INTERPRETATION OF STUDENT SPECIALTY GROUP DATA IN RURAL SCHOOLS

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Abstract

Schools around the nation are being asked to comply with a complex set of criteria that require all students be proficient in mathematics and English language arts by 2013. The expectations are outlined in federal No Child Left Behind legislation and the specifics of the legislation have provided a focus on student outcomes. Student outcomes are being closely monitored through the collection and analysis of very specific data points. In addition to overall proficiencies, schools are also required to monitor specialty population data in order to demonstrate that there are not achievement gaps for any ethnic groups, economically disadvantaged or special education students. The process of data collection and analysis is particularly challenging for small rural districts as deriving meaningful conclusions from very small data sets is difficult. With multiple years of student proficiency data available, it is now possible to examine trend data over time and draw conclusions about student achievement outcomes on relatively small sets of data. Achievement data examined in this way can be used to inform decisions around curriculum, instruction and assessment as schools focus on attaining proficiency for all students by 2013.
Chapter I – Introduction

Statement of the Problem

Federal No Child Left Behind legislation broadly requires that schools address the educational needs of all children. All students are required to meet minimal educational standards as defined by the individual state where a student resides as approved by the US Department of Education. In the State of Michigan, the adopted plan for implementation of NCLB has set districts on a course of compliance that requires increasing minimum proficiencies beginning with the 2002-2003 academic year and ending in 2012-2013 with 100% of students meeting minimal proficiency standards. Tables 1 and 2 depict Michigan’s adopted minimal proficiencies over time in math and English language arts. Embedded in NCLB is the expectation that students in a variety of specialty groups will achieve the minimal expectations at the same rate as “all students” over time. Compliance with this secondary level of student achievement requirements has brought great attention to specialty group data.
Table 1. ELA Michigan Minimum Proficiencies

Table 2. Math Michigan Minimum Proficiencies
Local and intermediate school district staff members spend a phenomenal amount of
time and funds on the compilation of this data. In small rural districts, staff will conduct
sometimes elaborate data analysis only to find that they have a very small number of students
in one or more of the specialty populations monitored under NCLB. The student achievement
data being generated is intended to inform decisions around instruction to improve student
outcomes but, given the small number of students in these populations, it may not be
necessary or appropriate to modify instruction based on this data only.

Research Question:
To what extent is specialty group data valuable for rural schools struggling to meet the
increasingly difficult NCLB student achievement standards?

Definition of Terms:
Profiticiency:

Profiticiency is defined as students achieving a level 1 or 2 on state standardized
assessments. This four point scale for grades 3-9 is further defined as follows:

Level 1: Exceeded Standards
Level 2: Met Standards
Level 3: Basic
Level 4: Apprentice
Chapter II - Review of Literature

The following literature review is intended to (a) describe the use of student achievement data in terms of compliance with NCLB and improved educational programming, (b) summarize the research on specialty group data as a focus for improvement of programming, and (c) define specialty groups in Eastern Upper Peninsula of Michigan and design a research project that uses rural schools’ specialty group data to maximize student achievement through improved, targeted programming.

Use of Student Data to Inform Education

The intent of NCLB is to identify and address the needs of all students throughout their K-12 experience. Identification of students not meeting standards has now become an important strategy. Each individual state determines their own minimal standards and is then required to develop assessments that are aligned to the standards. The National Assessment of Educational Progress standards must be met by all states but individual states may impose higher standards. Once state standards have been established, they are presented to and accepted by the US Department of Education. After they are formally accepted at that level, all students are expected to meet these requisite minimums. In Michigan, students are tested annually from grades 3 through 8 in math and language arts, in grades 5 and 8 in science, and in grades 6 and 9 for social studies. All students are tested in grade 11 in the four core content areas. Beyond the when and what of testing lies the why. Test results are to be used to inform teaching and determine where scarce resources should be appropriated.

An issue that many rural districts face involves the usually small sample sizes of overall classes and some specialty groups. The reliability of the data could be questioned, particularly when high stakes decisions are based on the interpretation of the data. In May
2007, Martineau conducted and exhaustive study on the accuracy of classifications based on methodology used by the Michigan Department of Education and found that reliability was threatened when sample sizes were too small. This factor may be an issue in some of the smaller schools that are referenced in this project.

