

Tech Brief

2006 Update

No. 3

December 2006

Science Attainment in St. Louis Area School Districts

Center for Inquiry in Science Teaching and Learning (CISTL) St. Louis Regional Database Project

The CISTL St. Louis Regional Database Project strives to provide information to schools and the community about indicators of science attainment at the elementary, middle, and high school levels using local, state, and national data sources. Information on science attainment for area students assists the planning and decision-making of teachers, school officials, and policy-makers.

Schools and educators are accountable under the requirements of the No Child Left Behind Act (NCLB) of 2001 in which they participate in standards-based reform to insure all students demonstrate content knowledge and skills at specific mastery levels. Schools monitor their performance closely to show Adequate Yearly Progress (AYP) for increasing student achievement. The movement of high-stakes accountability to drive school improvement has resulted in widespread access to data about schools and districts. With the availability of this data, student performance can be studied for the region as a whole. Comparisons across school districts inform both educational and business communities about student performance variation within the region.

A regional perspective assists in planning for the growing demand for scientists and technicians in the St. Louis area. The region continues to develop into a national technology hub for research and production in medical, biological, engineering, and industrial applications. In order to provide human resources to sustain this scientific and technological growth, the area's schools need to provide high quality education, training, and strong scientific coursework.

This Tech Brief is an update to Tech Brief No. 1. The Tech Brief series is designed to inform the community about overall trends in science attainment for the St. Louis region.



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The St. Louis Center for Inquiry in Science Teaching and Learning (CISTL) is supported by the National Science Foundation's Centers for Learning and Teaching (CLT) program. CISTL is a collaboration among higher education institutions (Washington University in St. Louis, St. Louis Community College and University of Missouri-St. Louis), cultural science institutions (Missouri Botanical Garden, Saint Louis Zoo, St. Louis Science Center, Tyson Research Center, and Association of Science-Technology Centers) and school districts (Kirkwood, Riverview Gardens, Maplewood-Richmond Heights, St. Louis Public, and University City).

CISTL is supported under the National Science Foundation's Centers for Learning and Teaching (CLT) program (grant #ESI-0227619).

Any opinions, findings, and conclusions or recommendations expressed in this publication are those of the authors and do not necessarily reflect the views of the National Science Foundation.

Science Attainment in St. Louis Area School Districts: 2006 Update

Mark C. Hogrebe and Lydia Kyei-Blankson

The purpose of this Tech Brief 1 Update is to present the 2006 results for the State of Missouri Assessment Program (MAP) science test administered by St. Louis area school districts. CISTL Tech Brief No. 1 (Hogrebe & Kyei-Blankson, 2006) provided an in-depth review of the MAP science test and the performance of St. Louis area school districts for the years 2000 – 2005. This follow-up Tech Brief reports the MAP science results for St. Louis area districts that administered the test in 2006.

MAP test data from specific schools, districts, and the entire state are available on the Missouri Department of Elementary and Secondary Education (DESE) website <http://dese.mo.gov>; however, the data are not aggregated to give a picture of particular regions within the state. The data for the school districts in this report were obtained from the DESE website. The indicator of science attainment for each district was the percentage of students at the Proficient plus Advanced levels, separately, for the third, seventh, and tenth grades. The focus is on the percentage of students at the Proficient/Advanced levels because “Proficient” as defined above is the achievement level desired for all students. Proficient means students demonstrate science knowledge and skills that the State of Missouri defined as essential in the Show-Me Standards.

For Tech Brief 1, MAP science data were gathered for the years 2000 through 2005. Since state funding for the science test was eliminated after 2002, schools could elect to give the science test on a voluntary basis; therefore, some schools did not administer the science test during each subsequent year and did not have data for all six years, but all districts had at least three years of data. The median was calculated to summarize each district’s percentage of Proficient/Advanced students on the science MAP test during the 2000 – 2005 period. The administration of the science MAP test in grades 5, 8, and 11 will be mandatory in spring 2008.

