

Section 2

Learner Outcomes



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Summary: Learner Outcomes

This section presents findings on student achievement and outcomes and the progress that is being made in improving student performance and closing achievement gaps.

Children enter school with varying levels of knowledge and skill. Measures of these early childhood competencies represent important indicators of future prospects both inside and outside of the classroom. As students proceed through school, it is essential to measure their progress to ensure they are acquiring the necessary skills and understanding challenging subject matter. Academic outcomes are measured as the change in performance over time, as the percentage of students achieving predetermined standards of competence, and through international comparisons of national averages. Together these measures help create a composite picture of academic achievement.

In addition to academic achievement, an important outcome of education is an educated, capable, and engaged citizenry. The social and cultural outcomes of education, measured by civic knowledge, community volunteerism, and voting participation, among other things, are necessary to ensure a well-rounded and complete education.

Adult learning and economic outcomes also figure prominently among indicators of education results. Adult learning refers to the lifelong learning capacities of adults and the educational opportunities provided to them to continue to meet the changing needs of society. Economic outcomes refer to creating a productive and capable workforce, often measured by the wages employers are willing to pay.

Academic Outcomes

Reading Performance of Students in Grade 4

Fourth-grade reading performance has not changed significantly since 1992. In each assessment year, including the most recent, female students scored higher than their male peers.

The results of the National Assessment of Educational Progress (NAEP) for 4th-graders in 2000 show overall stability in students' reading performance: the average reading scale score for 2000 is not significantly different from the scale scores in 1992, 1994, or 1998. Achievement levels, which specify what students should know and be able to do, provide another measure of student performance. Higher percentages of students were at or above the *Proficient* level and at the *Advanced* level in 2000 than in 1992 (32 and 29 percent and 8 and 6 percent, respectively) (see supplemental table 7-1).

The results from 2000 show female students continuing to outperform their male counterparts in reading. Comparison of male and female performance in 2000 shows higher percentages of female 4th-graders scored at or above *Basic*, at or above *Proficient*, and at the *Advanced* level. Among males, there was no significant change in the percentages of students scoring at or above each achievement level across assessment years. In 2000, however, the percentage of females at or above the *Proficient* level was higher than in 1992.

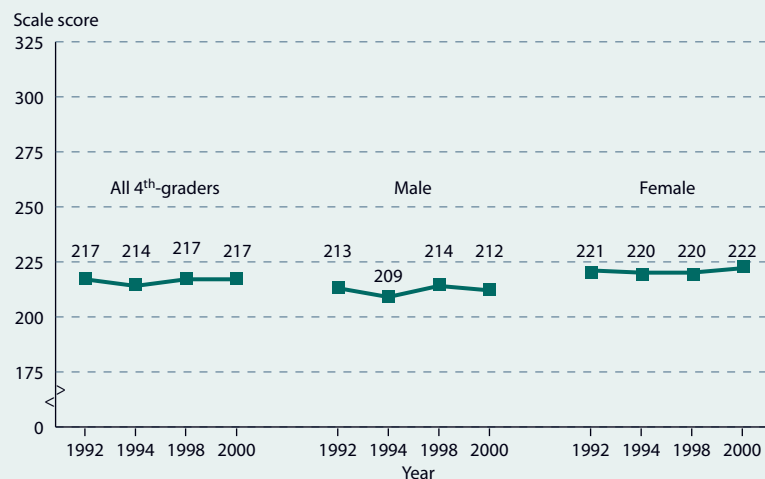
Without controlling for socioeconomic status, 4th-grade reading achievement varied by differ-

ent school and family characteristics. In 2000, 4th-graders in schools where more than 75 percent of the students were eligible for the National School Lunch Program did not perform as well as 4th-graders in schools with lower percentages of students eligible for the program. As the percentage of students in a school eligible for the program increased, the average score decreased. When comparing differences based on school location, students in central city schools had a lower average reading score than their peers who attended schools in other locations (see supplemental table 7-2).

School-related activities or family behavior were associated with student performance (without controlling for socioeconomic status). Students who discussed their studies at home on a daily, weekly, or monthly basis had higher average reading scores than students who never discussed their studies at home. Practice is important to reading development. Higher numbers of pages read daily in school and for homework were associated with higher average reading scale scores. Fourth-graders who reported reading 11 or more pages daily had the highest average score, outperforming their peers who reported reading fewer pages.

SOURCE: U.S. Department of Education, NCES. (2001). *The Nation's Report Card: Fourth-Grade Reading 2000* (NCES 2001-499).

READING PERFORMANCE: Average reading scale scores for 4th-graders, by sex: 1992, 1994, 1998, and 2000



FOR MORE INFORMATION:
Supplemental Notes 1, 3
Supplemental Tables 7-1, 7-2

Academic Outcomes

Trends in the Achievement Gap in Reading Between White and Black Students

While the average reading scores of White students are higher than those of Black students at ages 9, 13, and 17, the gaps decreased between the early 1970s and the late 1980s. Since then, the gaps have remained relatively stable or increased.

The National Assessment of Educational Progress (NAEP) has assessed trends in students' reading performance since the early 1970s. NAEP thus provides a picture of how student performance in reading has changed over time, specifically the achievement gap between Black and White students. This issue has been the focus of considerable attention among those concerned with equity in the quality of education provided to America's students.

