back to ETS for processing. All open-ended responses were scored by professional readers who were trained to use the evaluative criteria developed for each question. The booklets were then scanned and information was transcribed to the NAEP database. All data collection and processing activities were conducted with attention to rigorous quality control procedures.

Open-Ended Item Scoring

A scoring guide was developed for each open-ended reading question to focus raters' attention on how successfully students' responses accomplished the task set forth in the prompt. The guides defined four to five levels of task accomplishment for each task. For ease in reporting the results, the levels contained in some of the guides were collapsed into four common levels: not rated, unsatisfactory, adequate, and elaborated, as illustrated in Figure A.1.

FIGURE A.1

Levels of Reading Task Accomplishment

Score	
3	**Elaborated**. Students providing elaborated responses give evidence of success in examining meaning. They extend and restructure ideas in texts and provide relevant support for their understandings. They identify relationships among ideas even when the relationships are not stated explicitly.
2	**Adequate**. Students providing adequate responses formulate understandings, but provide no or only partial evidence to support their ideas.
1	**Unsatisfactory**. Students providing unsatisfactory responses show little evidence that they have understood the passage, although related information may have been presented.
0	**Not Rated**. A small percentage of responses were blank, indecipherable, or completely off task, or contained a statement to the effect that the student did not know how to do the task.

A group of trained raters carried out the scoring over a period of several months. Prior to scoring the responses to each task, an intensive training session was conducted by NAEP staff in the use of the scoring guide for that task. Twenty percent of the responses were scored by a second rater to give an estimate of interrater reliabilities. These are summarized in TABLE A.2. Following the scoring of students' written responses, the information from the booklets was transcribed to the NAEP data base. All data collection and processing activities were conducted with attention to rigorous quality control procedures.

TABLE A.2

Intraclass Correlation Coefficients and Percentages of Exact Score Point Agreement for Open-Ended Reading Questions

	Grade 4		Grade 8		Grade 12	
	Correlation Coefficients	Percent Agreement	Correlation Coefficients	Percent Agreement	Correlation Coefficients	Percent Agreement
Ant and Dove	.95	88.9	-	-	-	-
Big Wind	.92	93.4	.95	97.4	.93	92.9
High-Tech Pizza	-	-	-	-	.93	92.9

Note: The scoring was based on four categories.

The Data Analyses

Once the processing of the reading data had been completed, the data were weighted in accordance with the population structure. The weighting reflects the probability of selection of each student, adjusts for nonresponse, and, through poststratification, assures that the representation of certain subpopulations corresponds to figures from the Census and the Current Population Survey. (*The NAEP 1987-88 Technical Report* will provide further details on weighting and its effects on proficiency estimates.)

Analyses included computing the percentages of students giving various responses to the questions and estimating the average percentage of students responding correctly to particular sets of items. Because a nationally representative sample of students answered each question, these results are also available for subgroups of students as defined by gender, race/ethnicity, region, and other characteristics (see Data Appendix).

Item response theory (IRT) technology was used to estimate average reading proficiency for the nation and various subpopulations. The main purpose of IRT analysis is to provide a common scale on which performance can be compared across groups and subgroups whether or not they are tested using the same sets of items.

IRT defines the probability of answering an item correctly as a mathematical function of proficiency or skill. NAEP's estimated statistics describing national and subgroup proficiency are computed as expectations of the values of the figures that would have been obtained had individual proficiencies been observed, given the data that were in fact observed — that is, responses to the cognitive and background items.[8]

The NAEP assessments also make it possible to examine relationships between student performance and a variety of background factors, relating achievement to one variable or composite variables. In developing background questions for the assessments, NAEP staff and consultants rely on existing educational research. Each question is carefully crafted so that the data it yields can be used to confirm and build on what is known about factors related to academic performance. The analysis of students' responses to the background questions can then be used to highlight particular relationships of interest — for example, the relationship between students' home and school environments and their performance in the NAEP assessments. These analyses, however, do not reveal the underlying causes of these relationships, which may be influenced by a number of variables. Similarly, the assessments do not

