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What Does the NAEP Tell Us About Student Achievement in Arkansas?

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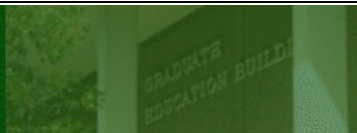


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ARKANSAS EDUCATION REPORT
Volume 2, Issue 1

WHAT DOES THE NAEP TELL US ABOUT

STUDENT ACHIEVEMENT IN ARKASNAS?

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ABSTRACT

This brief discusses the most recent and historical NAEP data in math, science, reading, and writing. Arkansas' NAEP results are compared to national and border state averages. Based on the most recent NAEP exams, Arkansas is performing slightly below the national average in reading, math, science, and writing. There is also data to support that Arkansas students perform less well in Grade 8 than in Grade 4 when compared to the national and border state averages. Arkansas, however, is among the highest performing states with regard to change over the last decade. Since 1992, Arkansas has gained on the national and border state averages. In addition, Arkansas' black-white and Hispanic-white achievement gaps in reading and math are lower than over half of participating states.

INTRODUCTION: NAEP TESTS

The National Assessment of Educational Progress (NAEP) has periodically assessed students across the country in reading, mathematics, science, writing, U.S. history, civics, geography, and the arts since 1969. In recognition of the necessity to assess student performance and the long-standing assessments made by NAEP, No Child Left Behind (NCLB) mandated that all states now participate in the annual NAEP testing. The NAEP data offer insight into how Arkansas students are performing in comparison to neighboring states' students and the national average. The goal of this working paper, after first describing the NAEP exams, is to highlight the performance of Arkansas students now and over the past decade. Arkansas results on state NAEP in math, science, reading, and writing will be compared to national and regional averages.

NAEP, also known as "the Nation's Report Card," is a national assessment of what students know in various subjects. NAEP, which is conducted by the U.S. Department of Education's National Center for Education Statistics, provides scores for aggregate populations and schools rather than for individual students and schools. Specifically, the NAEP provides results assessing subject-matter achievement, instructional experience, and school environmental factors for student populations and provides subgroup scores within the populations (e.g. Black students, male students, free and reduced lunch students). By measuring a representative sample from each participating state, the NAEP tests present national and state findings.

The national NAEP provides information about students across the nation and in specific geographic areas (e.g. Southeast, Southwest). Students from public and nonpublic schools in grades 4, 8, and 12 are tested. The math and reading scale scores range from 0 to 500, while the writing and science scores range from 0 to 300. In addition to the national results, NAEP began providing state-level data in 1990. The state assessments mirror the national assessment except separate representative samples are selected for each participating state. The NCLB legislation now requires all states to participate in annual NAEP testing, which will provide the national data to test the validity of gains made in state-developed exams.

While every state has not been part of the NAEP testing base since 1970, Arkansas and the states surrounding Arkansas did participate in the most recent (2003) NAEP tests, which tested Grade 4 and Grade 8 reading and math. The

most recent Grade 4 and Grade 8 writing and science tests were conducted in 2002 and 2000, respectively, and provide similar findings to the reading and math scores. Results of these four subject area tests indicate that generally Arkansas students perform below the national average but above its border states.

CURRENT NAEP PERFORMANCE

Reading, 2003

The 2003 NAEP results for reading follow the trend of Arkansas and its border states scoring slightly below the national average. Table 1 presents the

scaled score averages and percent scoring proficient or higher for the nation, Arkansas, and Arkansas' border states. Arkansas falls slightly below the national average in reading achievement and percent proficient in both Grade 4 and Grade 8. In addition, while Arkansas' 2003 ranking is consistent across grades, the ranking is near the bottom of all states.

Arkansas, however, ranks near the top of the border states, with only Missouri having more students meeting proficiency in Grade 4 and only Missouri and Oklahoma having more proficient students in Grade 8.

Table 1: NAEP Results Reading, 2003

State	Grade 4 Scaled Score	Grade 4 Percent Proficient	Grade 8 Scaled Score	Grade 8 Percent Proficient
Arkansas	214	28%	258	27%
Arkansas rank of 50 states and DC (high=1)	38	34	35	37
US Average	216	30%	261	30%
Louisiana	205	20%	253	22%
Mississippi	205	18%	255	21%
Missouri	222	34%	267	34%
Oklahoma	214	26%	262	30%
Tennessee	212	26%	258	26%
Texas	215	27%	259	26%

Source: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2003 Reading Assessment (<http://nces.ed.gov/nationsreportcard/>)

Math, 2003

Arkansas' math scores are not as strong as the reading scores when compared to the national and surrounding state's scores. Arkansas' 2003 NAEP math results for Grade 4 and Grade 8 position the state below the national average and in the middle of the border states' scores (see Table 2). National rankings place Arkansas lower than the reading score rankings, with Grade 8 math being near the bottom.

