

## Mercer Middle School Case Study: High Science and Math Achievement

### Case study background and purpose

To spotlight effective practices, the [Washington State Board of Education](#) (SBE) is highlighting schools that are closing achievement gaps and performing at high levels.

In 2009, the SBE partnered with the [Office of Superintendent of Public Instruction](#) (OSPI) to create the [Washington Accountability Index](#). The Index is a new way to measure schools' improvement, the degree to which they close gaps for low income students, and starting in the 2009-2010 school year, the closing of the gap for students of color. Through the [Measurement of Student Progress](#), the High School Proficiency Exams, the Washington Assessment of Student Learning (prior to 2010) as well as graduation data, the Index provides schools with a 'snapshot' of their achievement in language arts, math, science, and extended graduation rates. The Index takes into account improvement from the previous year and a school's relative performance compared to demographically similar schools.



In the spring of 2010, SBE and OSPI awarded top Index performers with the [Washington Achievement Award](#). A statewide recognition ceremony honored [174 schools](#) for exemplary performance in language arts, math, science, graduation rate, gifted education, and overall excellence (top five percent statewide).

From the list of overall excellence award winners, SBE selected a few ethnically diverse schools with the highest percentages of low-income students (measured by students eligible for free and reduced-price meals). These are examples of schools that are beating the odds and are closing the academic achievement gaps. The purpose of this case study is to learn from

Mercer Middle School's success and hopefully incorporate similar professional practices in other schools.

### Why was Mercer Middle School in the Seattle School District selected?

Mercer Middle School, located in the highly diverse Beacon Hill neighborhood, received the overall excellence award in 2009 for being in the top five percent of middle schools. They have demonstrated rapid growth in math and science that far exceeded statewide performance. Mercer Middle School is third in the entire state on the science Index rating and tied for second place for science performance for low-income students. In the entire state, only six middle schools scored higher on the Index for math performance of low income students.

"My goal was to start the first high poverty, high performing middle school in Washington State. We are on the way to doing that. It's about believing every kid can do this and it's the adults and the system that need to change in order to make sure every child succeeds."