Martineau (2007) specifically looked at the reliability of the classification of students in the four proficiency levels: exceeded expectations, met expectations, basic or apprentice. This “four category” measure is what the Michigan system is based on. The “two category” system groups exceeded expectations and met expectations into a “met” category and basic and apprentice into a “not met” category. This system is used in Michigan for AYP reporting purposes (federal level). The application of Michigan data, specifically grade 4 mathematics from 2005, was used as a simulation to test an index that looks at the correlation between true and expected classification accuracy. The findings were interesting as they verified the fact that the data is most reliable when sample sizes are larger. While this may have been expected, the use of the index described may be most helpful for small sample sizes as a method to show the effect of measurement error on the classification of groups into categories, particularly in the four category system. The two category distinctions were more reliable, met vs. not met, but the concern over those students near the cut score continues to be problematic. While the results of the data applied to the two category system seem clear, students either “meet” or “do not meet” state established standards, a closer look at the data is necessary for districts to utilized the information on behalf of individual students and/ or programmatically. For example, if analysis of the data indicates that 20% of a districts’ students met state standards by only 2 to 5 points on a given test, that district would be considered very vulnerable to potential decline the following year and students in that
vulnerable category may actually need interventions to maintain their marginal proficiencies. Conversely, if 20% of students missed meeting the established state standard cut score by 2 to 5 points, that district may be on the verge of a significant jump in proficiency in subsequent years with focused interventions for the students in that marginal category or district wide improvements in curriculum, instruction or assessment that would impact all students enough to improve outcomes enough to push these students over the cut score.

Martineau (2007) paid particular attention to small sample sizes which makes it relevant to this paper. One of the most interesting components was a table within the article, Distribution of Numbers of Fourth Graders Tested in Various Michigan Schools, that shows how many schools in Michigan have small class sizes. Of the 2,122 schools that tested 4th grade students in 2005, 179 tested one to fifteen 4th grade students. While the State Department of Education struggles with accurately reporting AYP status for these small schools, these small schools struggle with using the data to meaningfully inform curriculum, instruction and assessment.

Once access to meaningful data is available, there has to be a system into which the data can be fed. Martin, in a 2003 work that clearly outlines such a system, emphasizes the need for teachers to start each year with a meaningful data profile of each student in his/her classroom. Several key pieces of data are included in the profile and state standardized summative data is only one of many outlined. The expectation at the district level is that teachers would utilize the data set to chart a course for academic growth for each student based on identified areas of strengths and weaknesses.

This work was of particular relevance to this project in that it stressed the importance of a method of electronically storing data in order to profile student achievement in a way that
would be of greatest import to classroom teachers. What was striking, however, was the fact that the district provided each teacher with the individual student data profiles rather than the tools (access to a robust data warehouse) for them to create the profiles themselves.

Martin (2003) also describes the process of teachers being provided with updated profiles at quarterly intervals. Again, the district provision of the data to teachers rather than the teachers generating the data themselves was of particular interest. What was very clear was the expectation that all educators would be utilizing data to design instructional units, provide remediation or acceleration opportunities and monitor progress throughout the year. In fact, the expectation was to move students from remediation to acceleration.

In 2006, Nodine and Petrides examined three different school districts with attention to the processes these districts were using to connect the goal setting work (that schools are often very good at) with what was actually happening in the schools as indicated by data. The three districts examined were:

Albuquerque Public School (New Mexico)

Boston Public Schools (Massachusetts)

Airline Independent School District (Houston, Texas)

There was no formal research study or comparison in student outcomes involved in this work, it was an examination of the processes in place to support and require the use of data in decision making. In both the Albuquerque and Airline Independent School districts, the process revolves around an alignment of goals. There are district level goals, school level goals and teacher level goals in each model. Albuquerque schools have an additional “cluster” level of goals set within the cluster. A cluster is defined as a unit with one high school with all of its feeder schools. The cluster is led by a principal from one of the schools
in the cluster. What was most interesting about this particular process model was the additional resources lent to the process. Each cluster had an instructional assistant, a program specialist and other instructional coaching staff assigned to it. This provision of staff with clearly defined roles within the process was most relevant to this paper since one of the often heard barriers to meaningful use of data within a school or district is the time and expertise needed to insert appropriate data into a process that is already in place in a school or district. At present, this process is generally associated with school improvement planning but the transition from pure goal setting to more genuine monitoring of each goal is often lost.

In all districts within the Nodine and Petrides work (2006), the progress monitoring component of the overall school improvement process was clearly defined. Time for the analysis of data and for potential adjustment of programming was built into the process. In the Albuquerque and Houston examples, the district had established specific times during the year when particular staff were brought together to examine data, monitor and adjust accordingly. Both met at least three times per year at the district and school level and Albuquerque also met three times per year at the cluster level. Houston describes a more “all year long” process at the classroom, grade and building level via the use of scorecards that are filled out and monitored more frequently. The Houston process drills right down to the classroom level with common assessments given every three weeks with close monitoring of those results.