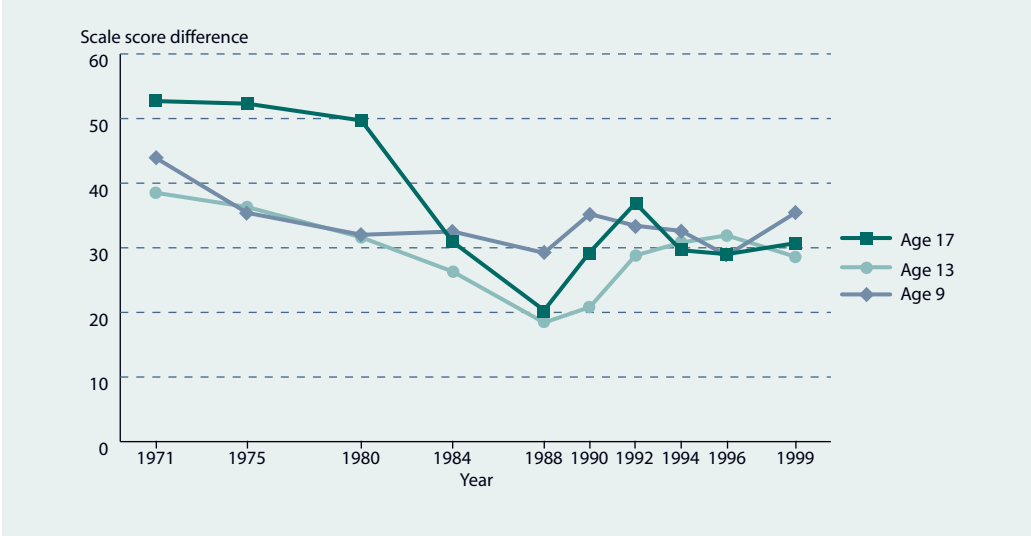
Since 1971, the reading scores of Black 9-, 13-, and 17-year-olds have been lower, on average, than those of their White peers. However, the average difference between Black and White students' scores has changed over time. There has been an overall narrowing in this achievement gap since 1971, most of which is due to decreases that occurred before 1988. For example, between 1971 and 1988, the Black-White score gap decreased for all 13- and 17-year-olds. Between 1988 and 1999, the Black-White score gap increased for 13-year-olds. The appar-

ent increases for 9- and 17-year-olds, however, were not significant (see supplemental table 8-1).

One indication of what these score changes mean for Black students' achievement is that in 1971 the average reading score of Black 17-year-olds (239) was below that of White 13-year-olds (261). By 1988, the average reading score of Black 17-year-olds (274) was between that of White 17-year-olds (295) and White 13-year-olds (261).

The changes in the Black and White achievement gaps can also be examined by looking at the changes that occurred in the achievement scores of Black and White students at the high and the low ends of the score distribution in these two time periods. From 1971 to 1988, the overall reading gap for 17-year-olds decreased because the reading scores of Black students increased more than the scores of White students at all quartile levels. Furthermore, among Black and White students, the gaps between the highest and lowest per-

READING ACHIEVEMENT GAP: Difference in average reading scale scores of 9-, 13-, and 17-year-old White and Black students: 1971–99



NOTE: The gap is determined by subtracting the average Black score from the average White score at each grade for each year assessed.

SOURCE: U.S. Department of Education, NCES. (2000). *NAEP 1999 Trends in Academic Progress: Three Decades of Student Performance* (NCES 2000–469) and National Assessment of Educational Progress (NAEP), 1999 Long-Term Trend Assessment, unpublished data produced by the Educational Testing Service.

FOR MORE INFORMATION:

Supplemental Notes 1, 3
Supplemental Tables 8-1, 8-2



forming students narrowed: the average scores of those in the lowest quartile increased relative to those in the highest quartile. These trends changed or were reversed between 1988 and 1999, at which time the scores of Blacks at all quartile levels decreased, while the scores of Whites varied by quartile. Among Black students, there were no further

changes in the gaps between the upper and lower quartile scores. Among White students, the average scores of those in the upper quartile increased, while the scores of those in the bottom quartile decreased, widening the difference between them to a level similar to that in 1971.

TRENDS IN READING ACHIEVEMENT: Change in average reading scale scores for 17-year-olds, by race and score quartile: 1971–88 and 1988–99



*Change is greater than 0 but less than .5.
 NOTE: The change for each race is determined by subtracting the average score in the earlier year from the average score in the later year for each quartile.
 SOURCE: U.S. Department of Education, NCES. (2000). *NAEP 1999 Trends in Academic Progress: Three Decades of Student Performance* (NCES 2000–469) and National Assessment of Educational Progress (NAEP), 1999 Long-Term Trend Assessment, unpublished data produced by the Educational Testing Service.



FOR MORE INFORMATION:
 Supplemental Notes 1, 3
 Supplemental Tables 8-1,
 8-2

Academic Outcomes

International Comparisons of Reading Literacy

U.S. 15-year-olds performed at the international average in reading literacy in 2000, scored below the average of 3 countries, and above the average of 4 industrialized countries.

The Program for International Student Assessment (PISA) reports on the reading literacy of 15-year-olds in 27 participating Organization for Economic Cooperation and Development (OECD) industrialized countries and 4 non-OECD countries assessed in 2000. The average U.S. reading literacy score was similar to the international average of the 27 OECD countries. U.S. students had a lower average score than students in 3 countries and a higher average score than students in 4 OECD and 3 non-OECD countries. On specific reading skill areas (retrieving information, interpreting texts, reflecting on texts), U.S. students also scored similarly to the international averages. In each specific skill area, a few countries outperformed the United States (see supplemental table 9-1).

Countries differ in the extent to which students' scores are distributed above and below the national average. The standard deviation of reading literacy scores in each country can be used to determine how much scores vary from the country's average score. Fifteen countries showed less variation from their average score than the United States, no country had more variation, and 15 countries had similar variation.

In almost all countries, students whose parents had a high school diploma or higher outperformed students whose parents had less than a high school diploma. No country had a larger reading literacy point difference between students whose parents had a bachelor's degree or higher and those whose parents had not completed high school than the United States. In addition, females outperformed males in reading literacy in every country (see supplemental table 9-2).

The socioeconomic status of students' parents was positively associated with performance in reading literacy in the United States. Each 1-point increase in the International Socioeconomic Index (ISEI), a measure based on parents' occupation, was associated with an increase in literacy scores on average for each country. The larger the increase in literacy score in a country, the stronger was the relationship between socioeconomic status and reading literacy performance in that country. Each 1-point increase in ISEI led to a 2.1-point difference in reading literacy in the United States, which was similar to the international average point difference.

*The international average is the average of OECD countries only and thus excludes Brazil, Latvia, Liechtenstein, and the Russian Federation.

NOTE: A standard deviation provides information about the distribution of students' combined reading literacy scale scores. In a normal distribution, 68 percent of scores fall within plus or minus one standard deviation of the mean, and 95 percent fall within plus or minus two standard deviations of the mean. For more information on this study, see *Supplemental Note 4*.

SOURCE: U.S. Department of Education, NCES. (2001). *Outcomes of Learning: Results from the 2000 Program for International Student Assessment of 15-Year-Olds in Reading, Mathematics, and Science Literacy* (NCES 2002-115).