Andhra Lutz, Principal

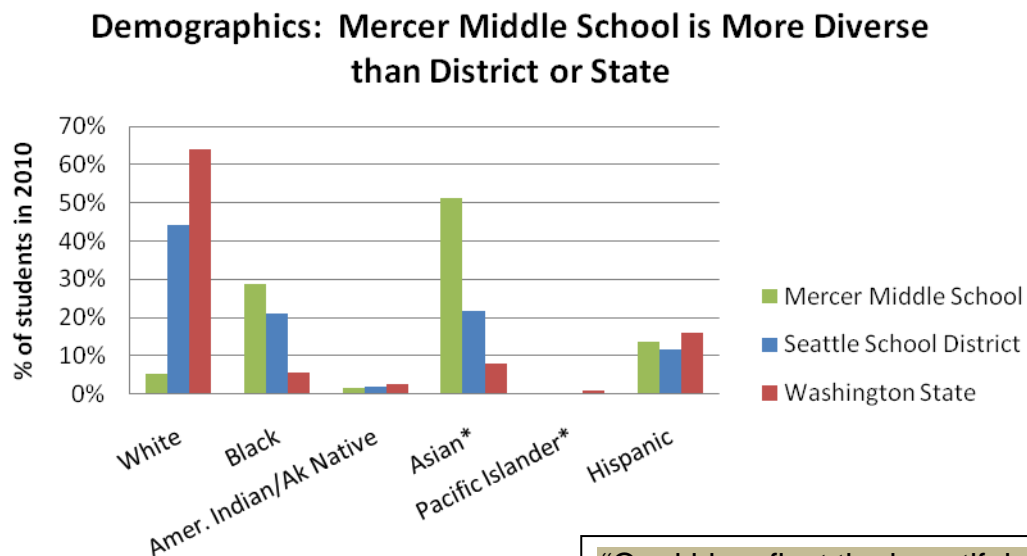
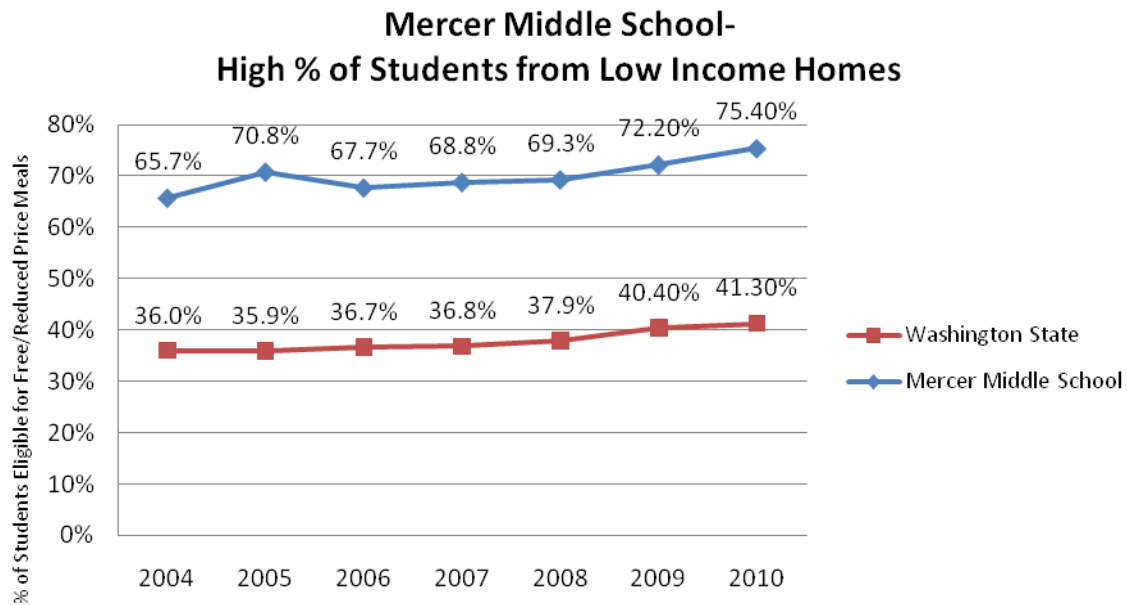
## Mercer Middle School characteristics and student demographics

**Grade span:** 6-8

**Number of classroom teachers:** 38

**Enrollment:** 739 (October, 2009 count)

**Free and reduced price meals:** 75.4%



Source: [OSPI Washington State Report Card](#)

"Our kids reflect the beautiful  
diversity of Seattle."  
 Andhra Lutz, Principal

**Mercer Middle School Accountability Index Results**

| <b>2009-2010</b>                       |                |                |             |                |                                |
|----------------------------------------|----------------|----------------|-------------|----------------|--------------------------------|
| <b>OUTCOMES</b>                        |                |                |             |                |                                |
| <b>INDICATORS</b>                      | <b>Reading</b> | <b>Writing</b> | <b>Math</b> | <b>Science</b> | <b>Average</b>                 |
| Achievement of non-low income students | 6              | 7              | 5           | 6              | 6.0                            |
| Achievement of low income students     | 4              | 4              | 4           | 5              | 4.3                            |
| Achievement vs. peers                  | 7              | 6              | 7           | 7              | 6.8                            |
| Improvement from the previous year     | 4              | 1              | 7           | 7              | 4.8                            |
| <b>Index scores</b>                    | <b>5.3</b>     | <b>4.5</b>     | <b>5.8</b>  | <b>6.3</b>     | <b>5.44</b><br>Tier: Very Good |