[8]For theoretical justification of the procedures employed, see Robert J. Mislevy, *ETS Research Bulletin #88-54-ONR: Randomization-based Inferences About Latent Variables from Complex Samples* (Princeton, NJ: Educational Testing Service, 1988). For computational details, see *The NAEP 1987-88 Technical Report* (Princeton, NJ: Educational Testing Service, National Assessment of Educational Progress, 1990).

capture the influence of unmeasured variables. Therefore, the results are most useful when they are considered in combination with other knowledge about the student population and the educational system, such as trends in instruction, changes in the school-age population, and societal demands and expectations.

Fourth-grade Teacher Questionnaire

To supplement the information on reading instruction reported by students, the teachers of fourth-grade students sampled for participation in NAEP's 1988 reading assessment were asked to complete a questionnaire that asked about their instructional practices, teaching backgrounds, and characteristics. NAEP collected information from the teachers of 3,808 of the 4,534 fourth graders who participated in the 1988 reading assessment. For the teacher questionnaire analyses reported herein, these students were treated as the total sample.

The design of the teacher questionnaire was rather complex, consisting of three parts. The first part contained questions on each *student* participating in the assessment, as some teachers had more than one of their students assessed. Teachers were asked to provide information on each student's reading level, primary grade reading program, and reading group, and on the instructional emphasis on particular reading skills, homework, testing, and remediation.

In the second part of the questionnaire, teachers were asked to provide information on each *class* they taught that included one or more students who participated in the assessment. Teachers were asked whether students were assigned to the class by ability level, the reading ability of the students in the class, the amount of time spent on reading instruction, the classroom organization for reading instruction, use of various resources, and the amount of time spent using a variety of instructional techniques.

The third part of the questionnaire asked about the *teacher*, including questions about his or her characteristics — such as race/ethnicity and gender, as well as academic degrees held, teaching certification and experience, special training, amount of control over school decision-making, ability to get resources, and commitment to teaching.

All teachers who received the questionnaires were told of the students and classes for which they were to provide information. This information was transcribed onto the cover of the questionnaire using the identification numbers assigned to each student participating in the assessment. Teachers were also given unique identification numbers. In keeping with NAEP's confidentiality policy, the names of the students assessed and the teachers who completed questionnaires never left the schools. Prior to data analysis, the student identification numbers and class period designations on the front of each teacher questionnaire were used to link the teacher questionnaire data to the records containing information on students' characteristics and their performance in the reading assessment.

Thus, in the 1988 assessment, NAEP was able for the first time to link information on students' reading performance with instructional information provided by their teachers. Using the student as the unit of analysis, rather than the teacher, it is possible to describe instruction as received by nationally representative samples of fourth-grade students. This allows NAEP to address questions such as, what do the teachers of fourth-grade students actually do in the classroom? And how do these practices relate to reading achievement?

The perspective provided by these analyses may differ from what would be obtained by simply collecting information from a national sample of fourth-grade reading teachers. However, the approach used is in keeping with NAEP's goal of providing information about the educational context and performance of *students*. Further, the results may reflect more accurately what is actually going on in classrooms, because they indicate what the reading teachers of fourth graders are doing, rather than what all fourth-grade reading teachers are doing regardless of how much contact they have with actual students.

In reality, the difference between the two sets of results — that is, the results from surveying all teachers and results from surveying the teachers of students at a given grade — may be quite small. For example, because most fourth graders are taught reading by female teachers, it is relatively safe to assume that fourth-grade reading teachers are predominantly female. However, to be consistent with the analyses performed, care was taken throughout this report to describe the results of the teacher questionnaire analyses in terms of students rather than teachers. The information gleaned from these analyses helps to provide a more complete picture of the instructional experiences of NAEP's nationally representative sample of fourth-grade students.