Of the border states, Arkansas' Grade 4 math scores are close to the reading scores, where Arkansas students outperformed students in Louisiana, Mississippi, and Tennessee, but scored lower than students in Missouri and Texas. By Grade 8, however, Arkansas' scores are not as high compared to the scores of the border states. Arkansas' Grade 4 math scores ranks third, while the Grade 8 math scores slip to fifth.

Table 2: NAEP Results Math, 2003

State	Grade 4 Scaled Score	Grade 4 Percent Proficient	Grade 8 Scaled Score	Grade 8 Percent Proficient
Arkansas	229	26%	266	19%
Arkansas rank of 50 states and DC (high=1)	39	39	45	45
US Average	234	31%	276	27%
Louisiana	226	21%	266	17%
Mississippi	223	17%	261	12%
Missouri	235	30%	279	28%
Oklahoma	229	23%	272	20%
Tennessee	228	24%	268	21%
Texas	237	33%	277	25%

Source: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2003 Mathematics Assessment (<http://nces.ed.gov/nationsreportcard/>)

Writing, 2002

The writing NAEP tests were not conducted in 2003; however, the 2002 results do provide insight into how Arkansas compares to the nation and border states. Arkansas students' writing test scores follow the trend found in the reading and math tests.

That is, Arkansas Grade 4 students seem to be in the middle of the border states and score slightly below the national average, however, by Grade 8, Arkansas students are scoring in the bottom of the border states and farther below the national average. Once again, the national rankings find Arkansas near the bottom.

Table 3: NAEP Results Writing, 2002

State	Grade 4 Scaled Score	Grade 4 Percent Proficient	Grade 8 Scaled Score	Grade 8 Percent Proficient
Arkansas	145	19%	142	19%
Arkansas rank (high=1; # of states)	34 of 44	30 of 44	34 of 41	33 of 43
US Average	153	27%	152	30%
Louisiana	142	14%	142	18%
Mississippi	141	13%	141	13%
Missouri	151	22%	151	27%
Oklahoma	142	16%	150	27%
Tennessee	149	23%	148	24%
Texas	154	29%	152	31%

Source: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2002 Writing Assessment (<http://nces.ed.gov/nationsreportcard/>)

Science, 2000

The most recent science NAEP was conducted in 2000. The results are similar to those found on the reading, math, and writing tests, where Arkansas

scores behind the national average and close to the middle of the border state scores (see Table 4). However, when the participating states are ranked in order of score and percent proficient, Arkansas is located near the bottom.

Table 4: NAEP Results Science, 2000

State	Grade 4 Scaled Score	Grade 4 Percent Proficient	Grade 8 Scaled Score	Grade 8 Percent Proficient
Arkansas	144	24%	143	23%
Arkansas rank (high=1; # of states)	29 of 39	27 of 39	30 of 38	27 of 38
US Average	148	28%	149	30%
Louisiana	139	19%	136	18%
Mississippi	133	14%	134	15%
Missouri	156	35%	156	36%
Oklahoma	152	26%	149	26%
Tennessee	147	26%	146	25%
Texas	147	24%	144	23%

Source: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2000 Science Assessment (<http://nces.ed.gov/nationsreportcard/>)

Summary of Recent NAEP Results

Regardless of the subject area test, Arkansas continues to score in a similar place—that is, Arkansas typically scores slightly behind the national average, in the middle of its border states, and ranks near the bottom of all states. On the specific tests, Arkansas students do show some variance. Grade 4 reading seems to be a strong test for Arkansas students, where Arkansas students are scoring at the top of the border states and close to the national average. On the Grade 8 reading exam, Arkansas also scored close to the national average and at the high end of the border states.