| <b>2008-2009</b>                       |                |                |             |                |                                |
|----------------------------------------|----------------|----------------|-------------|----------------|--------------------------------|
| <b>OUTCOMES</b>                        |                |                |             |                |                                |
| <b>INDICATORS</b>                      | <b>Reading</b> | <b>Writing</b> | <b>Math</b> | <b>Science</b> | <b>Average</b>                 |
| Achievement of non-low income students | 6              | 7              | 5           | 5              | 5.8                            |
| Achievement of low income students     | 4              | 6              | 2           | 3              | 3.8                            |
| Achievement vs. peers                  | 6              | 7              | 7           | 7              | 6.8                            |
| Improvement from the previous year     | 6              | 7              | 7           | 7              | 6.8                            |
| <b>Index scores</b>                    | <b>5.5</b>     | <b>6.8</b>     | <b>5.3</b>  | <b>5.5</b>     | <b>5.75</b><br>Tier: Exemplary |

| <b>2007-2008</b>                       |                |                |             |                |                           |
|----------------------------------------|----------------|----------------|-------------|----------------|---------------------------|
| <b>OUTCOMES</b>                        |                |                |             |                |                           |
| <b>INDICATORS</b>                      | <b>Reading</b> | <b>Writing</b> | <b>Math</b> | <b>Science</b> | <b>Average</b>            |
| Achievement of non-low income students | 5              | 6              | 3           | 2              | 4.0                       |
| Achievement of low income students     | 3              | 5              | 1           | 1              | 2.5                       |
| Achievement vs. peers                  | 4              | 7              | 4           | 3              | 4.5                       |
| Improvement from the previous year     | 5              | 6              | 5           | 5              | 5.3                       |
| <b>Index scores</b>                    | <b>4.3</b>     | <b>6.0</b>     | <b>3.3</b>  | <b>2.8</b>     | <b>4.06</b><br>Tier: Good |

Source: [SBE Accountability Index Data](#)

## How has Mercer Middle School Closed the Gap?

### Instruction and Intervention

Mercer Middle School implements the framework of a Response to Intervention<sup>[1]</sup> system for reading, math, and behavior. Assessments determine which students will need additional support, and then teachers provide intense, targeted intervention to accelerate skill acquisition. Every 4-6 weeks, teachers collaborate for lesson planning tied to state standards. Susan Toth, the Assistant Principal for literacy, provides instructional support in reading and writing. She observes classrooms, leads curriculum planning meetings, and leads teachers in analyzing student data and student work.

### Science Highlight

Mercer students' science scores have risen dramatically. From 2003 to 2008, Mercer 8<sup>th</sup> grade science scores on the Washington Assessment of Student Learning were nearly 20 percentage points below the state average. In 2009, WASL performance jumped to eight points above the state, and by 2010 Mercer students scored 15 points above the state on the Measurement of Student Progress, the new state assessment measure which replaced the WASL (see graph on page 5).

How did they do it?

First, students devote 55 minutes to science instruction every day. Teachers collaborate on lesson plans



Science teachers Bob Ettinger and Emily Elasky

to ensure that no instructional time is wasted. Second, teachers have systematically aligned their materials to the state standards, and filled in any gaps with additional materials and content. Third, the teachers built a system of formative assessments to ensure that students are learning what is taught. Eighth grade students are asked to write persuasive essays to demonstrate their understanding of concepts. For example, students write a letter to a member of Congress to describe what he/she should do to restore salmon ecosystems in Washington, applying data and ecology concepts. Student performance on additional quizzes and tests are analyzed to ensure that students are mastering the material. Finally, teachers ensure that students

understand why they are doing an activity. Rather than giving them a list of steps to follow, Mercer staff present a challenge to solve. Teachers structure activities so that students are deeply engaged in science and feel successful. Eighth grade science teacher Bob Ettinger said, "Students need to love science and believe in themselves as scientists."