Estimating Variability in Proficiency Measures

Since the statistics presented in this report are estimates of population and subpopulation characteristics, rather than the actual (unknown) values of those characteristics, it is important to have measures of the degree of uncertainty of the estimates. There are two components of uncertainty which are accounted for in statistics based on the NAEP data: (1) uncertainty due to sampling variability and (2) uncertainty arising because scale values for each respondent are based on a relatively small number of cognitive items.

The sampling variance provides a measure of the dependence of the results on the particular sample achieved. Because NAEP uses complex sampling procedures, conventional formula for estimating sampling variability that assume simple random sampling are inappropriate. To account for the characteristics of its complex sample design, NAEP uses a jackknife replication procedure to estimate the sampling variability. Briefly, the jackknife procedure estimates the sampling variance of a statistic by repeatedly altering the sample in a controlled manner and recomputing the statistic based on the altered sample.[9] The jackknife variance estimate is based on the variability of the statistics from the altered samples. The square root of the jackknife variance estimate of a statistic is the sampling standard error of that statistic. This standard error includes all possible nonsystematic error associated with administering specific items to designated students in controlled situations.

The jackknifed standard error provides a reasonable measure of uncertainty for any statistic based on values observed without error. Population scores for cognitive items meet this requirement, but scale-score proficiency values do not. Because each student typically responds to relatively few items, there exists a nontrivial amount of imprecision in the measurement of the proficiency values for any given student. This imprecision adds an additional component of variability to statistics based on scale-score proficiency values. This component is estimated by assessing the dependence of the value of the statistic on the particular set of student level estimated proficiencies used in its computation. The measure of the overall variability of a statistic based on scale scores is the sum of the component due to imprecision of measurement and the jackknife sampling variance. The standard error of the statistic is the square root of this sum.

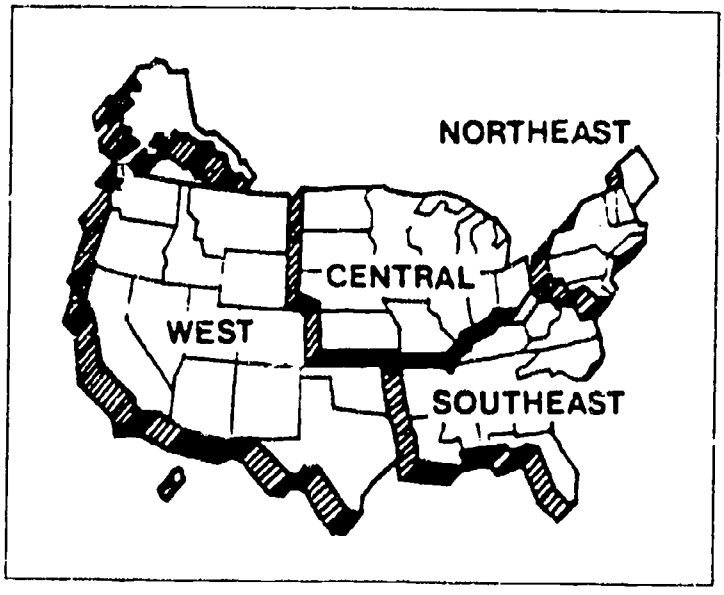
[9]Eugene G. Johnson, "Considerations and Techniques for the Analysis of NAEP Data," *Journal of Educational Statistics, Vol. 14, No. 4* (December 1989).

NAEP Reporting Groups

NAEP reports performance for the nation and for groups of students defined by shared characteristics. In addition to national results, this report contains information about subgroups defined by region of the country, gender, race/ethnicity, and size and type of community. The following section defines these and other subpopulations referred to in this report.

Region

The country has been divided into four regions: Northeast, Southeast, Central and West. States included in each region are shown on the following map.



Gender

Results are reported for males and females.

Race/Ethnicity

Results are presented for Black, White, and Hispanic students, based on students' identification of their race/ethnicity according to the following categories: White, Black, Hispanic, Asian or Pacific Islander, American Indian or Alaskan Native, and Other. Although the sample sizes were insufficient to permit separate reliable estimates for all subgroups defined by race/ethnicity, all students were included in computing the national estimates of average reading performance.