The math results paint a slightly less positive picture for Arkansas' students. On the Grade 4 math exam, Arkansas students were five percentage points less proficient than the national average, but on the Grade 8 exam they were eight points less proficient. This indicates that Arkansas students are losing ground as they continue through their education; however, this seems to be a trend across the border states and nation (see Table 5). The writing and science tests were also not as positive as the reading tests. On the 2002 writing test, Arkansas' students were eight points less proficient in Grade 4 and eleven points less proficient by Grade 8, which continues to show that Arkansas

students are losing ground during their educational years. The science tests yielded similar results, where Arkansas students are performing behind the national average and losing pace between Grade 4 and Grade 8.

Overall, Arkansas students did not score as well nor achieve the same proficiency level as the nation or the border states on the recent NAEP exams. However, it is also important to examine previous Arkansas results to ascertain whether the state has been gaining or losing ground on the nation and border states.

NAEP TRENDS OVER PAST DECADE

Reading

NAEP began testing reading performances in 1992 for Grade 4 and in 1998 for Grade 8. In 1992, the US average for Grade 4 percent scoring proficient and above was four percentage points more than in Arkansas; however, by 2003, Arkansas has cut that deficit in half, now trailing the US average by only two points. Over the last decade, Arkansas, which ranked 12th of 42 states in change over the last decade, has been gaining on the national average (see Table 6).

Table 6: Grade 4 NAEP Reading Results, Percent of Students Scoring Proficient or Better, 1992-2003

State	Percent Proficient, 1992	Percent Proficient, 1998	Percent Proficient, 2003	Change in Percent Proficient, 1992-2003
Arkansas	23%	23%	28%	+5%
Arkansas rank (high=1; # of states)	28 of 42	28 of 42	34 of 51	12 of 42
US Average	27%	28%	30%	+3%
Louisiana	15%	17%	20%	+5%
Mississippi	14%	17%	18%	+4%
Missouri	30%	28%	34%	+4%
Oklahoma	29%	30%	26%	-3%
Tennessee	23%	25%	26%	+3%
Texas	24%	28%	27%	+3%

Source: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2003, 1998, 1992 Reading Assessment (<http://nces.ed.gov/nationsreportcard/>)

The Grade 4 results are similar to those found in Grade 8 (see Table 7). Over the last five years, only students in Arkansas, Louisiana, Mississippi, and Missouri were able to gain on the US average, and

Arkansas was ranked near the top in change from 1998-03. However, while Arkansas did gain on the national average of students scoring proficient or above, its annual rank did not improve.

Table 7: Grade 8 NAEP Reading Results, Percent of Students Scoring Proficient or Better, 1998-2003

State	Percent Proficient, 1998	Percent Proficient, 2003	Change in Percent Proficient, 1998-2003
Arkansas	23%	27%	+4%
Arkansas rank (high=1; # of states)	25 of 37	35 of 51	6 of 37
US Average	30%	30%	0%
Louisiana	17%	22%	+5%
Mississippi	19%	21%	+2%
Missouri	28%	34%	+6%
Oklahoma	30%	30%	0%
Tennessee	27%	26%	-1%
Texas	27%	26%	-1%

Source: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2003, 1998 Reading Assessment (<http://nces.ed.gov/nationsreportcard/>)

Math

NAEP began testing math performances in 1992 for Grade 4 and in 1990 for Grade 8. Fewer states participated in 1990 than in 1992 for Grade 8; consequently, 1992 was selected as the trend

starting year. A similar view to the reading performances was uncovered when reviewing the historical data for math performances (see Tables 8 and 9). With respect to Grade 4 math, Arkansas trailed the national average by seven percentage points in 1992, whereas, in 2003, Arkansas trailed

by five points. Compared to Arkansas' border states, Arkansas made the second largest gain in Grade 4 proficiency scores and ranked 13th of 42 states. Nationally, Arkansas' ranking also improved

over the last decade. In 1992, Arkansas students outperformed four states; however, by 2003, they outperformed twelve states.

Table 8: Grade 4 NAEP Math Results, Percent of Students Scoring Proficient or Better, 1992-2003

State	Percent Proficient, 1992	Percent Proficient, 1996	Percent Proficient, 2003	Change in Percent Proficient, 1992-2003
Arkansas	10%	13%	26%	+16%
Arkansas rank (high=1; # of states)	37 of 41	36 of 44	39 of 51	13 of 42
US Average	17%	19%	31%	+14%
Louisiana	8%	8%	21%	+13%
Mississippi	6%	8%	17%	+11%
Missouri	19%	20%	30%	+11%
Oklahoma	14%	no data	23%	+9%
Tennessee	10%	17%	24%	+14%
Texas	15%	25%	33%	+18%

Source: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2003, 1996, 1992 Mathematics Assessment (<http://nces.ed.gov/nationsreportcard/>)

Similar gains were made by Arkansas' students in Grade 8, where Arkansas, once again, gained over the last decade. In 1992, only half as many Arkansas students performed at or above proficient compared to the national average (10 percent compared to 20 percent); however, by 2003, nearly

two-thirds as many Arkansas students performed at or above proficient compared to the national average (19 percent compared to 27 percent). Despite these gains and increasing at a faster rate than the national average, Arkansas continued to trail the national average by eight points in 2003.