FOR MORE INFORMATION:

Supplemental Note 4
Supplemental Tables 9-1, 9-2
OECD 2001



INTERNATIONAL READING LITERACY: Average reading literacy score of 15-year-olds, by country: 2000

Average score relative to the United States	Country and score					
Significantly higher	Finland	546	Canada	534	New Zealand	529
Not significantly different	Australia	528	Iceland	507	Spain	493
	Ireland	527	France	505	Czech Republic	492
	Korea, Republic of	525	Norway	505	Italy	487
	United Kingdom	523	United States	504	Germany	484
	Japan	522	<i>International average*</i>	<i>500</i>	Liechtenstein	483
	Sweden	516	Denmark	497	Hungary	480
	Austria	507	Switzerland	494	Poland	479
	Belgium	507				
	Significantly lower	Greece	474	Latvia	458	Mexico
Portugal		470	Luxembourg	441	Brazil	396
Russian Federation		462				

Academic Outcomes

Mathematics Performance of Students in Grades 4, 8, and 12

The mathematics performance of 4th- and 8th-graders increased steadily from 1990 to 2000, while the performance of 12th-graders increased from 1990 to 1996 but then declined between 1996 and 2000.

The National Assessment of Educational Progress (NAEP) has assessed performance in mathematics in grades 4, 8, and 12 since 1990. Students in grades 4 and 8 showed steady growth in mathematics achievement from 1990 to 2000. In contrast, 12th-graders in 2000 scored higher than in 1990 but lower than in 1996. Achievement levels, which identify what students should know and be able to do at each grade, provide another measure of student performance. In 2000, 26 percent of 4th-graders, 27 percent of 8th-graders, and 17 percent of 12th-graders performed at or above the *Proficient* levels for each grade (see supplemental table 10-1).

Did certain subgroups of students outperform other groups in 2000? Males, on average, scored higher than females in grades 8 and 12; however, in grade 4, there was no significant difference between the average scores of boys and girls. Whites at all three grade levels and Asian/Pacific Islanders in grades 8 and 12 scored higher, on average, than their Black, Hispanic, and American Indian counterparts. Asian/Pacific Islanders scored higher than Whites at grade 12. The level of poverty in

the school was associated with student achievement. In all three grades, average scale scores decreased as the percentage of students in the school eligible for a free or reduced-price lunch increased (see supplemental table 10-2).

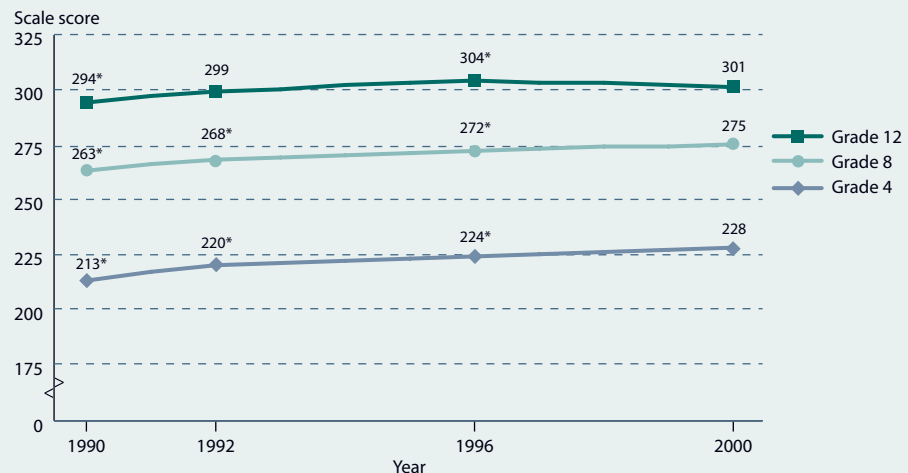
Assessment results were associated with the opportunity to study challenging material and the degree to which students took advantage of these opportunities. Among 8th-grade students in 2000, those taking 8th-grade mathematics or prealgebra scored lower than those taking algebra I or II, geometry, or sequential or integrated mathematics. Twelfth-graders who had taken the most advanced mathematics courses scored higher than students who had taken low- or middle-level courses.

NAEP also provided a state comparison of public schools in grades 4 and 8. Of the 36 jurisdictions that participated in the assessment in 4th grade in 1992 and 2000, 26 had a higher average score and 1 had a lower score in 2000 than in 1992. Thirty-one jurisdictions participated in grade 8 in 1990 and 2000; 27 had a higher average score, and none had a lower score in 2000 than in 1990 (see supplemental table 10-3).

*Significantly different from 2000.

SOURCE: U.S. Department of Education, NCES. (2001). *The Nation's Report Card: Mathematics 2000* (NCES 2001-517).

MATHEMATICS PERFORMANCE: Average mathematics scale scores for 4th-, 8th-, and 12th-graders: 1990, 1992, 1996, and 2000



FOR MORE INFORMATION:
Supplemental Notes 1, 3
Supplemental Tables 10-1,
10-2, 10-3

Academic Outcomes

Poverty and Student Achievement

Compared with students in low-poverty public schools, students in high-poverty public schools have lower achievement scores in 4th-grade mathematics.

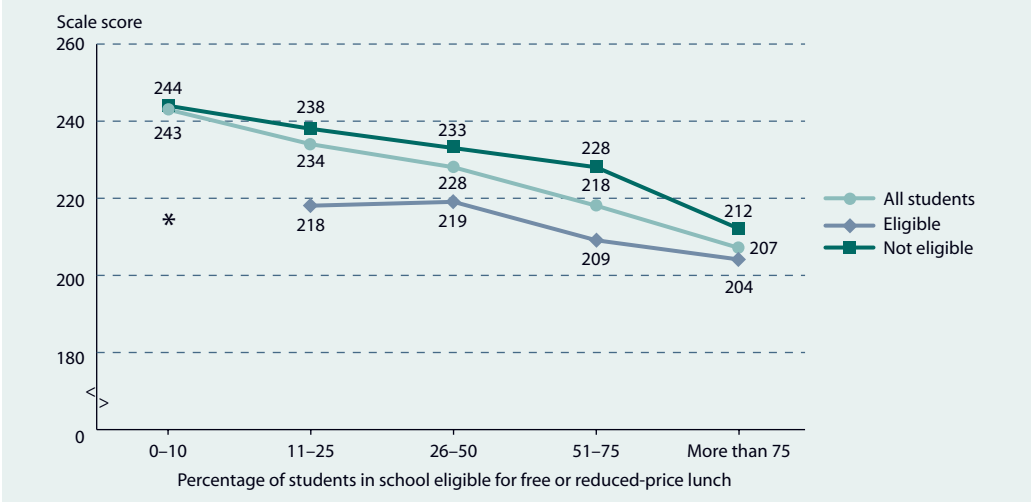
The National Assessment of Educational Progress (NAEP) collects background information on students, teachers, and schools, permitting analysis of student achievement relative to the poverty level of public schools, measured as the percentage of students eligible for free or reduced-price lunch. In 2000, higher levels of students eligible for subsidized lunch were generally associated with lower scores on the 4th-grade mathematics assessment. Students in schools with more than 50 percent of their students eligible for free or reduced-price lunch had a lower average score than students in schools with a quarter or fewer of their students eligible for the program (see supplemental table 11-1).