Size and Type of Community

Three extreme community types of special interest are defined by an occupational profile of the area served by the school, as well as by the size of the community in which the school is located. This is the only reporting category that excludes a large number of respondents. About two-thirds do not fall into the classifications listed below. Results for this remaining two-thirds are not reported in this breakdown, since their performance was similar to that for the nation.

Advantaged Urban Communities. *Students in this group attend schools in or around cities with a population greater than 200,000 where a high proportion of the residents are in professional or managerial positions.*

Disadvantaged Urban Communities. *Students in this group attend schools in or around cities with a population greater than 200,000 where a high proportion of the residents are on welfare or are not regularly employed.*

Rural Communities. *Students in this group attend schools in areas with a population below 10,000 where many of the residents are farmers or farm workers.*

Race/Ethnicity by Region and Advantaged/Disadvantaged Urban Communities

TABLE A.3 provides information on the cross-section between students' racial/ethnic characteristics and the regions in which they live and the types of communities in which they attend school.

Additional Background Factors

In addition to gathering information on students' gender, race/ethnicity, the region in which they live, and the type of community in which they attend school, NAEP collects data from all students on a number of background questions, including the type of school program in which they are enrolled, the number and types of reading materials in the home, the highest level of parents' education, and the amount of time spent on homework. Students participating in the 1988 reading assessment were also asked a series of background questions specific to their reading instruction. To report students' responses to these questions in a useful way, NAEP has developed composite variables by analyzing students' responses to certain sets of the background questions.

TABLE
A.3

Distribution of White, Black, and Hispanic Students by Region and by Size and Type of Community

	Percentage of Students		
	White	Black	Hispanic
GRADE 4			
Total	69.7 (0.6)	15.9 (0.5)	10.3 (0.3)
Region			
Northeast	70.6 (1.8)	15.9 (1.4)	8.8 (0.8)
Southeast	62.4 (2.1)	29.8 (2.0)	5.6 (0.9)
Central	82.7 (2.4)	8.7 (2.3)	6.6 (0.8)
West	64.3 (1.5)	9.1 (1.7)	19.3 (0.9)
Size and Type of Community			
Advantaged urban	75.0 (3.4)!	9.0 (2.2)!	10.5 (2.5)!
Disadvantaged urban	27.1 (5.6)	48.2 (7.4)	20.5 (3.7)
GRADE 8			
Total	69.8 (0.7)	15.2 (0.7)	10.7 (0.4)
Region			
Northeast	73.8 (2.8)	15.3 (1.8)	8.2 (1.8)
Southeast	68.9 (2.9)	23.6 (2.4)	5.6 (1.0
Central	76.0 (2.4)	15.8 (2.3)	5.3 (0.9)
West	62.0 (2.1)	7.4 (1.4)	21.7 (1.3)
Size and Type of Community			
Advantaged urban	75.6 (4.8)	11.3 (4.0)	8.0 (2.9)
Disadvantaged urban	32.9 (5.9)	40.7 (5.4)	18.9 (3.3)
GRADE 12			
Total	74.0 (1.0)	13.9 (0.7)	8.0 (1.5)
Region			
Northeast	80.0 (3.1)	9.9 (2.0)	6.9 (1.9)
Southeast	67.2 (3.3)	24.9 (2.8)	5.3 (1.6)
Central	83.5 (2.5)	10.6 (1.7)	3.2 (0.6)
West	65.3 (2.2)	10.8 (1.8)	16.2 (1.7)
Size and Type of Community			
Advantaged urban	85.7 (2.3)	6.2 (1.4)	3.9 (1.0)
Disadvantaged urban	23.2 (6.9)	38.3 (7.5)	34.9 (6.1)

Standard errors are presented in parentheses. The "!" symbol indicates that the data should be interpreted with caution because the standard errors cannot be accurately estimated.