Table 9: Grade 8 NAEP Math Results, Percent of Students Scoring Proficient or Better, 1992-2003

State	Percent Proficient, 1992	Percent Proficient, 1996	Percent Proficient, 2003	Change in Percent Proficient, 1992-2003
Arkansas	10%	13%	19%	+9%
Arkansas rank (high=1; # of states)	37 of 42	36 of 41	45 of 51	16 of 42
US Average	20%	22%	27%	+7%
Louisiana	7%	7%	17%	+10%
Mississippi	6%	7%	12%	+6%
Missouri	20%	22%	28%	+8%
Oklahoma	17%	no data	20%	+3%
Tennessee	12%	15%	21%	+9%
Texas	18%	21%	25%	+7%

Source: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2003, 1996, 1992 Mathematics Assessment (<http://nces.ed.gov/nationsreportcard/>)

A noteworthy difference between the math and reading scores is that all of the states made gains in Grade 4 and Grade 8 math, an average gain of thirteen percent and seven percent respectively, whereas the average reading gain over the last decade in Grade 4 and Grade 8 reading was three percent and one and one-half percent respectively. This difference, however, has only advanced the math proficiency scores up to where the reading scores are, which indicates that the math scores were lagging behind the reading scores before 1992. Another interesting difference between the math and reading proficiency scores is that the Grade 8 scores are not as high as the Grade 4 scores. Three states' Grade 8 reading scores exceed their Grade 4 reading scores; however, zero states' Grade 8 math scores exceed their Grade 4 math scores.

In addition to trying to increase scale scores and percent scoring proficient or better, the nation and states have been working to reduce the achievement gaps between specific populations (e.g. black-white students). The following section discusses the achievement gaps in Arkansas, both today and over time, and compares the gaps found in Arkansas to those in the border states and the nation.

ACHIEVEMENT GAPS

According to the NAEP and other measures, the national racial gaps in reading and math were shrinking throughout the 1970s and early 1980s.

However, that progress slowed somewhat in the late 1980s and early 1990s. The 2003 NAEP Grade 4 and Grade 8 math and reading scores for white and black students, however, suggest that the fluctuating gap is once again narrowing. For example, the national Grade 4 math achievement gap (that is, the difference in the average scaled score between white and black students) has decreased over the last decade. Similarly, the national Grade 8 math and Grade 4 reading gaps have also decreased over the last decade, while the Grade 8 reading gap has held steady over the past five years.

According to the NAEP Grade 4 2003 reading by race comparisons, the difference between black and white students in Arkansas is 25 percent, which is close to the average of each border state and below the national average (see Table 10). Similarly, the Hispanic-white achievement gap in Arkansas is far below the nationally average. Arkansas' gap rank also indicates that it has a black-white gap better than half of the states and a Hispanic-white gap among top ten best in the nation. In addition, Arkansas' Hispanic students are performing among the top half in comparison to other Hispanic students across the nation, ranking 16th of 41 states. Over time, Arkansas' gap has remained stable. In 1992 and 1998, the Grade 4 black-white gap was 22 percent, while it has remained at 25 points since 2002. The Hispanic-white, which was only documented since 2002, was the same as in 2003.

Table 10: Grade 4 NAEP Reading Results, Percent of Students Scoring Proficient or Better, 2003

State	White Students	Black Students	Hispanic Students	Black-White Achievement Gap	Hispanic-White Achievement Gap
Arkansas	35%	10%	18%	25%	17%
Arkansas rank (high=1; # of states)	35 of 51	31 of 42	16 of 41	20 of 42	9 of 41
US Average	39%	12%	14%	27%	25%
Louisiana	34%	8%	no data	26%	no data
Mississippi	30%	8%	no data	22%	no data
Missouri	39%	14%	30%	25%	9%
Oklahoma	32%	13%	14%	19%	18%
Tennessee	32%	9%	27%	23%	5%
Texas	39%	16%	17%	23%	22%

Source: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2003 Assessment (<http://nces.ed.gov/nationsreportcard/>)

The math comparison indicates that the gaps in Arkansas are comparatively lower than those found in other states, where Arkansas ranks 15th lowest with its black-white gap and 8th lowest with its Hispanic-white gap. In addition, Arkansas’

Hispanic students performed much better in comparison to other Hispanic students from across the nation. In contrast, Arkansas’ black students are performing among the lowest of all black students in the nation, while white students are also performing near the bottom.