Was there a difference in the mathematics achievement of 4th-graders in 2000 in high and low poverty schools regardless of whether or not the student was personally eligible for subsidized lunch? Among students who were not personally eligible for the school lunch program, students in schools with more than 50 percent of their students eligible for the program had a lower average score than those in schools with a quarter or fewer eligible. Among those eligible for

the school lunch program, the average score of students in schools with more than 75 percent of students eligible was lower than the score for those in schools with 11–50 percent of students eligible.

Certain characteristics of the highest poverty schools (more than 75 percent of students eligible for subsidized lunch) are evident. Relative to the total 4th-grade population, there was a lower percentage of White students and a higher percentage of Black and Hispanic students in the highest poverty schools. The highest poverty schools had higher rates of student absenteeism and a lower percentage of their students with a “very positive” attitude toward academic achievement than schools with the least poverty (i.e., those with 10 percent or fewer eligible). In addition, the highest poverty schools in 2000 reported less parental involvement than schools with the least poverty. For example, the highest poverty schools were more likely to report less than 50 percent parent participation in open houses or back-to-school nights than schools with the least poverty (see supplemental table 11-2).

POVERTY AND ACHIEVEMENT: Average scale score of public school students in 4th-grade mathematics, by the percentage of students in the school eligible for free or reduced-price lunch and whether the student was eligible for free or reduced-price lunch: 2000



*For the eligible student category, there were too few sample cases for a reliable estimate.

SOURCE: U.S. Department of Education, NCES, National Assessment of Educational Progress (NAEP), unpublished data provided by the Educational Testing Service, 2000.

FOR MORE INFORMATION:

Supplemental Notes 1, 3
Supplemental Tables 11-1, 11-2



Academic Outcomes

Science Performance of Students in Grades 4, 8, and 12

The science performance of both 4th- and 8th-graders did not change significantly from 1996 to 2000, while 12th-grade scores declined by 3 points.

The National Assessment of Educational Progress (NAEP) assessed 4th-, 8th-, and 12th-grade student performance in science in 1996 and 2000. The average science scale scores of both 4th- and 8th-graders did not change significantly from 1996 to 2000, while there was a 3-point decline in grade 12 between the 2 years. NAEP also provides achievement levels indicating what students should know and be able to do in each grade. In 2000, 29 percent of 4th-graders, 32 percent of 8th-graders, and 18 percent of 12th-graders performed at or above the *Proficient* level set for each grade. In 8th grade, there was an increase in the percentage of students reaching the *Proficient* level or above between 1996 and 2000 (see supplemental table 12-1).

Student and school characteristics were associated with student performance. Males had a higher average score than females in 2000 at grades 4 and 8, but the two had similar scores in grade 12. Whites in grade 4 and Whites and Asian/Pacific Islanders in grades 8 and 12 had higher average scores than their Black, Hispanic, and American Indian counterparts; in all three grades, American Indians had a higher score than Hispanics and Blacks. The poverty

rate, as measured by the percentage of students in a school eligible for the National School Lunch Program, was also related to achievement. As the percentage of students in a school eligible for the program increased, the average score of students in the school decreased (see supplemental table 12-2).

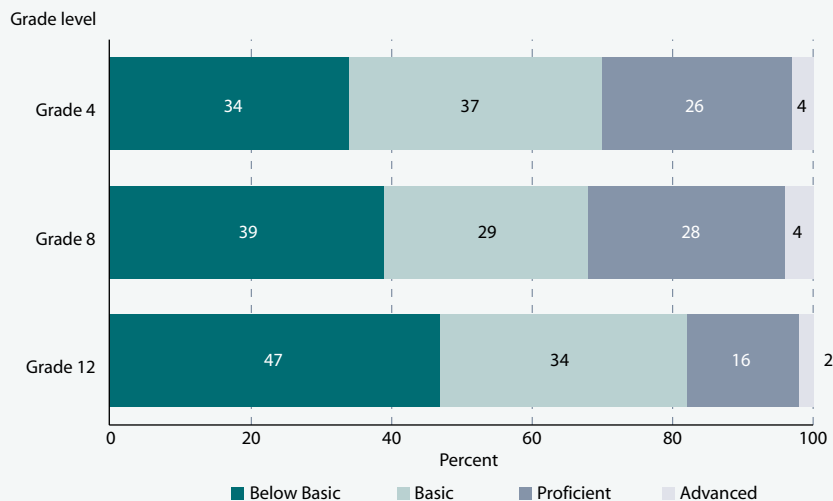
Coursetaking was also associated with student achievement. Eighth-graders who were not taking science had the lowest average scores of all 8th-graders assessed in 2000. Eighth-graders enrolled in a life science course had a lower average score than their peers enrolled in other science courses. Twelfth-graders who had taken 1st-year biology, chemistry, or physics at some point since grade 8 had higher scores than students who had not taken these courses.

NAEP also collected performance data of public school students by state or jurisdiction in 4th grade in 2000 and in 8th grade in 1996 and 2000. In 8th grade, there was no significant difference in average scores from 1996 to 2000 in 33 jurisdictions, while 3 jurisdictions showed significant score gains and no jurisdiction showed a significant decline (see supplemental table 12-3).

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, NCES. (forthcoming). *The Nation's Report Card: Science 2000* (NCES 2002-451).

