



**HOUSTON INDEPENDENT  
SCHOOL DISTRICT**

**NATIONAL ASSESSMENT  
OF EDUCATIONAL  
PROGRESS**

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*Trial Urban District Assessment*

## MEMORANDUM

February 24, 2011

TO: Board Members

FROM: Terry B. Grier, Ed.D  
Superintendent of Schools

SUBJECT: **NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS (NAEP)  
TRIAL URBAN DISTRICT ASSESSMENT (TUDA): SCIENCE 2009  
RESULTS**

CONTACT: Carla Stevens, 713-556-6700

The 2009 NAEP science assessment has been released for the districts that participated in the Trial Urban District Assessment program. NAEP, also known as the Nation's Report Card, is the nation's only federally authorized survey of student achievement in various subject areas. NAEP is administered by the National Center for Education Statistics (NCES), an agency within the U.S. Department of Education's Institute of Education Sciences. The Houston Independent School District (HISD) is one of 17 large urban districts that voluntarily participated in the TUDA in 2009. The District of Columbia public schools that participated in the science and mathematics TUDA's were unable to participate because of sample size.

Student performance on the 2009 NAEP science assessments at grades 4 and 8 is reported by using scale scores, which represent equal units on a continuous scale, using numbers that range from 0 to 300. Also, student performance is reported by using the percentage of students who attained the achievement levels, Basic, Proficient, and Advanced. The National Assessment Governing Board (NAGB) defines the achievement levels as follows:

- *Basic*: denotes partial mastery of prerequisite knowledge and skills that are fundamental for proficient work at each grade.
- *Proficient*: represents solid academic performance for each grade assessed. Students reaching this level have demonstrated competency over challenging subject matter, including subject matter knowledge, application of such knowledge to real-world situations, and analytical skills appropriate to the subject matter.
- *Advanced*: signifies superior performance.

The science framework used for the 2009 NAEP replaced the previous framework first used for the 2005 science assessment. The 2009 science framework was updated to a more current content with key developments in science standards (including National Science Education Standards and Benchmarks for Science Literacy), curriculum standards, assessments, and research. Due to the revisions of the 2009 science framework, it is not possible to calculate trend data. NAEP did not conduct a linking study to allow for any possible analysis over time.

The science framework organizes science content into three broad content areas, physical science, life science, and Earth and space sciences, reflecting the science curriculum students are generally exposed to across grades kindergarten through 12. The new framework recommends an approximately equal distribution of questions across the three

content areas at grade four. At grade eight, there is greater emphasis on Earth and space science.

The three NAEP science content areas are:

- Physical science—properties and changes of matter, forms of energy, energy transfer and conservation, position and motion of objects, and forces affecting motion.
- Life science—organization and development, matter and energy transformations, interdependence, heredity and reproduction, and evolution and diversity.
- Earth and space sciences—objects in the universe, the history of the Earth, properties of earth materials, tectonics, energy in Earth systems, climate and weather, and biogeochemical cycles.

Results of the 2009 NAEP grade four and eight science assessment are presented in the following tables and graphs. Due to sampling methods used by NCES, results are only available at the district level and not at the school level. Comparisons were made between seventeen participating districts—Atlanta, Austin, Baltimore, Boston, Charlotte, Chicago, Cleveland, Detroit, Fresno, Houston, Jefferson County, Los Angeles, Miami-Dade County, Milwaukee, New York City, Philadelphia, and San Diego—as well as Texas, the nation, and large central cities (LCC). With the new framework designed for the 2009 assessment, these results present the first administration of the science assessment for the TUDA although this is the second actual administration of a NAEP science assessment. Not all districts have had participants over that time, but Houston is one of the original TUDA districts and has been a member since its inception in 2002.

It is important to note that while the 17 TUDAs represent some of the largest urban school districts in the country, there remain some substantial differences among them. Not only are the demographic characteristics different but there is a drastic difference in the percentage of students that are eligible for free/reduced price lunch and the percentage of English Language Learners (ELL). **Tables 6 and 7** show the key characteristics for each of the participating TUDAs at grades four and eight, as well as the characteristics of the nation and the LCC. It is in this comparison that the differences between the TUDA districts and the nation are most notable. The percent of students who are eligible for the free or reduced price lunch program for the nation is 48% in fourth-grade and 43% in eighth-grade. With the exception of Charlotte, the percent of students eligible for the free or reduced price lunch program in fourth-grade ranges from 60–100% and eighth-grade 55–100% for the urban districts. Houston ISD comes in at 83% in fourth-grade and 78% in eighth-grade; along with the second highest percentage of English Language Learners at 37% and 11%, in grades 4 and 8, respectively. The national average of ELL is 9% and 5%, in those same grades, respectively.