Over time, the Grade 4 math gap has changed. In 2000, the black-white gap was 16 percent, with 18 percent of white students scoring proficient compared to 2 percent of black students. The 2000 Grade 4 Hispanic-white gap was 12 percent, with 6 percent of Hispanic students scoring proficient. While the white, black, and Hispanic students are all performing higher than their 2000 levels, the gaps between the groups seems to be expanding.

Table 11: Grade 4 NAEP Math Results, Percent of Students Scoring Proficient or Better, 2003

State	White Students	Black Students	Hispanic Students	Black-White Achievement Gap	Hispanic-White Achievement Gap
Arkansas	34%	5%	15%	29%	19%
Arkansas rank (high=1; # of states)	38 of 51	40 of 42	20 of 43	15 of 42	8 of 43
US Average	42%	10%	15%	32%	27%
Louisiana	39%	6%	no data	33%	no data
Mississippi	30%	6%	no data	24%	no data
Missouri	35%	9%	14%	26%	21%
Oklahoma	29%	6%	11%	23%	18%
Tennessee	30%	6%	14%	24%	16%
Texas	49%	15%	21%	34%	28%

Source: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2003 Assessment (<http://nces.ed.gov/nationsreportcard/>)

COMPARING ARKANSAS SCHOOLS TO ONE ANOTHER

To further gain a perspective on the current racial gap in Arkansas, the high schools were categorized by racial composition. Across the state, 136 high schools had enrollments in 2002-2003 that were almost entirely white (schools with 95 percent or more white students). Conversely, 32 high schools had 70 percent or more minority students.

Comparing the academic results of these “mostly white” high schools with the results of the “mostly minority” high schools demonstrates the degree of the achievement gaps in Arkansas. The students in the mostly white high schools have lower rates of college remediation and perform better on the ACT exam, the SAT-9 test, and the Grade 11 Literacy

exam than do their peers in mostly minority Arkansas high schools (see Table 12).

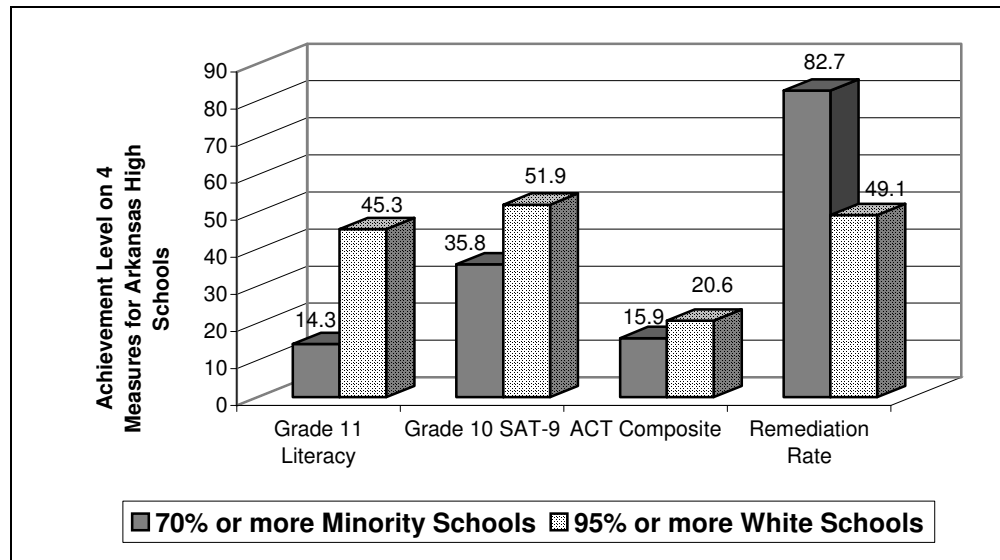
Compared with students in the mostly white schools, students in the high-minority schools had a passing rate on the Literacy exam that was only one-third as high (14 percent vs. 45 percent), a SAT-9 composite score that was roughly 15 percentile points lower (36th percentile vs. 52nd percentile), an ACT composite score that was more than 4 points lower (15.9 vs. 20.6), and a college remediation rate that was nearly twice as high (83 percent vs. 49 percent).