SCIENCE PERFORMANCE: Percentage distribution of students performing at each science achievement level, by grade: 2000



FOR MORE INFORMATION:
Supplemental Notes 1, 3
Supplemental Tables 12-1,
12-2, 12-3

Academic Outcomes

International Comparisons of 8th-Graders' Performance in Mathematics and Science

In 1999, U.S. 8th-graders exceeded the international average of 38 countries in mathematics and science but performed lower than their peers in 14 countries.

The Third International Mathematics and Science Study–Repeat (TIMSS-R), which was conducted in 1999, follows the previous TIMSS by 4 years and focuses on the mathematics and science achievement of 8th-graders in 38 countries.

Comparison of 8th-graders in 1999. In TIMSS-R, the international average score for 8th-graders in mathematics of the 38 participating countries was 487, and the average in science was 488. In 1999, U.S. students on average scored higher in both mathematics and science than the international average of the 38 countries. In mathematics, the average U.S. score was higher than the score in 17 countries, similar to the score in 6 countries, and lower than the score in 14 countries. In science, the average U.S. score for 8th-graders was higher than the score in 18 countries, similar to the score in 5 countries, and lower than the score in 14 countries in 1999 (see the figure on the opposite page and supplemental table 13-1).

Comparison of 8th-graders in 1995 and 1999. Both TIMSS and TIMSS-R assessed students in 8th grade, allowing for a comparison of 8th-grade performance at two points in time. Of the 38 countries that participated in TIMSS-R, 23 also participated in the 8th-grade assessment in TIMSS. The international average in 1999 of the 23 countries participating in both studies was 521 in both mathematics and science (see supplemental table 13-2).

Among U.S. 8th-graders, there was no statistically significant change in mathematics or science performance from 1995 to 1999. Of the 23 countries that participated at the 8th-grade level in mathematics in TIMSS 1995 and TIMSS-R 1999, there was no change in achievement in 19 countries during this period, 3 countries experienced an increase in overall mathematics achievement, and 1 country experienced a decrease. In science, there was no change in 18 of the 23 countries from 1995 to 1999, there was an increase in overall science achievement in 4 countries, and a decrease

in 1 country. The international average of 8th-graders in 1999 was similar to that of 8th-graders in 1995 in both mathematics and science for the 23 countries that participated in both assessments (see the top figure on page 62 and supplemental table 13-2).

Comparison of 4th-graders in 1995 and 8th-graders in 1999. The 1995 TIMSS 4th-graders and the 1999 TIMSS-R 8th-graders represented the same cohort of students at two different points in time. These students' performance in 1995 can be compared with their performance in 1999. However, direct comparisons between the 1995 4th-grade TIMSS assessment and the 1999 8th-grade TIMSS-R assessment are complicated by several factors, including differences in the content areas assessed and the questions that could be asked between the two grade levels. Therefore, comparisons between TIMSS 4th-graders and TIMSS-R 8th-graders are based on their performance relative to the international average of the 17 countries that participated in 4th-grade TIMSS in 1995 and 8th-grade TIMSS-R in 1999. The international average in 1999 for the 17 countries was 524 in both 8th-grade mathematics and science in 1999 and it was 517 and 514 in 4th-grade mathematics and science, respectively, in 1995 (see supplemental table 13-3).

The U.S. mathematics score for 4th-graders in 1995 was statistically similar to the international average of the 17 participating countries, but the U.S. mathematics score for 8th-graders in 1999 was below the international average. In science, the U.S. 4th-grade score in 1995 was above the international average of the 17 countries, but the 8th-grade score in 1999 was similar to the international average. As a result, in both mathematics and science, U.S. students' performance decreased relative to the international average of the 17 countries, from the 4th grade in 1995 to the 8th grade in 1999 (see the bottom figure on page 62 and supplemental table 13-3).

MATHEMATICS AND SCIENCE PERFORMANCE: Average mathematics and science performance of 8th-graders for the 38 participating countries: 1999

Mathematics	Average score relative to the United States	Science
Australia Belgium-Flemish Canada Chinese Taipei Finland Hong Kong, SAR Hungary Japan Korea, Republic of Netherlands Russian Federation Singapore Slovak Republic Slovenia	Significantly higher	Australia Belgium-Flemish Canada Chinese Taipei Czech Republic England Finland Hungary Japan Korea, Republic of Netherlands Singapore Slovak Republic Slovenia
Bulgaria Czech Republic England Latvia-LSS ¹ Malaysia New Zealand	Not significantly different	Bulgaria Hong Kong, SAR Latvia-LSS ¹ New Zealand Russian Federation
Chile Cyprus Indonesia <i>International average</i> Iran, Islamic Republic of Israel ² Italy Jordan Lithuania ³ Macedonia, Republic of Moldova Morocco Philippines Romania South Africa Thailand Tunisia Turkey	Significantly lower	Chile Cyprus Indonesia <i>International average</i> Iran, Islamic Republic of Israel ² Italy Jordan Lithuania ³ Macedonia, Republic of Malaysia Moldova Morocco Philippines Romania South Africa Thailand Tunisia Turkey

¹Only Latvian-speaking schools were tested.

²Israel did not meet the international sampling and/or other guidelines. See *Supplemental Note 4* for details.

³Lithuania tested the same cohort of students as in other countries, but later in 1999, at the beginning of the next school year.

NOTE: Eighth grade in most countries. See *Supplemental Note 4* for details. The international average is the average of the national averages of the 38 countries.

SOURCE: U.S. Department of Education, NCES. (2000). *Pursuing Excellence: Comparisons of International Eighth-Grade Mathematics and Science Achievement from a U.S. Perspective, 1995 and 1999* (NCES 2001–028) (TIMSS-R).



FOR MORE INFORMATION:

Supplemental Note 4
Supplemental Tables 13-1,
13-2, 13-3

NCES 2001–027, NCES 2000–
062, Indicators 18, 19

CHANGE IN MATHEMATICS AND SCIENCE PERFORMANCE: Mathematics and science performance of 8th-graders in 1995 and 1999 for the 23 countries that participated in both assessments

Mathematics	Average score in 1999 relative to the country's score in 1995	Science
Canada Cyprus Latvia-LSS ^{1,2}	Significantly higher	Canada Hungary Latvia-LSS ^{1,2} Lithuania ^{1,3}
Australia ¹ Belgium-Flemish Bulgaria ¹ England ¹ Hong Kong, SAR Hungary <i>International average</i> Iran, Islamic Republic of Italy Japan	Not significantly different	Australia ¹ Belgium-Flemish Cyprus Czech Republic England ¹ Hong Kong SAR <i>International average</i> Iran, Islamic Republic of Italy Japan
		Korea, Republic of Netherlands ¹ New Zealand Romania ¹ Russian Federation Singapore Slovak Republic Slovenia ¹ <i>United States</i>
Czech Republic	Significantly lower	Bulgaria ¹

¹Country did not meet the international sampling and/or other guidelines at 8th-grade level in 1995. See *Supplemental Note 4* for more details.