DATA APPENDIX

Average Reading Proficiency and Standard Errors

	Grade 4	Grade 8	Grade 12
NATION	230.4 (1.1)	262.8 (1.0)	287.1 (0.8)
Gender			
Male	226.6 (1.5)	256.4 (1.3)	282.9 (1.1)
Female	234.4 (1.2)	269.6 (1.1)	291.0 (1.1)
Race/Ethnicity			
White	238.1 (1.2)	269.2 (1.3)	292.6 (1.0)
Black	210.6 (1.9)	245.7 (2.0)	270.3 (1.6)
Hispanic	209.9 (2.4)	243.6 (2.1)	267.1 (2.4)
Region			
Northeast	233.1 (2.8)	268.1 (1.8)	287.0 (2.1)
Southeast	224.4 (2.5)	259.3 (1.8)	284.3 (1.1)
Central	234.6 (2.2)	264.3 (3.4)	289.3 (1.6)
West	230.2 (2.3)	260.1 (1.4)	287.7 (1.5)
Size and Type of Community			
Advantaged urban	247.5 (2.9)	273.9 (2.8)	296.0 (2.6)
Disadvantaged urban	208.3 (3.2)	247.4 (2.9)	269.4 (3.0)
Rural	228.3 (2.9)	270.5 (3.4)	287.7 (3.2)
Parental Education			
Not graduated high school	204.4 (3.2)	244.8 (2.2)	271.4 (2.1)
Graduated high school	225.9 (2.1)	256.3 (1.5)	278.2 (1.1)
Some college	240.8 (2.1)	268.6 (1.4)	288.6 (1.2)
Graduated college	240.9 (1.3)	272.7 (1.2)	295.9 (1.2)

Average Percentage of Students Constructing Meaning

Specific Information	Average Percentage Correct		
Informational Passages	**Grade 4**	**Grade 8**	**Grade 12**
NATION	69.9 (0.6)	68.0 (0.5)	75.0 (0.4)
Gender			
Male	68.4 (0.8)	64.7 (0.8)	72.4 (0.6)
Female	71.5 (0.7)	71.5 (0.5)	77.4 (0.5)
Race/Ethnicity			
White	73.7 (0.7)	71.0 (0.7)	77.4 (0.5)
Black	59.6 (1.2)	59.5 (1.0)	67.9 (0.9)
Hispanic	59.1 (1.3)	58.7 (1.2)	65.4 (1.5)
Other	69.1 (2.0)	69.3 (1.3)	73.2 (1.6)
Region			
Northeast	72.1 (1.6)	71.0 (0.8)	75.3 (1.1)
Southeast	66.3 (1.4)	66.5 (1.0)	73.7 (0.5)
Central	72.8 (1.1)	68.3 (1.8)	75.7 (0.9)
West	69.0 (1.2)	66.4 (0.9)	75.1 (0.7)
Size and Type of Community			
Advantaged Urban	58.6 (2.0)	60.7 (1.5)	66.3 (1.8)
Disadvantaged Urban	78.1 (1.3)	72.4 (1.4)	79.1 (1.2)
Rural	68.5 (1.3)	71.2 (1.8)	75.6 (1.8)
Parental Education			
Not graduated high school	57.8 (1.9)	59.3 (1.4)	67.4 (1.2)
Graduated high school	68.2 (1.1)	64.8 (0.8)	71.2 (0.6)
Some college	75.5 (1.2)	70.5 (0.8)	75.7 (0.5)
Graduated college	75.3 (0.7)	72.8 (0.6)	78.8 (0.6)
Unknown	64.8 (0.8)	57.5 (1.4)	60.5 (3.3)
Literary Passages			
NATION	73.4 (0.6)	74.1 (0.7)	69.7 (0.7)
Sex			
Male	70.7 (0.8)	70.2 (0.9)	69.2 (0.9)
Female	76.2 (0.6)	78.1 (0.6)	70.2 (0.9)
Race/Ethnicity			
White	76.6 (0.6)	77.4 (0.8)	73.3 (0.8)
Black	64.9 (1.1)	65.5 (1.5)	60.2 (1.2)
Hispanic	64.6 (1.3)	62.6 (1.6)	54.8 (2.2)
Other	71.0 (1.9)	74.4 (2.2)	62.5 (3.3)
Region			
Northeast	74.3 (1.7)	77.3 (1.0)	69.1 (1.5)
Southeast	71.1 (1.2)	71.8 (1.5)	68.3 (1.4)
Central	75.1 (1.0)	75.0 (2.0)	72.8 (1.2)
West	73.3 (1.0)	72.6 (1.1)	68.7 (1.2)

