



DATE: September 12, 2011

TO: Board of Education

APPENDIX NNN-3-3
September 26, 2011

FROM: Daniel A. Nerad, Superintendent

RE: Value Added report and discussion of the Value Added model

I. Introduction

A. Title/topic: Value Added

B. Presenter/contact person:

Andrew Statz
WCER Staff

C. Background information: Value Added is the use of statistical technique to identify the effects of schooling on measured student performance. The model uses what data are available about students -- past test scores and student demographics in particular -- to control for prior student knowledge, home and community environment, and other relevant factors to better measure the effects of schools on student achievement. In practice, Value Added focuses on student improvement on an assessment from one year to the next.

D. BOE action requested: No action requested; review of this `update

II. Summary of Current Information

A. Provide summary: The first part of this agenda item is the discussion of the strengths and limitations of Value Added as a model and what is being done to overcome any limitations. The second part is the report of the District's Value Added results that incorporate WKCE results from the 2010-11 school year.

Issues in Value Added in Depth. The strengths of Value Added as a model include:

- Measuring growth – to close achievement gaps, students need to experience growth and Value Added is the best model available to measure growth
- Measuring the contribution of schools and classrooms to measured student knowledge – it controls for grade, prior knowledge and student subgroup status (disability, ELL, gender, race, parent's education, low-income status, Full Academic Year (FAY))
- Providing feedback about what may be working or not – identifying areas of excellence or areas in need of improvement will enhance the role of the District's new School Support Teams
- Building on a strong and sophisticated statistical model with 95% confidence intervals to ensure reliability of results

- Being applicable to many different assessments – the District currently uses it for WKCE, but it could also be used for Measures of Academic Progress (MAP)
- Being accepted by many other districts including New York City, Los Angeles, Chicago, and Milwaukee. It is also being pursued by the Wisconsin Department of Public Instruction for use statewide.

Limitations of Value Added include:

- Many comparisons are made to the District average, which does not provide perspective of how well MMSD's schools are doing compared to other districts' schools. This is addressed in part this year by comparisons to statewide results. (MMSD's data continues to be richer than what is used in the state model. Examples of this are MMSD's inclusion of parent education and student mobility.)
- Results are as good as the tests and data they are based on – Value Added can be applied to other assessments and should always be used in concert with other information.
- Measures require some work to interpret and use – They require statistical thinking and thoughtful use by District leadership and School Support Teams.
- Possibly subject to selection bias – The way we roster our classrooms may have an impact on Value Added. A separate study is underway to determine if the way we assign students to classrooms has an impact on Value Added results.
- Caution must be exercised for groups smaller than the school level, especially at the classroom level. Multi-year averages help create a larger, more informative sample. Further, confidence intervals are always provided to be clear about the amount of randomness in a sample.

MMSD's Value Added Results. This report presents Value Added results for MMSD measuring student improvement on the November test administrations of the Wisconsin Knowledge and Concepts Examination (WKCE) in Grades 3 through 8.

This report responds to requests made during a delivery of Value Added results in January 2011 that asked about how MMSD's results compare to other Districts, namely the rest of the state. When possible, this is done but it is limited to one year at a time (i.e., comparing November 2009 to 2010, or November 2008 to 2009).

For more detailed discussion about the impact of subgroup status (such as disability, ELL, gender, race, parent's education, low-income status, FAY), the MMSD-only model is used. Using the District model, we use a two-year rolling average that compares WKCE results from November 2008 to 2009 and November 2009 to 2010. A two-year rolling average is used in the District model to increase precision and smooth results over time. This is useful in an MMSD-only model since the variance of Value Added results by school is relatively small in Madison.

Highlights:

- MMSD's district-wide results are generally above the rest of the state, but it varies by subject and grade. There are also several cases where MMSD results are better than or lower than the rest of the state.
- Variance of Value Added is generally smaller in MMSD than the rest of the state. MMSD schools tend to cluster around the district average and have fewer outliers (both positive and negative) than the rest of the state.

- Even with this small variance, MMSD has a handful of schools that are above or below the statewide average. This is true for both reading and math.
- Gaps persist among student subgroups. These measure the difference in growth among non-white vs. white students, ELL vs. non-ELL students and so on. MMSD is not unusual in this respect. Also, these gaps are cumulative. For example with elementary math, black students have a Value Added 4.4 points lower than non-black and students receiving free lunch are 3.6 points below those who do not. So, if a student is both black and receiving free lunch, his or her Value Added score would be 8.0 points lower, statistically speaking.
- The gaps related to ELL, race or low-income status do not vary greatly from school to school. However, differences between students with disabilities and without does sometimes differ across schools.

Also new this year are quadrant analyses that compare District Value Added and WKCE proficiencies with the rest of the state. We see only a few schools that are below average in both proficiency and growth by more than one standard deviation for elementary math and reading. For middle schools, there are no schools in this quadrant more than one standard deviation in both proficiency and growth for either math or reading.

In the quadrant for both high proficiency and high growth, there is one elementary school for math and two for reading beyond one standard deviation in both proficiency and growth. For middle schools, there are two for math and none for reading.

Further analysis is needed to determine what strengths and areas for improvement are present in these schools. This analysis will inform the work of MMSD's new School Support Teams.

Detailed school by school results contained in the appendix are comparisons from the MMSD model relative to the MMSD district average.

B. Recommendations and/or alternative recommendation(s): It is recommended that the Board review this summary of Value Added results and the discussion of its strengths and limitations as a model.

C. Link to supporting detail: N/A

III. Implications

A. Budget: A plan needs to be developed to target schools with additional resources to make the gains needed for increased growth.

B. Strategic Plan: This data provides information needed as we work toward implementing K-12 alignment in the district. When looking at the report appendix, there are two ways we can use this data to make improvements:

- When a school's value added is positive and *statistically significant*: it is likely that students at the school grew more quickly than the district average, to an extent that is unlikely to be attributable to randomness or chance and therefore, we will work with these schools to determine what the contributing factors are that we can apply to other schools.

- Similarly, when value added is negative and *statistically significant*, it is likely that students at the school grew more slowly than the district average, to an extent that it is unlikely to be attributable to chance and we will therefore support these schools for improvement.

C. Equity Plan: Schools can be aligned more equitably if we use the information from this and other data within the District.

D. Implications for other aspects of the organization: N/A

IV. Supporting Documentation

- A.** Presentation – Issues in Value Added in Depth
- B.** Presentation of MMSD Value Added 2010
- C.** Full report – The Madison Metropolitan School District Value-Added Model