²Only Latvian-speaking schools were tested.

³Lithuania tested the same cohort of students as in other countries, but later in 1999, at the beginning of the next school year.

NOTE: Eighth grade in most countries. See *Supplemental Note 4* for details. International average is the average of the national averages for the 23 countries that participated in the 8th-grade assessment in both 1995 and 1999.

SOURCE: U.S. Department of Education, NCES. (2000). *Pursuing Excellence: Comparisons of International Eighth-Grade Mathematics and Science Achievement from a U.S. Perspective, 1995 and 1999* (NCES 2001-028) (TIMSS and TIMSS-R).

MATHEMATICS PERFORMANCE: Average mathematics performance of 4th-graders in 1995 and 8th-graders in 1999 for the 17 countries that participated in both assessments

4 th -graders in 1995	Average score relative to the international average	8 th -graders in 1999
Czech Republic Japan Hong Kong, SAR Netherlands ¹ Singapore Korea, Republic of	Significantly higher	Hong Kong, SAR Singapore Japan Korea, Republic of
Australia ¹ Hungary ¹ Italy ¹	Not significantly different	Australia Canada Czech Republic Hungary Netherlands Slovenia
Canada Latvia-LSS ^{1,2} Cyprus New Zealand England ¹ Iran, Islamic Republic of	Significantly lower	Cyprus Latvia-LSS ² New Zealand United States England Iran, Islamic Republic of Italy

¹Country did not meet the international sampling and/or other guidelines at 4th-grade level in 1995. See *Supplemental Note 4* for more details.

²Only Latvian-speaking schools were tested.

NOTE: Fourth and 8th grade in most countries. See *Supplemental Note 4* for details. International average is the average of the national averages for the 17 countries that participated in the 4th-grade assessment in 1995 and the 8th-grade assessment in 1999.

SOURCE: U.S. Department of Education, NCES. (2000). *Pursuing Excellence: Comparisons of International Eighth-Grade Mathematics and Science Achievement from a U.S. Perspective, 1995 and 1999* (NCES 2001-028) (TIMSS and TIMSS-R).

FOR MORE INFORMATION:

Supplemental Note 4
Supplemental Tables 13-1,
13-2, 13-3

NCES 2001-027, NCES 2000-062, Indicators 18, 19



Social and Cultural Outcomes

Education and Health

The better educated a person is, the more likely that person is to report being in “very good” or “excellent” health, regardless of income.

Better education is associated with better health. In the National Health Interview Survey, the National Center for Health Statistics annually surveys people concerning their health. One question asks respondents to rate their own health. In 1997, the better educated a person was, the more likely that person was to report being in “excellent” or “very good” health. People with a bachelor’s degree or higher were twice as likely as those without a high school diploma or equivalent to report being in excellent or very good health (80 versus 39 percent) (see supplemental table 14-1).

Family income was also related to health. The more family income a person had, the more likely that person was to report being in excellent or very good health. In 1997, those with a family income of \$75,000 or more were nearly twice as likely as people making less than \$20,000 to report being in excellent or very good health (80 versus 41 percent) (see supplemental table 14-1).

In addition to this strong relationship between family income and health, education is positively related to health, independent of income. Within each income range, people with a bachelor’s degree or higher reported being in better health than people with some education beyond high school, who, in turn, reported being in better health than high school completers. High school completers, in turn, reported being in better health than people with less than a high school diploma. For example, for all adults with a family income between \$35,000 and \$54,999 in 1997, those with a bachelor’s degree or higher (80 percent) were more likely than those with some education beyond high school (71 percent) to report being in excellent or very good health. People with some education beyond high school, in turn, were more likely than high school completers (63 percent) to report being in good health. Finally, people with a high school diploma or equivalent reported having better health on average than those who had not completed high school (49 percent).

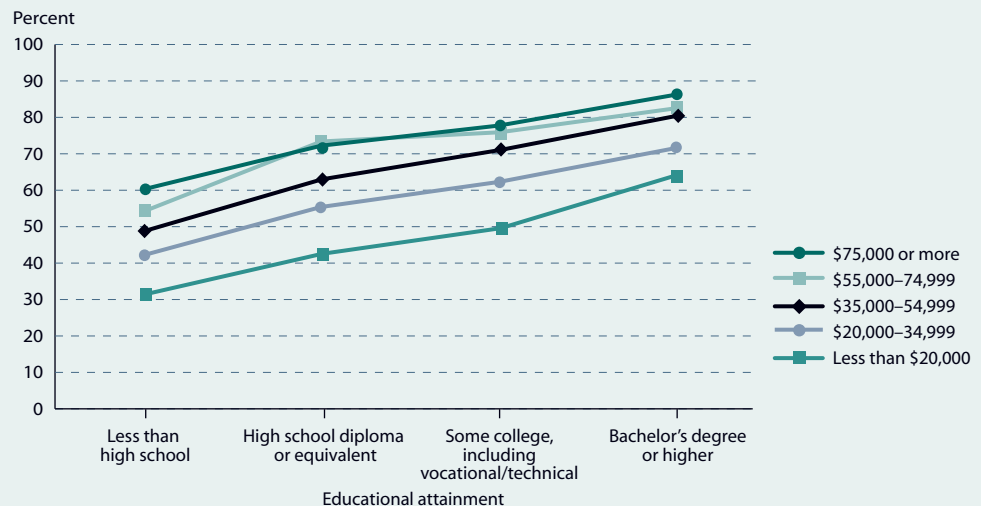
NOTE: Includes those who responded excellent or very good on a scale of excellent, very good, good, fair, and poor.

SOURCE: U.S. Department of Health and Human Services, Centers for Disease Control, National Center for Health Statistics. National Health Interview Survey, 1997.