Many of the thirty St. Louis area school districts included in Tech Brief 1 did not administer the MAP science test in 2006. The data for this 2006 Update were based on the 13 St. Louis area districts that elected to administer the 2006 MAP science test in third grade, 14 districts in seventh grade, and 15 districts in tenth grade. The 2006 results are compared to each district’s performance during the 2000 – 2005 period. Performance is the percentage of students in the district at the various levels of proficiency on the MAP science test.

Third Grade MAP Science Proficiency for 13 Districts

Average Proficiency Levels across 13 Districts (Figure 1)

- Approximately 83% of students were Nearing Proficient or higher in 2000-05 and 2006.
- Approximately half of the districts’ students scored in the upper two proficiency categories (Proficient/Advanced) in 2000-05 and 2006.

Variability across districts

Figure 2 shows the wide range of variability across districts in the percentage of students at the Proficient/Advanced levels (24% to 81%) for 2006.

Figure 1: Average 3rd Grade MAP Science Attainment for 13 St. Louis Area School Districts

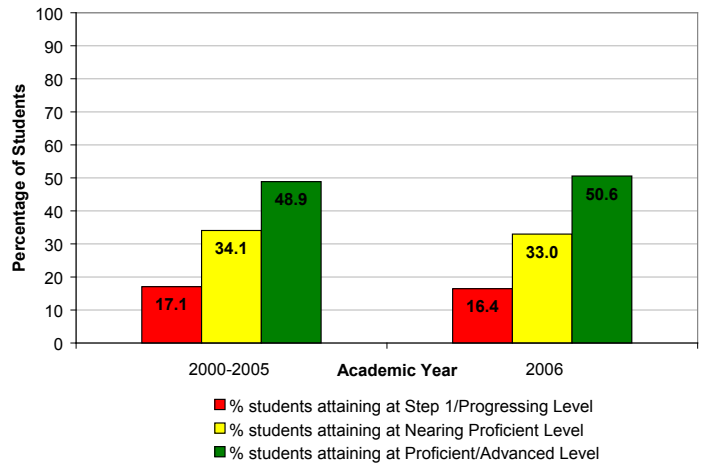
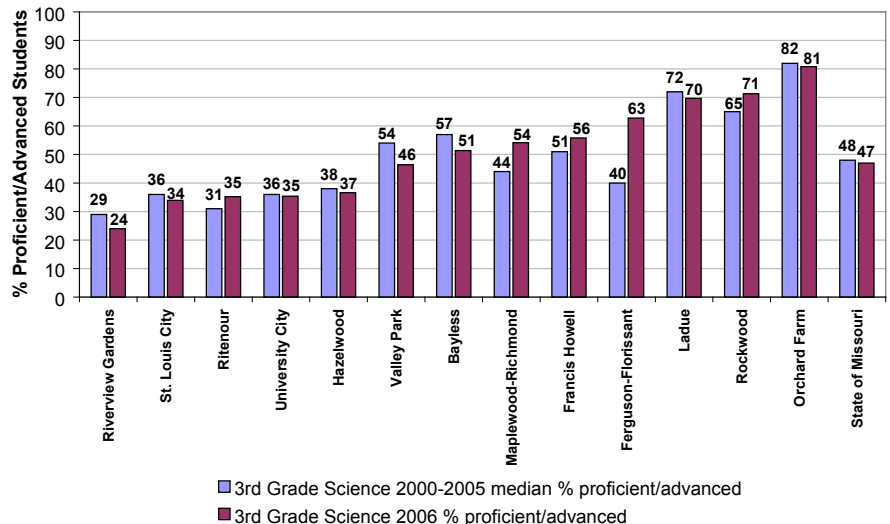


Figure 2: Percentages of Third Grade Students at the Proficient/Advanced Level for 13 St. Louis School Districts that Administered the MAP Science Test