These data, along with the NAEP data, reinforce a concern that many students across the state are not

being provided a high quality education that will prepare them for the future. There is overwhelming evidence that such disparities in educational achievement manifest themselves later on in the

form of success or failure in the labor market. Thus, it is clear that the racial achievement gaps in Arkansas' public schools pose a critically important challenge to the state's leaders and educators.

Figure 1: Student Achievement in Mostly Minority and Mostly White High Schools in Arkansas, 2002-2003



Source: Arkansas State Education Department, www.as-is.org

CONCLUSIONS

Based on the most recent NAEP scores for each subject area as well as sources from earlier NAEP assessments, Arkansas appears to be performing below the national level and close to the regional level. The following conclusions were drawn from the data.

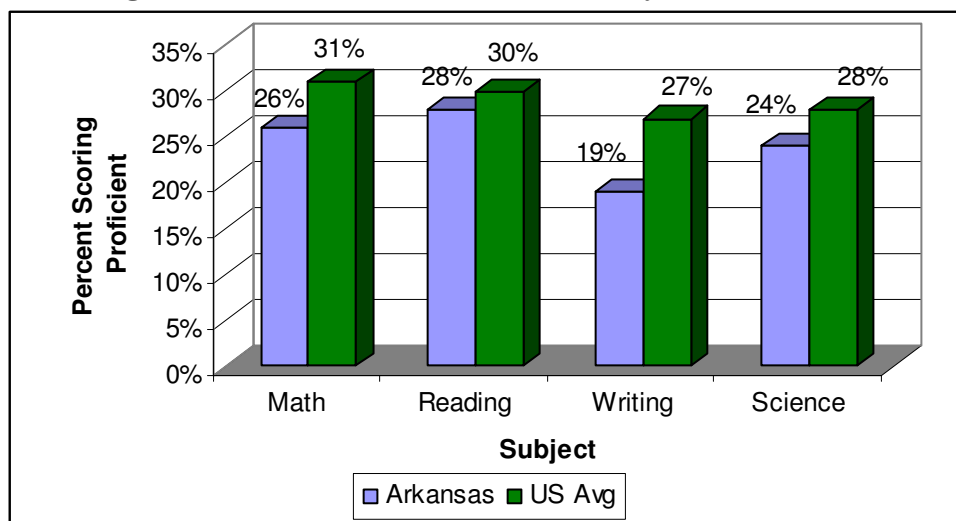
- For Grade 4 and 8 reading scores, Arkansas falls slightly below the national average, but Arkansas' students score rank near the top regionally. Over time, Arkansas students seem to be improving more rapidly than students in other states and those across the nation.
- With regard to math scores, Arkansas' Grade 4 scores fall slightly below the national average and in the middle of the border state's averages. By Grade 8, however, Arkansas' scores are farther below the national average and at the bottom of the border states' scores.
- Over time, Arkansas students seem to be improving more rapidly than students in the border states and those across the nation, which indicates that Arkansas is gaining on the national proficiency level.
- Arkansas' writing and science scores follow the math and reading scores. In Grade 4, Arkansas students are slightly below the national average; however, by Grade 8, Arkansas' scores have fallen farther behind the national average and have lost ground to border states.
- According to the percent of students meeting proficiency data, Arkansas' black-white achievement gap in reading and math is lower than the half of participating states. However, Arkansas' black students are performing near the bottom compared to other black students from across the nation.
- Arkansas' Hispanic students are performing among the best in the nation, and the

Hispanic-white achievement gap in reading and math is among the lowest ten state gaps in the nation.

- Comparing Arkansas districts to one another indicates that a significant difference does exist between high- and low-minority districts on Grade 11 literacy rates, Grade 10, SAT-9 scores, ACT composite scores and remediation rate.

- As indicated throughout this working paper, Arkansas continues to score below the national average. Figure 2 illustrates the disparity between Arkansas and the national performance in each subject area based on the most recent test date (2003 for math and reading, 2002 for writing, and 2000 for science).

Figure 2: Most Recent NAEP Proficiency Scores, Grade 4



Source: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2003 Math Assessment (<http://nces.ed.gov/nationsreportcard/>)