FOR MORE INFORMATION:
Supplemental Note 1
Supplemental Table 14-1
Bjorner et al. 1996; Lantz et al.
2001

EDUCATION AND HEALTH: Percentage of the population age 25 and above who reported being in excellent or very good health, by educational attainment and family income: 1997



Social and Cultural Outcomes

Civic Performance of U.S. Students in an International Perspective

U.S. 9th-graders scored significantly higher than the international average in overall civic knowledge and outperformed students in 27 other countries in civic skills.

In 1999, the United States participated with 27 other countries in the Civic Education Study, conducted under the auspices of the International Association for the Evaluation of Educational Achievement (IEA). The study assessed the civic knowledge and skills of 14-year-olds (9th grade in most countries) and their attitudes toward democracy and citizenship. The study was not designed to measure knowledge of a particular country’s government but rather to measure knowledge and understanding of key civic principles that are universal across democracies.

U.S. students performed well when compared with students in the other countries. Civic performance was measured by an overall civic knowledge scale composed of two subscales, civic content and civic skills. On overall civic knowledge, U.S. 9th-graders performed significantly above the international average score. In no other country did students outperform U.S. students. Students in 11 countries performed similarly to U.S. students, and students

in 16 countries scored significantly below U.S. students.

The civic content subscale included content knowledge of civic principles or pivotal ideas, such as the characteristics of democracies. On civic content, the average score of U.S. 9th-graders was similar to the international average. Students in six countries performed better than U.S. students, while U.S. students outperformed students in 11 countries.

The civic skills subscale included the analytical skills needed to understand civic-related information, such as the skills needed to understand a newspaper article. U.S. 9th-graders scored significantly higher than the international mean on civic skills and also outperformed, on average, students in every other participating country. This finding indicates that U.S. students, on average, were able to use analytical skills to process information related to political and social issues.

INTERNATIONAL CIVIC PERFORMANCE: Average total civic knowledge of 9 th -grade students, by score and country: 1999						
Average score relative to the United States	Country and score					
Significantly higher	(none)					
Not significantly different	Poland	111	Hong Kong (SAR)	107	Norway	103
	Finland	109	United States	106	Czech Republic	103
	Cyprus	108	Italy	105	Hungary	102
	Greece	108	Slovak Republic	105	Australia	102
Significantly lower	Slovenia	101	Sweden	99	Lithuania	94
	Denmark	100	Switzerland	98	Romania	92
	Germany	100	Bulgaria	98	Latvia	92
	Russian Federation	100	Portugal	96	Chile	88
	<i>International average</i>	<i>100</i>	Belgium (French)	95	Colombia	86
	England	99	Estonia	94		

NOTE: Countries were instructed to select the grade in which most 14-year-olds were enrolled at the time of the study. In the United States, this was 9th grade.

SOURCE: U.S. Department of Education, NCES. (2001). *What Democracy Means to Ninth-Graders: U.S. Results from the International IEA Civic Education Study* (NCES 2001–096).

FOR MORE INFORMATION:
Supplemental Note 4



INTERNATIONAL CIVIC PERFORMANCE: Average civic content subscale performance of 9th-grade students, by score and country: 1999

Average score relative to the United States	Country and score					
Significantly higher	Poland	112	Finland	108	Hong Kong (SAR)	108
	Greece	109	Cyprus	108	Slovak Republic	107
Not significantly different	Italy	105	Hungary	102	<i>International average</i>	100
	Norway	103	Slovenia	102	Australia	99
	Czech Republic	103	Russian Federation	102	Germany	99
	United States	102	Denmark	100	Bulgaria	99
	Sweden	97	Belgium (French)	94	Latvia	92
Significantly lower	Portugal	97	Estonia	94	Chile	89
	England	96	Lithuania	94	Colombia	89
	Switzerland	96	Romania	93		

NOTE: Countries were instructed to select the grade in which most 14-year-olds were enrolled at the time of the study. In the United States, this was 9th grade.

SOURCE: U.S. Department of Education, NCES. (2001). *What Democracy Means to Ninth-Graders: U.S. Results from the International IEA Civic Education Study* (NCES 2001–096).

INTERNATIONAL CIVIC PERFORMANCE: Average civic skills subscale performance of 9th-grade students, by score and country: 1999

Average score relative to the United States	Country and score					
Significantly higher	(None)					
Not significantly different	United States	114				
Significantly lower	Finland	110	Czech Republic	102	Bulgaria	95
	Cyprus	108	Sweden	102	Portugal	95
	Australia	107	Switzerland	102	Estonia	95
	Poland	106	Hungary	101	Lithuania	93
	Greece	105	Germany	101	Latvia	92
	Italy	105	Denmark	100	Romania	90
	England	105	<i>International average</i>	100	Chile	88
	Hong Kong (SAR)	104	Slovenia	99	Colombia	84
	Slovak Republic	103	Russian Federation	96		
	Norway	103	Belgium (French)	96		



FOR MORE INFORMATION:
Supplemental Note 4

Economic Outcomes

Annual Earnings of Young Adults

The earnings of young adults with at least a bachelor's degree increased over the past 20 years relative to their counterparts who have no more than a high school diploma.

Adults ages 25–34 with at least a bachelor's degree have higher median earnings than those who have less education. For example, in 2000, male and female college graduates earned 60 and 95 percent more, respectively, than those who completed only high school or a General Education Development Certificate (GED). In contrast, males and females ages 25–34 who dropped out of high school earned 27 and 30 percent less, respectively, than their peers who had a high school diploma or GED (see supplemental tables 16-1 and 16-2).

Between 1980 and 2000, the median earnings of young adults who have at least a bachelor's degree increased relative to their counterparts with no more than a high school diploma or GED. This increase occurred for men and women, rising from a difference of 19 percent in 1980 to 60 percent in 2000 for men, and from 52 percent in 1980 to 95 percent in 2000 for women. During the same period, the median earnings of young adults who had not completed high school lagged behind those with a high school diploma or GED. However, the earnings gap between those at these two education levels did not show any consistent increase during 1980–2000 for either male or female wage and salary workers ages 25–34 (see supplemental table 16-2).

Gaps in median earnings between males and females ages 25–34 exist at all levels of educational attainment. The male/female earnings gap is lower for those with at least a bachelor's degree than for their peers with no more than a high school diploma or GED. In addition,

the male/female earnings gap has narrowed between 1971 and 2000, regardless of the level of educational attainment (see supplemental table 16-3).