Figures 1 and 2 present the average scales for grades four and eight, respectively, by jurisdiction for the 2009 NAEP science assessment. The figures also show the percent of students eligible for the school lunch program which is an indicator used for economically disadvantaged status.

Figure 1: Average Scores in NAEP Science for 4<sup>th</sup> Grade Public School Students, by Jurisdiction: 2009

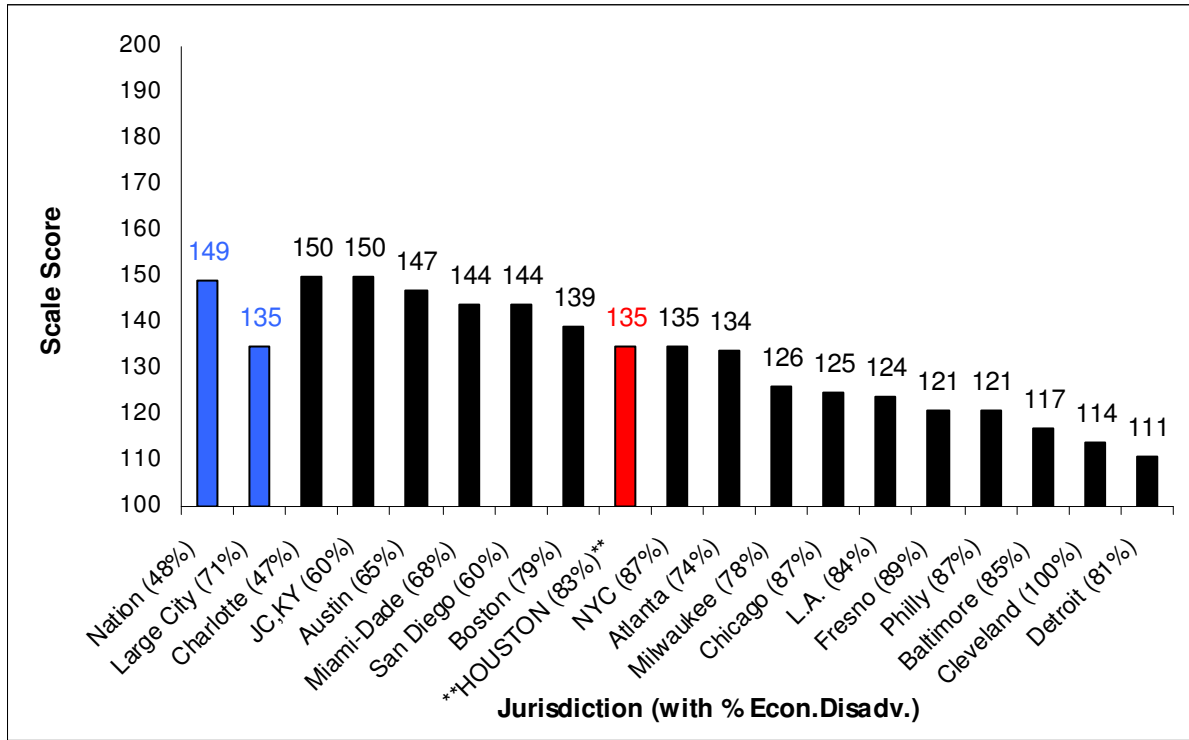
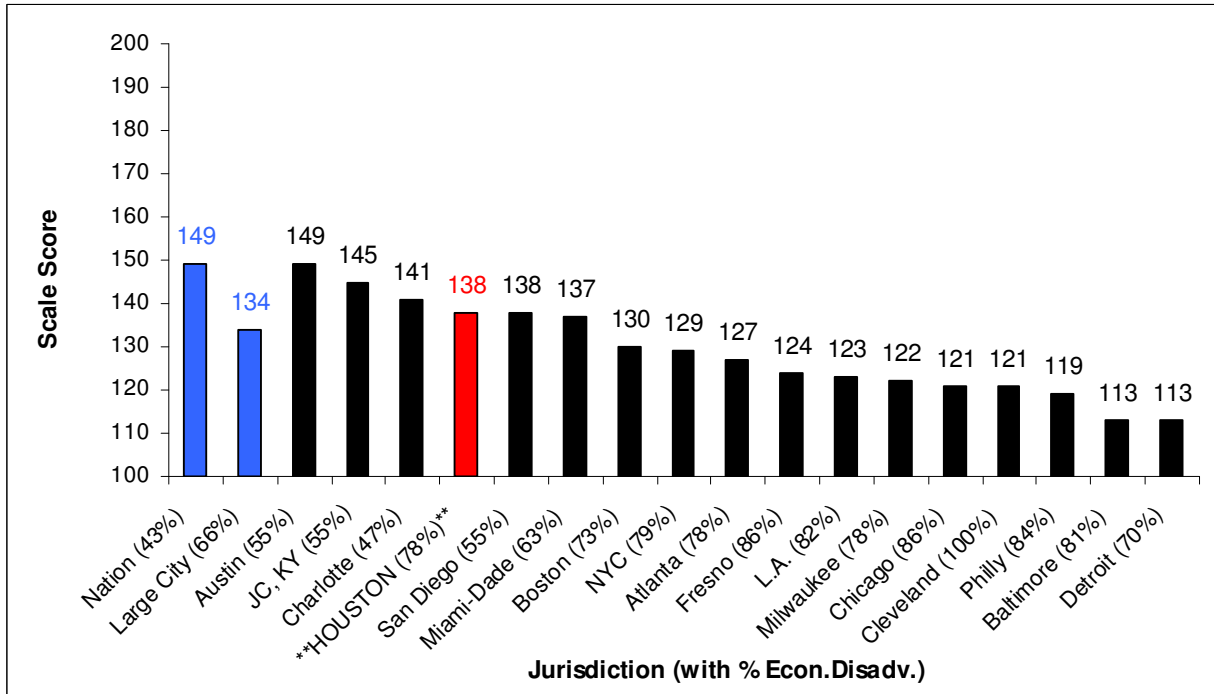