### Instructional Leadership

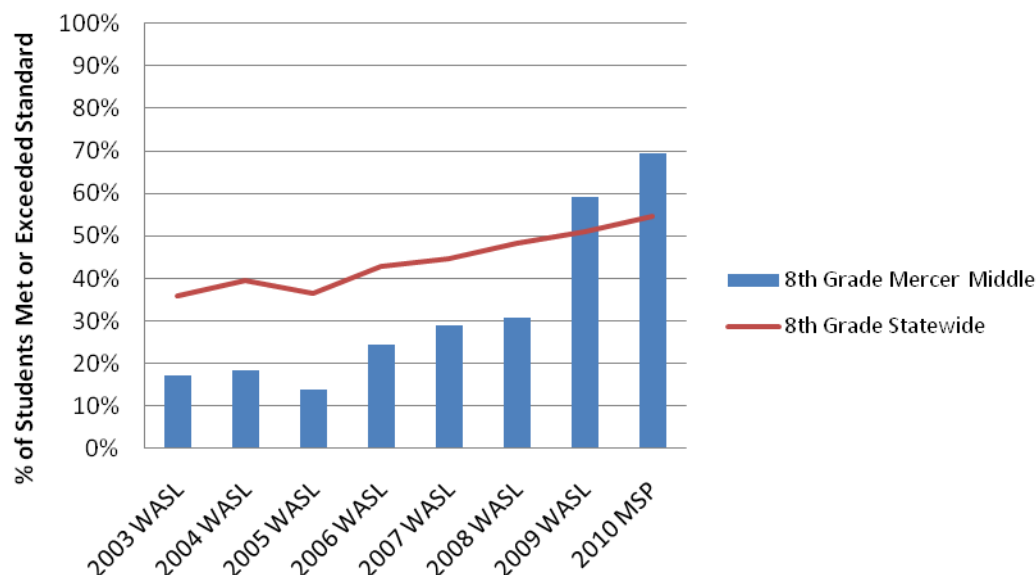
Mercer Middle School's Principal, Andhra Lutz, is an experienced instructional leader. Her focus on high expectations of students and staff, instructional rigor, using data to determine what instruction students need, and teaching standards-based curriculum to fidelity has resulted in significant student growth. Furthermore, through the implementation of a positive academic and behavioral intervention system the staff has been able to reduce suspensions by 50 percent. When asked how staff help students feel motivated, Ms. Lutz said, "We love our kids, and we know they can do a super job. We set up so many structures for them to be supported. We don't need to talk about motivation – they work so hard and they do whatever we ask of them. We care deeply about our kids. It all matters."

<sup>[1]</sup> Response to Intervention is a school-wide multi-level prevention system to maximize student achievement and to reduce behavior problems. <https://www.k12.wa.us/RTI/default.aspx>

## Science

From 2003 to 2008, Mercer 8<sup>th</sup> grade science scores on the WASL were nearly 20 percentage points below the state average. In 2009, WASL performance jumped to eight points above the state, and by 2010 they scored 15 points above the state on the Measurement of Student Progress, the new state assessment measure which replaced the WASL. As average statewide student performance was

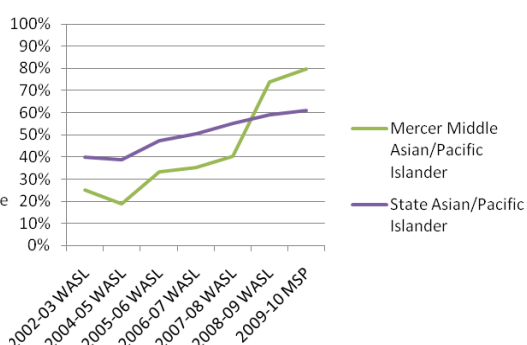
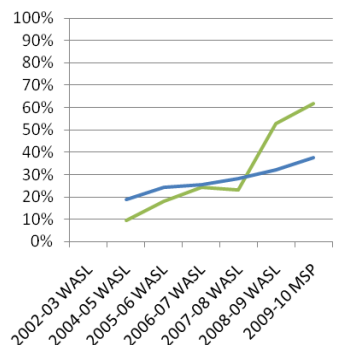
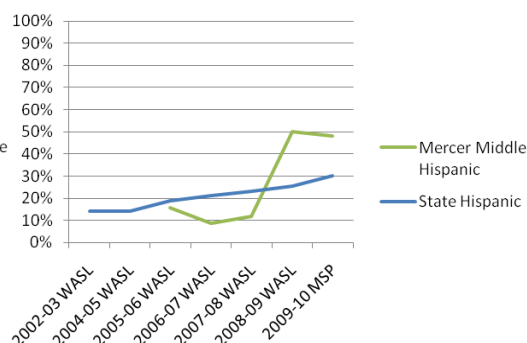
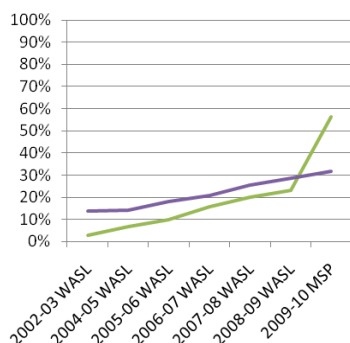
### Rapid Growth in Science Achievement