Average Percentage of Students Constructing Meaning (continued)

Specific Information	Average Percentage Correct		
Literary Passages (cont'd)	**Grade 4**	**Grade 8**	**Grade 12**
Size and Type of Community			
Advantaged Urban	63.0 (1.7)	65.4 (1.8)	61.6 (2.8)
Disadvantaged Urban	80.9 (1.1)	79.0 (1.7)	74.8 (1.9)
Rural	72.4 (1.6)	77.5 (2.0)	72.0 (2.8)
Parental Education			
Not graduated high school	60.9 (1.9)	63.7 (1.5)	62.0 (2.4)
Graduated high school	72.3 (1.1)	71.0 (1.2)	65.5 (1.2)
Some college	77.0 (1.3)	77.5 (1.0)	71.3 (1.0)
Graduated college	77.7 (0.7)	7[illegible].8 (0.8)	73.7 (1.1)
Unknown	69.9 (0.6)	63.4 (1.7)	50.1 (5.9)
Overall Message			
Informational Passages			
NATION	54.8 (0.8)	61.4 (0.6)	61.6 (0.5)
Gender			
Male	54.5 (1.1)	58.9 (0.9)	60.4 (0.7)
Female	55.3 (1.1)	64.0 (0.7)	62.7 (0.6)
Race/Ethnicity			
White	58.9 (0.9)	64.7 (0.8)	64.1 (0.5)
Black	43.1 (1.2)	51.0 (1.3)	53.6 (0.8)
Hispanic	43.0 (1.7)	52.5 (1.4)	51.6 (1.5)
Other	53.0 (3.0)	63.7 (1.7)	61.6 (1.7)
Region			
Northeast	56.6 (2.2)	64.7 (0.9)	61.2 (1.1)
Southeast	51.6 (1.9)	58.9 (1.0)	59.8 (0.8)
Central	56.7 (1.4)	62.3 (1.9)	63.0 (1.0)
West	54.6 (1.2)	60.0 (1.2)	62.4 (0.8)
Size and Type of Community			
Advantaged Urban	41.9 (1.8)	53.0 (2.0)	51.9 (2.0)
Disadvantaged Urban	63.2 (2.3)	68.0 (1.7)	65.4 (1.4)
Rural	52.6 (2.8)	64.8 (2.3)	61.2 (1.9)
Parental Education			
Not graduated high school	40.5 (2.6)	51.9 (1.4)	52.8 (1.4)
Graduated high school	53.3 (1.6)	57.3 (1.0)	57.9 (0.6)
Some college	61.9 (1.9)	64.4 (1.1)	61.5 (0.7)
Graduated college	61.9 (1.0)	66.9 (0.7)	65.8 (0.8)
Unknown	47.2 (1.0)	50.9 (1.3)	92.2 (4.4)

Average Percentage of Students Constructing Meaning (continued)