Figure 2: Average Scores in NAEP Science for 8<sup>th</sup> Grade Public School Students, by Jurisdiction: 2009



### **NAEP Results Overall Summary**

- In 2009, HISD showed overall performance in the subject of science at grade 4 that was greater than 9 of the 17 districts that were assessed while, in grade 8, HISD showed performance that was greater than 12 of the districts that were assessed.
- On the 2009 NAEP science assessment, HISD had performance that was the same as the Large Central Cities and lower than the nation. At grade 8, HISD showed performance that was higher than the Large Central Cities but lower than the nation.
- Also of note for HISD, in 2009, is that the Hispanic, African American, and white student groups in grades four and eight achieved higher average scores than their counterparts from the nation and Large Central Cities (**Graphs 4–6 and 10–12**). Students in the National Student Lunch Program had higher scale scores than the Large Central Cities.

### **NAEP Fourth-Grade Results for Science**

- Houston's fourth-grade students' average scale score in science was 135. This was the same as the score for public school students in large central cities (LCC) but was lower than the nation's average of 149 (**Table 1**).
- Houston's fourth-grade students outperformed nine of the TUDA districts with the exception of Austin, Boston, Charlotte, Jefferson County, Miami-Dade, and San Diego. (**Graph 2**).
- The districts that outperformed HISD fourth-graders had lower percentages of students categorized as English Language Learners and economically disadvantaged (**Table 6**).
- The percent of Houston fourth-grade students who scored at or above the basic level was 55, while the percent at or above proficient was 16. Houston ranked eighth among the 17 districts in the percent at or above the basic level of performance (**Table 1**).
- The average science score for Houston's Hispanic fourth-grade students was 133 (**Table 2**), exceeding the scores for the nation and Large Central Cities. Only Boston, Charlotte, Jefferson County, and Miami-Dade had higher scores than Houston's Hispanic students (**Graph 4**).
- The average science score for Houston's African American fourth-grade students was 128 (**Table 2**), and outperformed their counterparts in the nation and Large Central Cities. Only Austin, Boston, Charlotte, and Jefferson County had higher scores than Houston's African American students (**Graph 5**).
- White students outperformed the nation and the Large Central Cities and tied for the third highest performance among the 17 districts (**Table 2**).