The Boston Public School process also relies on clusters and is more focused on communication between and among staff. Their cluster process divides the district into three geographic areas and relies on leadership teams that meet every two weeks to discuss and document best practices, classroom observation data and what is working (as evidenced by
data). The findings are shared and implemented elsewhere as appropriate. Given the size of this urban district, the three clusters focused first on the lowest performing ten schools within each cluster. Once the processes and lines of communications were clearly established, they planned to fold in 15 additional schools each year. The first overarching goal that was addressed in the Boston district was to boost the academic achievement outcomes of students with special needs.

This representation of a specialty population in the first goal to be addressed by this district made the article of interest to this project. The translation of that goal into a progress monitoring program that utilized data as the focus of each of the cluster meetings was particularly interesting as it clearly depicted a process that moved from examination of data to utilization of data to elicit change.

All three of the district represented in this work also relied on the use of technology as a tool to enhance these processes. The technology tools were used to house, manipulate and assist with analysis through reporting but they were also used as communication tools between administrators, teachers and parents. Also specifically mentioned was the use of the data warehousing tools to house not only state level data but also local district and even classroom generated data that could then be examined in relation to other data sets. Without technological support, the meaningful use of this volume of data would have been impossible.

This particular aspect of the article was linked to this paper by that fact; the volume of data examined would not have been possible without the use of a data warehouse. Even in a relatively small intermediate school district, the EUPISD, the examination of “all student” and specialty population data sets over four years would not have been possible without access to
a data warehouse. The focus on and rapidity with which data can be acted upon was key in all the districts examined in this article and as part of this project as well.

*Specialty group Data*

School districts across the nation must account for student achievement levels both overall as well as for designated specialty groups. The specialty groups specifically monitored under NCLB are ethnicity, socioeconomic and special education designation. Aside from the strictly regulatory aspect of specialty group data analysis, a practical reason for examining student data around specialty groups exists. The research on meeting the needs of boys in writing, for example, may be just what a school district needs if gender/reading data show disparity. If there is disparity between low income (economically disadvantaged) students and students not economically disadvantaged, it may be worthwhile to research the role of poverty in education.

The issue of specialty group disparity in education as determined by student achievement is well documented and forms the basis for much of the new school reform movement. The 2004 NAEP Report takes a close look at student achievement data over three decades in reading and math. While black and Hispanic students are scoring higher in elementary and middle school, disparity still exists. As outlined in the same report, a gap in student achievement between economically disadvantaged students and not still exists. There is little data on the performance of Native American students at the national level outside of that reported in the NAEP trend data.

In her study on the *Effects of demographic and personal variables on achievement in eighth grade algebra*, McCoy (2005) established a link between ethnicity and socioeconomic status and academic achievement outcomes.
McCoy (2005) concentrated on students from four classrooms in a large, urban and suburban district in a southern US state. These were grade 8 algebra classes that included a total of 107 students; 46 boys and 61 girls. McCoy examined both demographic and personal variables. Demographic indicators included ethnicity, socioeconomic status and gender as well as personal variables associated with attitude toward mathematics. The specific attitudes investigated included confidence in using mathematics, perceived usefulness of mathematics and mathematics anxiety.

McCoy (2005) analyzed both quantitative and qualitative data. The quantitative data included individual student demographics limited to gender, ethnicity, socioeconomic status and attitude toward mathematics. In order to quantify the “attitude toward mathematics” data used in this study, McCoy utilized a modified version of the Fennema-Sherman Mathematics Scales. The specific components of that instrument that were used for this study included the Confidence in Using Mathematics, Perceived Usefulness of Mathematics, and Mathematics Anxiety categories. From these categories, McCoy created a survey for students that had 36 items that was scored using a 5-point Likert-type scale. The scores were then compiled into three levels: high, medium or low attitudes toward mathematics. In addition, school factors such as school attending and teacher name were included. Qualitative data collected included classroom observations throughout the year in the four classrooms studied as well as teacher and student interviews (four teacher and 107 students). Findings were based on examination of achievement test scores for both the state’s end of course and end of grade tests as well as the attitudes toward mathematics test instrument selected for this study. The classroom observational data and results from teacher and student interview data were used for clarification and explanation of certain findings. The findings revealed that ethnicity and
socioeconomic status both had a negative impact on end of course and end of grade academic achievement outcomes. For end of course the findings were as follows:

1.) SES, \(F(1, 89) = 6.997, p < .05\);

2.) \(F(1, 89) = 81.628, p < .05\).

End of grade test results showed the following:

1.) SES, \(F(1, 90) = 9.298, p < .05\);

2.) ethnicity, \(F(1, 90) = 62.785, p < .05\).