increasing steadily by 1 to 3 percent each year, Mercer 8<sup>th</sup> graders increased by 28 percentage points in 2009 and by another 10 percentage points in 2010.

### 8<sup>th</sup> Grade Science Achievement by Subgroup

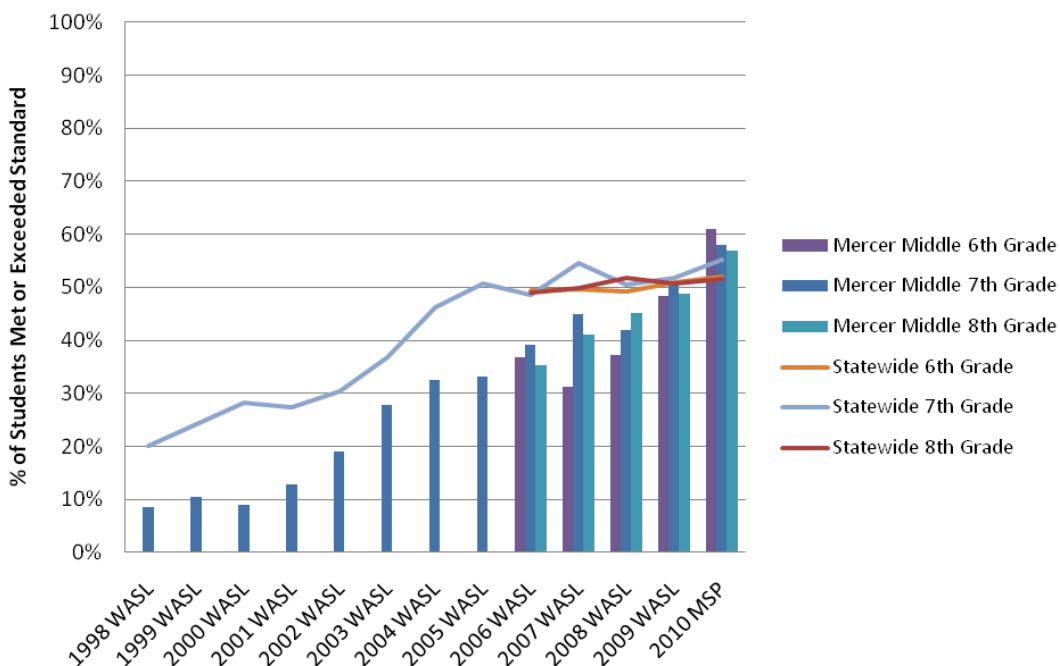
Eighth grade Mercer Middle School students who are Black, Hispanic, Asian/Pacific Islander, and from low income families lagged behind the average performance of their peers from around the state; now they far exceed it. Note: Native American/Alaskan Native students are not present in large enough numbers to be reported.



