

# Minnesota Principals Academy – Action Learning Project

Eric Bubna

## Increasing Student Achievement in Middle School Science

### Abstract

This Action Learning Project was designed to improve student achievement in middle school science at Crookston High School. I am in my third year as high school principal at Crookston High School. I arrived in the summer of 2014 and was the fifth principal since 2007. When looking at student performance data across the district, scores were particularly poor at the high school level. While our test scores have lagged in a few areas at the high school, our middle school science scores are particularly poor. The test is administered to 8<sup>th</sup> graders and assesses standards from grades 6-8. This project sought to address those poor scores by improving curriculum alignment with state standards, improving student engagement through inquiry based instruction and implementing a more comprehensive review of the material prior to the test.

The project will be evaluated by looking at our MCA test scores over the coming four years and comparing our proficiency rates to the state average. We are also gathering survey data from the students to assess how our implementation of inquiry based instruction is affecting their level of engagement in science. Given that we have only one year of data the results are inconclusive at this point.

---

**Background/Context:** Crookston Public Schools is located in northwest Minnesota and enrolls approximately 1200 students K-12. It has one high school that serves students in grades 7-12 in the same building. The student population is 70 percent White and 22 percent Hispanic. In 2015-16, 45 percent of students were on free and reduced lunch and the high school's graduation rate over four years is around 88 percent.

**Problem of Practice:** MCA scores on the 8<sup>th</sup> grade science exam. The scores are even more troubling when comparing them to our scores on the high school science exam.

Crookston Secondary 8 <sup>th</sup> Grade MCA Science		
School Year	Crookston % Proficient	State Average % Proficient
2013	35.6	44.3
2014	30.2	45.4
2015	24.5	45.9
2016	38.0	47.5

Crookston Secondary High School MCA Science		
School Year	Crookston % Proficient	State Average % Proficient
2013	47.4	53.1
2014	67.7	53.4
2015	63.3	54.9
2016	51.7	55.8

**What we did:** The purpose of this project was to improve proficiency rates on the 8<sup>th</sup> grade MCA science test. We tried to tackle three issues related to student performance on the test:

Alignment of our curriculum to the standards and test specifications: To address the issue of alignment each of the teachers used what we called a ‘standards template’ to track which benchmarks were being covered and how often. This will allow us to see which of the standards are being covered and which ones are not. However, simply covering a standard does not ensure that students are mastering it. By comparing our standards templates to the benchmark reports we will be able to determine, not only if the standard was covered, but did the students perform well on the assessment relative to that benchmark.

Instructional practices that improve/increase student engagement: To address the issues of instructional practices we looked at professional development for our middle school teachers. Lee Schmidt consulted with us to help us look at our test data and standards. However, his primary role was to help our teachers develop better instructional practices in the area of science with particular focus on making science more inquiry-based. He worked with them to redesign labs, worksheets, discussions and assessments to make them more engaging. Student surveys were administered to look at engagement rates over time.

Developing a review of the material since the test covers standards from three grades: To address the issue of reviewing previous year’s material, the teachers spent about twelve days reviewing prior to the test.

**Results:** Since the project is looking at MCA and survey results over the course of four years, the results are ultimately inconclusive at this point. We also do not have official MCA results yet for 2017. The preliminary results for the MCA:

Crookston Secondary 8 <sup>th</sup> Grade MCA Science		
School Year	Crookston % Proficient	State Average % Proficient
2016	38.0	47.5
2017	24.3	??

The results from our first year administering the survey showed fairly high rates of engagement but offered some concerns when looking at the issue of rigor in the course:

Question	Average
I was an enthusiastic learner	4.1
I did my best work in this class	4.0
This class was challenging	2.6
This class taught me valuable information	3.7

#### Implications for Practice and Next Steps:

- 1) There is still a need to be sure our assessments are more aligned with standards and test specs so they offer us better predictive data.
- 2) The student surveys showed a perceived lack of rigor in the course work. That needs to be explored.
- 3) We need to ensure our move to inquiry based instruction does not supplant the use of close reading and rigorous writing in our curriculum.