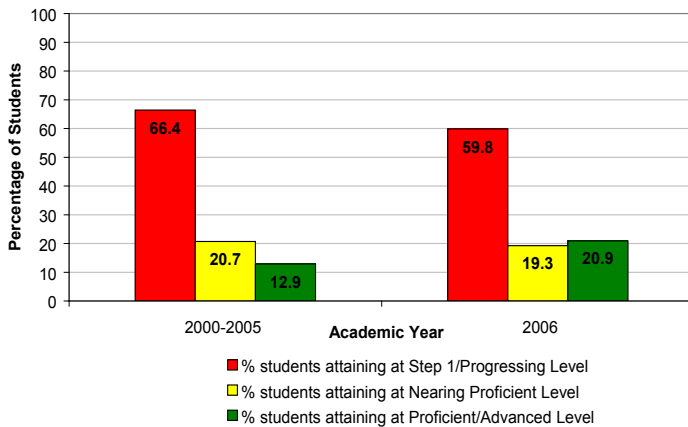
District performance (Figure 2)

- In 2006, 4 of 13 districts (31%) had plus five percentage points MORE students at the Proficient/Advanced levels than during their 2000-05 period.
- In 2006, 3 of 13 districts (23%) had minus five percentage points FEWER students at the Proficient/Advanced levels than during their 2000-05 period.
- Comment. The five percentage point difference was chosen as the break point for this analysis in an attempt to represent an educationally significant change and to show variability between the districts.

Compared to State of Missouri (Figure 2)

- In all years 2000-05 and 2006, 3 of 13 districts (23%) had plus five percentage points MORE students at the Proficient/Advanced levels than the State of Missouri.
- In all years 2000-05 and 2006, 5 of 13 districts (38%) had minus five percentage points FEWER students at the Proficient/Advanced levels than the State of Missouri.

Figure 3: Average Seventh Grade MAP Science Attainment for 14 St. Louis Area School Districts



Seventh Grade MAP Science Proficiency for 14 Districts

Average Proficiency Levels across 14 Districts (Figure 3)

- Comparing seventh grade to third. At the seventh grade level in 2006, there were substantially fewer students than at the third grade level scoring in the upper three levels of MAP science proficiency (83.6% vs. 40.2%).
- Comparing seventh grade across years. Approximately 40% of students were Nearing Proficient or higher in 2006. This is an increase above 2000-05 in which 33.6% of students scored in these three proficiency levels.
- Approximately 21% of the districts' students scored in the upper two proficiency levels (Proficient/Advanced) in 2006. This is an increase above 2000-05 in which 12.9% of students scored in these two highest proficiency levels.

- Comment. Although there were substantially fewer students in the higher proficiency categories at the seventh grade in comparison to third grade, the percentage of seventh grade students in the Proficient/Advanced levels was greater in 2006 over the prior 2000-05 period.

Variability across districts

Figure 4 shows the wide range of variability across districts in the percentage of students at the Proficient/Advanced levels (3% to 61%) for 2006.

District performance (Figure 4)

- In 2006, 5 of 14 districts (36%) had plus five percentage points MORE students at the Proficient/Advanced levels than during their 2000-05 period.
- In 2006, **no** districts had minus five percentage points FEWER students at the Proficient/Advanced levels than during their 2000-05 period.

Compared to State of Missouri (Figure 4)