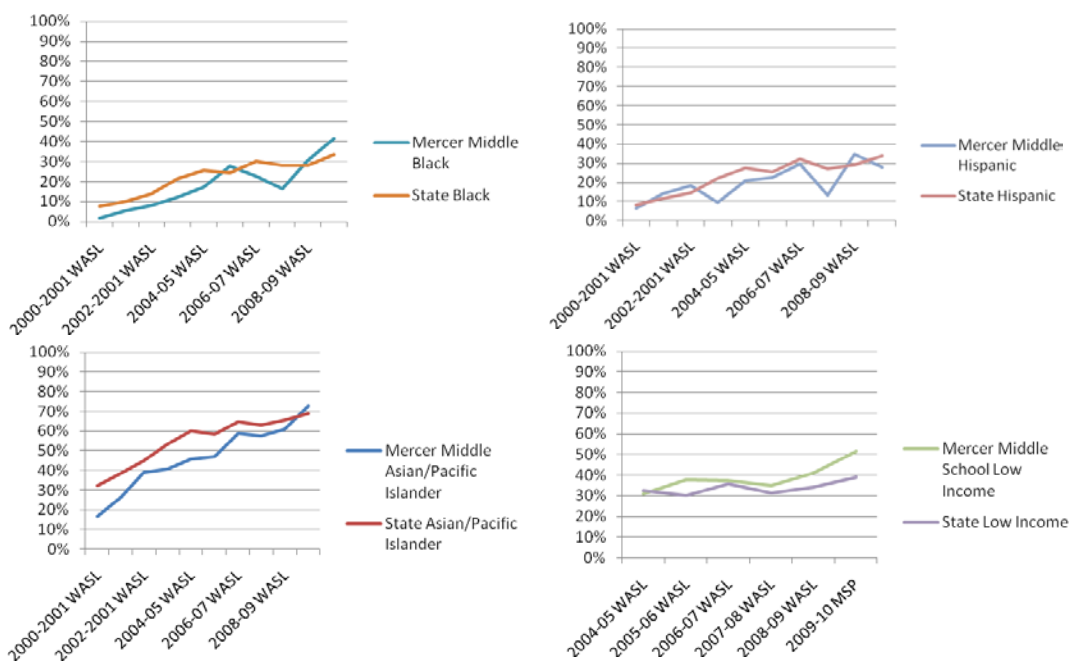
## Mathematics

### Rapid Growth in Math Achievement

After years of math WASL scores well below the state averages, Mercer Middle School MSP scores were higher than the state averages in 2010.