Overall Message	Average Percentage Correct		
	Grade 4	Grade 8	Grade 12
Literary Passages			
NATION	67.0 (0.7)	63.2 (0.7)	66.2 (0.7)
Gender			
Male	65.1 (0.8)	58.9 (1.0)	63.7 (1.1)
Female	68.9 (0.9)	67.7 (0.8)	68.4 (0.9)
Race/Ethnicity			
White	70.7 (0.8)	67.1 (0.9)	70.2 (0.8)
Black	56.4 (1.2)	52.5 (1.3)	52.3 (1.8)
Hispanic	58.3 (1.5)	51.0 (1.7)	49.9 (2.0)
Other	64.9 (2.4)	64.1 (2.8)	64.9 (3.8)
Region			
Northeast	69.3 (1.4)	67.4 (1.2)	66.1 (1.8)
Southeast	64.1 (1.5)	59.4 (1.4)	64.8 (1.2)
Central	68.4 (1.6)	64.9 (2.2)	68.2 (1.2)
West	66.6 (1.3)	61.6 (1.1)	65.5 (1.5)
Size and Type of Community			
Advantaged Urban	57.8 (1.7)	54.8 (1.9)	53.7 (2.7)
Disadvantaged Urban	74.9 (1.6)	70.5 (1.5)	71.3 (2.5)
Rural	67.1 (1.8)	67.4 (3.0)	69.7 (2.5)
Parental Education			
Not graduated high school	54.9 (2.0)	53.6 (1.8)	56.4 (2.6)
Graduated high school	64.4 (1.3)	58.8 (1.3)	60.2 (1.3)
Some college	71.2 (1.5)	66.8 (1.3)	68.3 (1.4)
Graduated college	72.4 (0.8)	69.0 (0.8)	71.6 (1.0)
Unknown	62.7 (1.1)	50.0 (2.2)	40.0 (5.1)

Average Percentage of Students Examining Meaning

	Average Percentage Elaborated Responses		
	Grade 4	Grade 8	Grade 12
NATION	6.3 (0.7)	1.4 (0.4)	4.8 (0.5)
Gender			
Male	6.0 (1.0)	0.5 (0.2)	3.2 (0.6)
Female	6.7 (0.8)	2.2 (0.7)	6.2 (0.9)
Race/Ethnicity			
White	7.0 (0.8)	1.7 (0.5)	5.5 (0.6)
Black	3.6 (1.4)	0.5 (0.5)	2.5 (1.5)
Hispanic	3.9 (1.1)	0.6 (0.6)	2.2 (1.6)
Region			
Northeast	7.3 (1.9)	1.8 (0.7)	7.2 (1.4)
Southeast	6.8 (1.2)	1.1 (0.7)	3.6 (1.1)
Central	4.6 (1.1)	1.0 (0.7)	3.8 (0.6)
West	6.7 (1.1)	1.6 (0.9)	4.5 (1.2)
Size and Type of Community			
Advantaged Urban	9.6 (1.6)	4.5 (2.2)	6.2 (1.6)
Disadvantaged Urban	6.1 (2.0)	0.0 (0.0)	4.3 (3.1)
Rural	4.2 (1.5)	2.0 (2.0)	1.9 (2.0)
Parental Education			
Not graduated high school	3.3 (2.0)	0.0 (0.0)	0.5 (0.5)
Graduated high school	7.2 (1.3)	1.1 (0.6)	3.8 (1.3)
Some college	4.4 (1.4)	0.5 (0.4)	7.1 (1.5)
Graduated college	8.6 (1.1)	2.5 (0.7)	4.8 (1.0)

Average Reading Proficiency, Standard Deviations, and Percentiles of Reading Distributions with Standard Errors