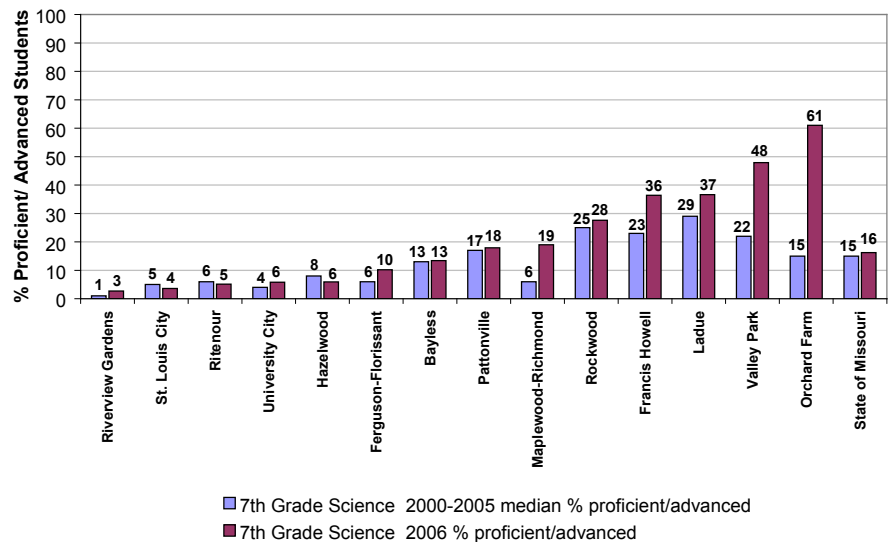
- In all years 2000-05 and 2006, 4 of 14 districts (28%) had plus five percentage points MORE students at the Proficient/Advanced levels than the State of Missouri.
- In all years 2000-05 and 2006, 6 of 14 districts (43%) had minus five percentage points FEWER students at the Proficient/Advanced levels than the State of Missouri.

Tenth Grade MAP Science Proficiency for 15 Districts

Average Proficiency Levels across 15 Districts (Figure 5)

- Comparing tenth grade to seventh. At the tenth grade level in 2006, there were slightly more students than at the seventh grade level scoring in the upper three levels of MAP science proficiency (44.9% vs. 40.2%). However, the pattern between the two grade levels was quite different in that there was a shift downward to more students in the Nearing Proficient level and fewer in the Proficient/Advanced levels.

Figure 4: Percentages of Seventh Grade Students at the Proficient/Advanced Level for 14 St. Louis School Districts that Administered the MAP Science Test



- Comparing tenth grade across years. Approximately 44.9% of students were Nearing Proficient or higher in 2006. This is greater than 2000-05 in which 40.5% of students scored in these three proficiency levels.
- Approximately 10% of the districts' students scored in the upper two proficiency levels (Proficient/Advanced) in 2006. This is a slight increase above 2000-05 in which 7% of students scored in these two highest proficiency levels.

Variability across districts

Figure 6 shows that for 2006 the range of variability across districts in the percentage of students at the Proficient/Advanced levels was narrower (1% to 26%) in comparison to third and seventh grades.

District performance (Figure 6)

- In 2006, 5 of 15 districts (33%) had plus five percentage points MORE students at the Proficient/Advanced levels than during their 2000-05 period.
- In 2006, **no** districts had minus five percentage points FEWER students at the Proficient/Advanced levels than during their 2000-05 period.

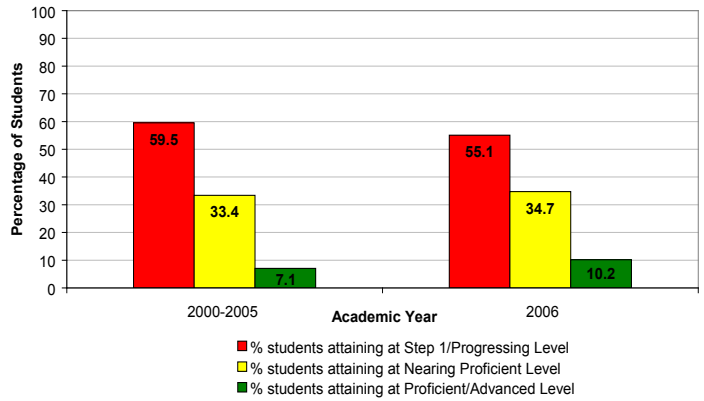
Compared to State of Missouri (Figure 6)

- In all years 2000-05 and 2006, 4 of 15 districts (27%) had plus five percentage points MORE students at the Proficient/Advanced levels than the State of Missouri.
- In all years 2000-05 and 2006, 2 of 15 districts (13%) had minus five percentage points FEWER students at the Proficient/Advanced levels than the State of Missouri.