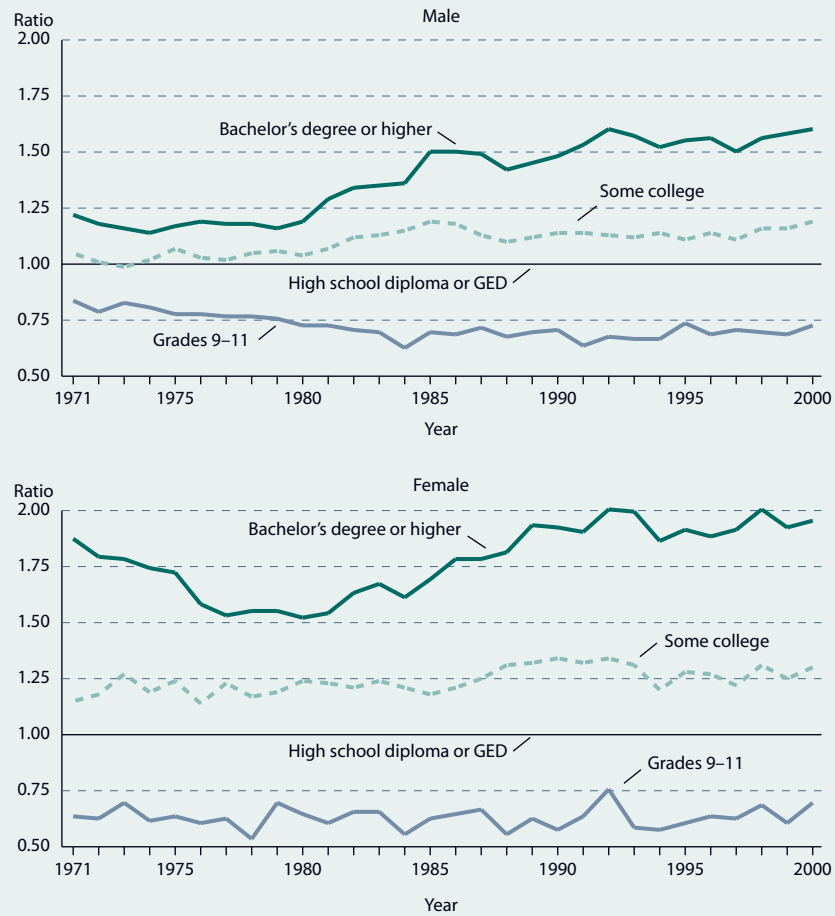
In addition to differences in average earnings by educational attainment, earnings also vary among those with the same level of education. For example, in 2000, a gap of \$39,389 in annual earnings separated males 25–34 with a bachelor's degree or higher in the highest and lowest quartiles of their earnings distribution. The comparable gap for their female counterparts was \$23,566. Between 1971 and 2000, the gap between the highest and the lowest quartile of earnings decreased or remained constant for all groups, except for males with a bachelor's degree or higher, for whom the gap increased markedly between 1997 and 2000 (see supplemental table 16-4).

As a result of these variations in earnings within education groups, the distribution of earnings for different education levels can overlap each other. Due to these overlaps, young adults with less education can earn more than some of their peers with higher levels of educational attainment. For example, in 2000, 16 percent of male adults ages 25–34 with a high school diploma or GED earned more than the median income of their peers with at least a bachelor's degree. However, the percentage of young adults earning more than some of their peers with higher education has generally declined for both males and females between 1971 and 2000 (see supplemental table 16-5).

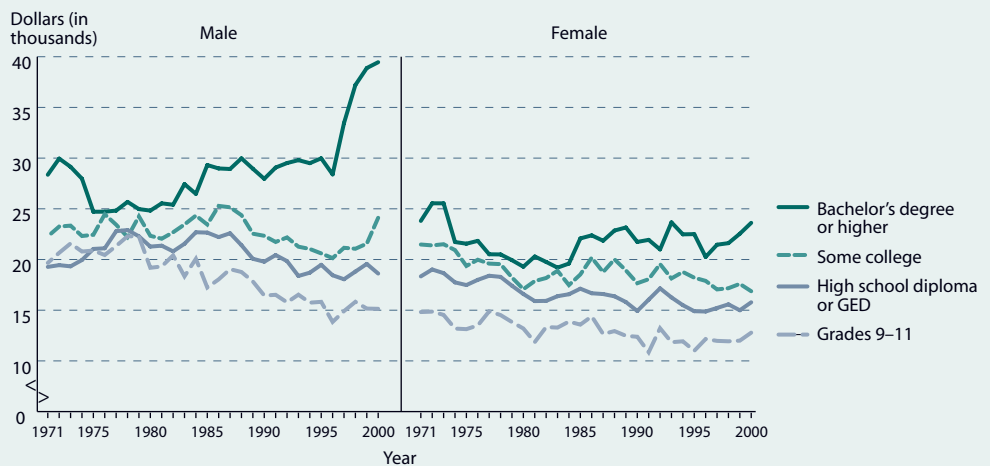
NOTE: This ratio is most useful when compared with 1.0 (which represents the median annual earnings of those with a high school diploma or GED). For example, the ratio of 1.60 in 2000 for males whose highest education level was a bachelor's degree or higher means that they earned 60 percent more than males who had only a high school diploma or GED. The ratio of 0.73 in 2000 for males whose highest education level was grades 9–11 means that they earned 27 percent less than males who had a high school diploma or GED. The Current Population Survey (CPS) questions used to obtain educational attainment were changed in 1992. In 1994, the survey methodology for the CPS was changed and weights were adjusted. See *Supplementary Note 2* for further discussion.

SOURCE: U.S. Department of Commerce, Bureau of the Census. March Current Population Surveys, 1972–2001.

ANNUAL EARNINGS: Ratio of median annual earnings of all wage and salary workers ages 25–34 whose highest education level was grades 9–11, some college, or a bachelor's degree or higher, compared with those with a high school diploma or GED, by sex: March 1971–2000



ANNUAL EARNINGS: Difference in average annual earnings (in constant 2000 dollars) for all wage and salary workers ages 25–34 between the highest and lowest quartiles, by sex and educational attainment: March 1971–2000



FOR MORE INFORMATION:
 Supplemental Notes 2, 13
 Supplemental Tables 16-1,
 16-2, 16-3, 16-4, 16-5