		Grade 4	Grade 8	Grade 12
TOTAL				
Average Proficiency		230.4 (1.1)	262.8 (1.0)	287.1 (0.8)
Standard Deviation		41.4 (0.7)	37.3 (0.6)	34.8 (0.6)
Percentiles	5	156.4 (1.3)	195.0 (2.6)	224.9 (2.4)
	10	174.2 (2.3)	211.6 (1.4)	241.1 (1.4)
	25	204.3 (2.0)	239.8 (1.6)	265.9 (1.3)
	50	233.6 (1.2)	266.0 (1.1)	290.0 (1.0)
	75	259.0 (1.1)	288.6 (1.7)	310.8 (1.0)
	90	280.3 (0.9)	308.2 (1.0)	329.1 (1.3)
	95	293.2 (1.2)	320.1 (1.8)	340.0 (1.8)
MALE				
Average Proficiency		226.6 (1.5)	256.4 (1.3)	282.9 (1.1)
Standard Deviation		43.6 (1.0)	39.4 (0.8)	36.8 (0.8)
Percentiles	5	148.7 (2.5)	186.0 (3.7)	214.6 (2.3)
	10	166.5 (4.4)	201.0 (1.9)	232.8 (1.9)
	25	198.7 (2.7)	230.7 (1.9)	259.7 (2.5)
	50	229.5 (1.4)	259.9 (2.1)	286.2 (1.5)
	75	257.1 (2.2)	284.2 (1.7)	307.9 (1.4)
	90	279.3 (1.9)	304.7 (1.9)	327.3 (0.9)
	95	293.2 (2.3)	317.3 (1.8)	338.1 (2.2)
FEMALE				
Average Proficiency		234.4 (1.2)	269.6 (1.1)	291.0 (1.1)
Standard Deviation		38.5 (0.6)	33.8 (0.7)	32.4 (0.8)
Percentiles	5	167.2 (2.0)	211.3 (1.6)	235.6 (4.2)
	10	182.8 (1.5)	225.0 (1.6)	249.3 (1.5)
	25	210.1 (1.0)	248.5 (1.2)	270.6 (1.4)
	50	237.6 (1.1)	271.6 (1.2)	292.8 (1.3)
	75	260.6 (1.1)	292.2 (1.0)	313.2 (1.2)
	90	281.3 (1.7)	310.6 (1.2)	330.5 (1.7)
	95	292.9 (1.6)	322.4 (2.2)	341.3 (3.1)

Average Reading Proficiency, Standard Deviations, and Percentiles of Reading Distributions with Standard Errors (continued)

		Grade 4	Grade 8	Grade 12
WHITE				
Average Proficiency		238.1 (1.2)	269.2 (1.3)	292.6 (1.0)
Standard Deviation		39.3 (0.8)	36.2 (0.7)	33.4 (0.6)
Percentiles	5	167.1 (2.9)	202.3 (5.7)	233.3 (3.6)
	10	186.0 (3.6)	219.8 (2.7)	249.2 (1.9)
	25	213.9 (1.3)	248.1 (1.7)	272.6 (1.2)
	50	240.8 (1.7)	272.6 (1.3)	295.1 (1.0)
	75	264.4 (1.1)	293.6 (0.7)	315.3 (1.3)
	90	285.2 (1.6)	312.6 (1.3)	332.5 (0.7)
	95	297.8 (2.7)	323.7 (1.5)	343.6 (2.2)
BLACK				
Average Proficiency		210.6 (1.9)	245.7 (2.0)	270.3 (1.6)
Standard Deviation		39.1 (1.0)	32.8 (1.2)	31.1 (1.2)
Percentiles	5	143.0 (4.2)	187.4 (4.0)	213.9 (3.5)
	10	158.4 (4.7)	201.2 (3.7)	228.8 (3.2)
	25	184.7 (3.4)	225.5 (2.3)	250.3 (3.5)
	50	212.0 (2.5)	248.2 (2.0)	272.9 (1.4)
	75	238.8 (2.0)	267.0 (2.8)	292.0 (1.7)
	90	258.0 (1.9)	284.9 (2.6)	307.1 (2.5)
	95	270.5 (3.4)	297.2 (3.8)	317.5 (4.4)
HISPANIC				
Average Proficiency		209.9 (2.4)	243.6 (2.1)	267.1 (2.4)
Standard Deviation		41.5 (1.3)	37.6 (1.3)	35.7 (1.5)
Percentiles	5	134.8 (7.6)	177.6 (4.3)	200.8 (7.0)
	10	153.2 (10.4)	190.9 (4.3)	218.1 (3.3)
	25	182.5 (4.0)	217.6 (4.3)	244.3 (4.3)
	50	213.4 (1.9)	246.9 (3.4)	269.9 (2.3)
	75	240.3 (2.9)	271.5 (2.5)	292.7 (1.9)
	90	260.1 (6.4)	288.2 (2.5)	310.8 (6.5)
	95	272.0 (4.1)	300.6 (3.1)	321.0 (2.4)

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