Summary and Highlights

In 2000 – 2005 the percentages of Proficient/Advanced students were less in higher grade levels: third (48.9%), seventh (12.9%), and tenth (7.1%). Although the percentages of Proficient/Advanced students were also lower for the upper grades in 2006, they were greater than in 2000 – 2005: third (50.6%), seventh (20.9%), and tenth (10.2%).

Figure 5: Average 10th Grade MAP Science Attainment for 15 St. Louis Area School Districts



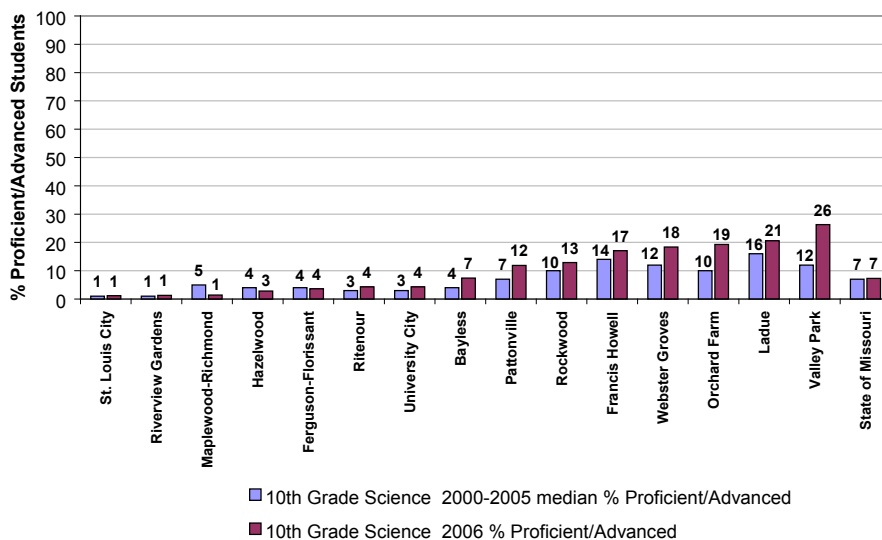
For both the seventh and tenth grade levels, there were **no** districts in which the percentage of Proficient/Advanced students decreased greater than five percentage points in 2006 (vs. 2000 – 2005). Instead, 5 districts increased five percentage points or more at seventh grade as did 5 districts at tenth grade in 2006.

Compared to the State of Missouri, St. Louis area districts that administered the MAP science test in 2006 showed variability in the percentage of Proficient/Advanced students. Some districts had more Proficient/Advanced students than the State, some about the same, and some districts had fewer.

- In third grade 23% of the districts had plus five percentage points MORE students at the Proficient/Advanced levels than the State of Missouri and 38% of the districts had minus five percentage points FEWER students at these levels.
- In seventh grade 28% of the districts had plus five percentage points MORE students at the Proficient/Advanced levels than the State of Missouri and 43% of the districts had minus five percentage points FEWER students at these levels.
- Tenth grade percentages of Proficient/Advanced for St. Louis area districts also varied in comparison to the State of Missouri. In tenth grade 27% of the districts had plus five percentage points MORE students at the

Proficient/Advanced levels than the State of Missouri. Only 13% of the districts (2) had minus five percentage points FEWER students at these levels which was a function of the low percentage of Proficient/Advanced students in both the districts and the State.

Figure 6: Percentages of Tenth Grade Students at the Proficient/Advanced Level for 15 St. Louis Area School Districts that Administered the MAP Science Test



Reference

Hogrebe, M.C., & Kyei-Blankson, L. (2006, February). Science attainment in St. Louis area school districts: Tech Brief No. 1. St. Louis, MO: Washington University, Center for Inquiry in Science Teaching and Learning. Retrieved December 15, 2006, from <http://cistl.wustl.edu/Downloads/index.php?ProgramID=0>