### **NAEP Eighth-Grade Results for Science**

- Houston's eighth-grade students' average scale score in science was 138. This was statistically higher than the score of 134 for public school students in Large Central Cities but lower than the nation's average of 149 (**Table 3**).
- Houston's eighth-grade students outperformed twelve of the TUDA districts with the exception of Austin, Charlotte, and Jefferson County. These three districts that outperformed HISD eighth-graders had lower percentages of students categorized as being eligible for the free and reduced lunch program (**Figure 2**).
- The percent of Houston eighth-grade students who scored at or above the basic level was 49, while the percent at or above proficient was 17. Houston outperformed 11 districts in the percent at or above basic level of performance (**Table 3**).
- The average science score for Houston's Hispanic eighth-grade students was 137 (**Table 4**), exceeding the scores for the nation (131) and Large Central Cities (127). Only Miami-Dade (138) had higher scores than Houston's Hispanic eighth-grade students (**Graph 10**).

- The average science score for Houston’s African American eighth-grade students was 128 (**Table 4**), and outperformed their counterparts in the nation (125) and Large Central Cities (120). Only Austin had higher scores than Houston’s African American eighth-grade students (**Graph 11**).
- White students outperformed the nation, Large Central Cities, and all other districts with the exception of Austin (**Table 4**).

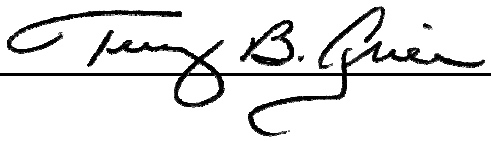
**NAEP Gap Analysis between Texas and HISD: (Tables 2 & 4)**

- Hispanic fourth-grade students in Houston had an average scale score (133) that was lower than that of their state (136) counterparts by three points.
- HISD African American fourth-grade students had an average scale score (128) that was 11 points lower than their state counterparts.
- White fourth-grade students in Houston had an average scale score (174) that was higher than that of their state (168) counterparts by six points.
- Fourth-grade students in HISD eligible for free/reduced lunch had an average scale score of (130), which was five points lower than those students eligible for free/reduced lunch for the state.
- The gaps between HISD’s fourth-grade White and Hispanic students, as well as White and African American students were greater at the district level than the state level.
- Eighth-grade Hispanic students had an average scale score (137) that was lower than that of their state (141) counterparts by four points.
- African American eighth-grade students had an average scale score (128) that was five points lower than their state counterparts.
- White eighth-grade students in Houston had an average scale score (172) that was higher than that of their state (167) counterparts by five points.
- Eighth-grade students in HISD eligible for free/reduced lunch had an average scale score of (133), which was seven points lower than those students eligible for free/reduced lunch for the state.
- The gaps between HISD’s eighth-grade White and Hispanic students, as well as White and African American students were greater at the district level than the state level.

**NAEP Sample/Exclusions: (Table 5)**

- For 2009, 2,200 fourth-grade students were tested in science and 2,000 eighth-grade students were tested in science.
- The district’s exclusion rate for fourth-graders with disabilities (SD) or English language learners (ELL) on the science test was three percent (**Table 5**).
- The science exclusion rate for eighth-grade students with disabilities or English language learners was four percent (**Table 5**).

Houston Independent School District has taken great strides in increasing student exposure to science curriculum in the classroom. Eighth-grade student performance has steadily increased over the last four years on the science subtest of the Texas Assessment of Knowledge and Skills (TAKS). HISD has continued to close the gap between state and district performance on science TAKS test. In 2010 the performance gap between students meeting TAKS passing standard was four percentage points, 74 percent to the state’s 78 percent. This is a vast improvement from the results on the TAKS science text in 2006 when the gap was 15 percentage points, 48 percent to the state’s 63 percent. These NAEP Science results provide the district with more points of reference when addressing curriculum and resource issues and serve as a benchmark for future goals.

 TBG

Attachments

cc: Superintendent's Direct Reports  
Aaron Spence  
Dallas Dance  
Samuel Sarabia  
Jason Spencer  
Kim Hall