### 7<sup>th</sup> Grade Math Achievement by Subgroup

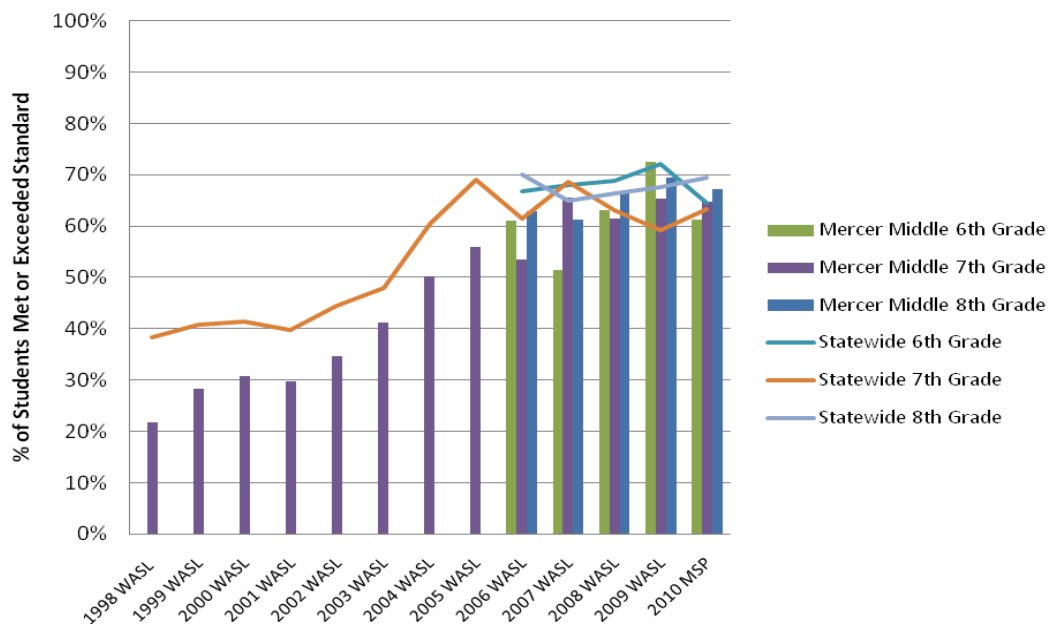


Seventh grade students at Mercer, when disaggregated by racial and ethnic subgroups as well as low income, have made significant gains in comparison with the average performance of subgroups statewide. Note: Native American/Alaskan Native students are not present in large enough numbers to be reported.



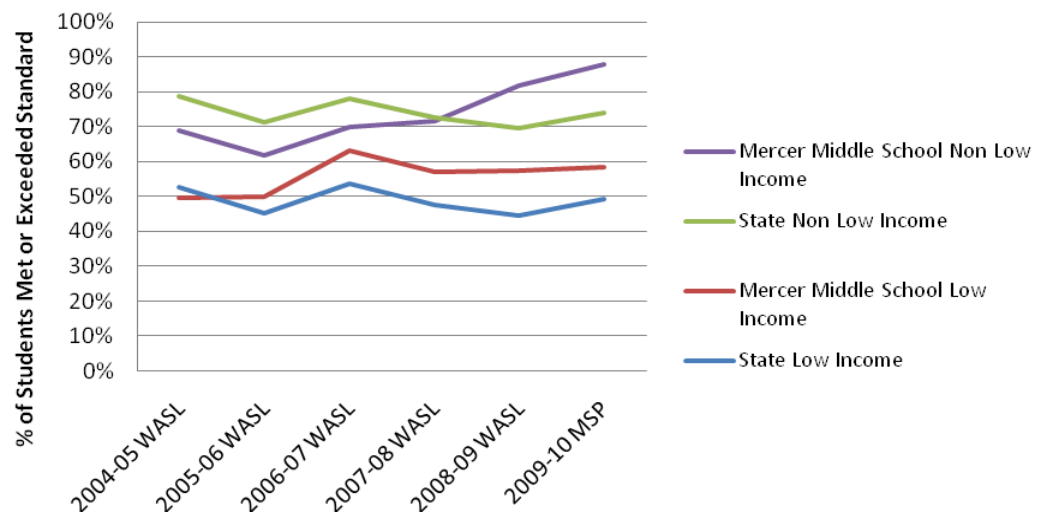
## Reading

### Steady Growth in Reading Achievement



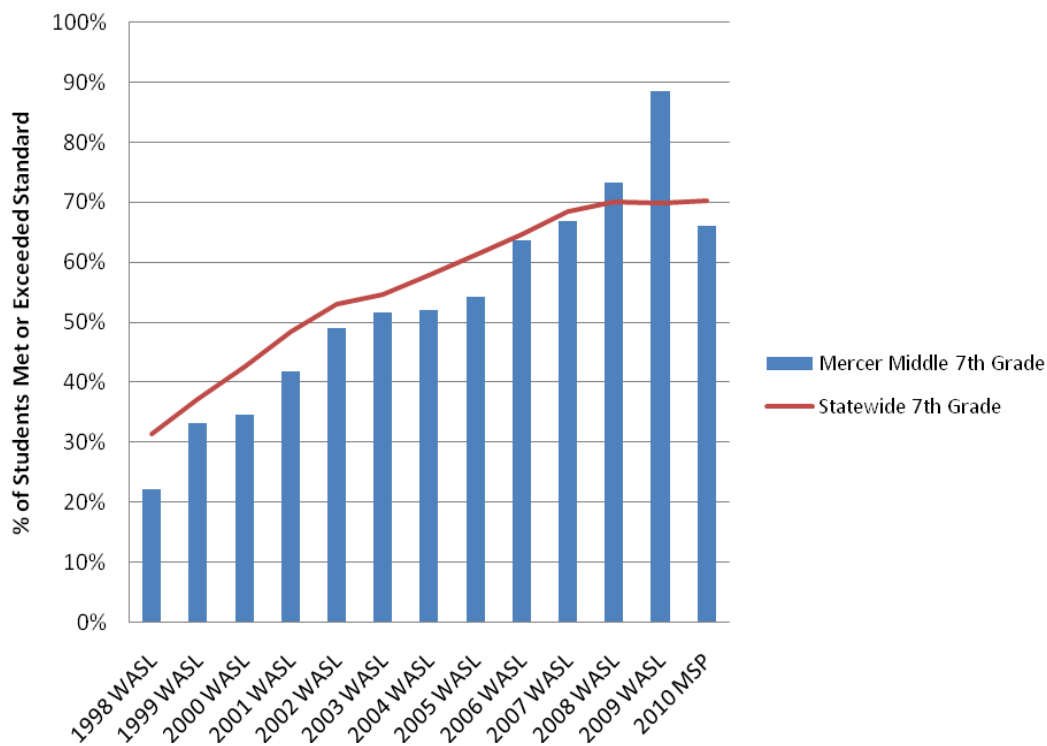
In 2008, Mercer Middle School 7th grade non low-income students performed on par with their statewide peers. In 2009 and 2010, they exceeded statewide performance dramatically. Low income students, although still behind their non-low income peers, consistently perform at higher rates than their peers. Mercer staff focuses on closing these gaps.

### 7th Grade Reading Achievement: Mercer Middle Low Income Students Outperform Low Income Student Statewide Average



## Writing

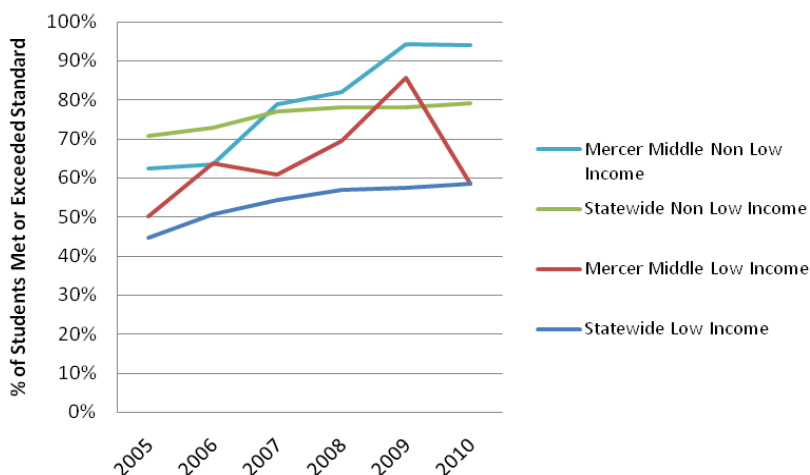
### Growth in Writing Achievement



Despite a one-year drop in 2010, students at Mercer Middle School have improved dramatically since 2005. Staff is working to ensure that performance returns to previous levels in 2011.

Starting in 2007, Mercer Middle School 7th grade non low-income students out-performed their statewide peers. In 2009 and 2010, they exceeded statewide performance dramatically. Low-income students dropped to the statewide low-income average in 2010. Mercer staff focuses on closing these gaps.

### 7th Grade Writing Achievement: Mercer Middle Low Income Students Outperform Low Income Student Statewide Average





## Sources

Ettinger, Robert. Interview with Robert Ettinger. October 18, 2010.

Lutz, Andhra and Susan Toth. Interview with Andhra Lutz and Susan Toth. June 28, 2010.

Office of Superintendent of Public Instruction. *Washington State Report Card* [Data]. Retrieved from <http://reportcard.ospi.k12.wa.us/summary.aspx?year=2008-09>.

The Washington State Board of Education. *The Washington Achievement Awards & Accountability Index Tool and Survey*. Retrieved from <http://www.sbe.wa.gov/>.