In addition, attitudes toward mathematics impacted end of grade test results. (attitude, \(F(1, 90) = 3.162, p < .05\)). Attitudes towards mathematics went down from the beginning to end of the year in all four classrooms.

Teachers in the four classrooms were identified as the most significant school level factor. Curriculum and materials available were similar but pedagogical skills, determined through qualitative measures noted, varied.

These findings were relevant to this paper in that the methodology used reliably linked both ethnicity and socioeconomic status to academic outcomes on more than one indicator. While the schools studied were in an urban rather than rural environment, the methods used would be transferrable since the work was done at essentially the classroom level with numbers that could be mimicked in many rural districts.

In a 2001 study conducted by Muller, Stage and Kinzie, factors related to gender and racial-ethnic differences were examined in relation to science achievement growth trajectories. This longitudinal look at growth over time; grade 8 to 12, examined several variables and how each gender and racial-ethnic group performed in science over time. The specific variables tested included:
This study utilized data collected from a multi-year effort by the National Center for Educational Statistics (NCES) initiated in 1988 known as the NELS:88. The NCES effort began with students that were in grade 8 in 1988 with follow-up data collected every 2 years. The Muller, Stage and Kinzie (2001) study utilized data collected during the first three waves of data that would have included student data from grades 8, 10, and 12. It should be noted that some of the initial students may have not actually been in grades 10 and 12 two and four years later but the majority would have been. The initial NCES data collection included a nationally representative sample of approximately 1,052 schools and 24,500 students. To be included in the Muller, Stage and Kinzie study, students from the NELS:88 group had to meet the following criteria: those surveyed in grade 8 were still students 2 and 4 years later and were resurveyed; students had to have had cognitive test score data from at least 2 of the 3 data collection points (grades 8, 10, 12); and, students had to be enrolled in public high schools.
The racial–ethnic groups included African American, Latino(a), Asian and White. Each of the variables was tested against the eight racial-ethnic by gender subgroups (i.e. African American males, African American females, etc.). The study utilized a hierarchical linear modeling (HLM) and longitudinal data to determine whether gender and racial-ethnic differences related to science achievement growth. This method is predicated on first running the test on “all students” as the level 1 trajectory over the four years on each of the variables. The same test is then run including each of the racial-ethnic by gender subgroups against same variables. This method sets the baseline, grade 8 science achievements of each of the subgroups and then monitors growth over two then four years against each of the variables. Chi square tests were applied to the individual test subgroups to determine the variation in initial grade 8 achievement and statistically significant differences were found. Additionally, chi square testing on the variation in academic achievement growth rates over the three testing events also demonstrated significant findings. These findings confirmed the need for the application of the HLM to the overall data collected for each student.

The findings from this multi-year study found that SES and previous science grades were positively related to grade 8 science achievement for all subgroups. Except for Asian American males, 8th grade locust-of-control was also positively related to grade 8 science achievement. Beyond these grade 8 findings, the quantity of high school science units was significantly related to individual growth rates over the four years in all subgroups. The high school program was positively related to science achievement growth for all subgroups except African American females and Latino males. This variable was described as the track a student was on in high school: college prep vs. career/technical.
Other notable findings included a positive relationship between grade 10 locus-of-control and science achievement growth for African American males, Latina females and White males. This finding is interesting because it indicates that this variable is most significant for most of the subgroups before entry into high school.

The conclusions drawn from the findings were first to note that racial-ethnic subgroup inclusion had a greater relationship than gender to science achievement growth outcomes. The more generalized conclusion regarding this specific finding went on to caution that gender only studies should pay attention to race/ethnicity as well. Also important was the fact that grade 8 science achievement was important to future outcomes. The students that were lower performing at grade 8 were not only lower performing at grades 10 and 12 but their rate of growth was also less. This emphasizes the importance of strong elementary and middle school science programming for all students.

There are several aspects of this study that relate to this paper. Most importantly is the recognition that a student can belong to several subgroups and that other factors (like SES) impact outcomes as well. The methodology used in this study to break apart subgroups by ethnicity and gender and then layer in other indicators like SES (which relates to economic status) provided an approach to the complex issue of one student belonging to multiple subgroups. While not specifically addressing the issue of compounding demographic indicators, it provided a roadmap for study design that could be helpful.

Additionally, the growth over time information was meaningful as it provided more depth around each set of subgroup findings than a single year or testing event study would. The findings themselves reinforced the need to tackle interventions early and to be strategic when examining which indicators represent the greatest need for services and when. For
example, this study found that there were already gaps between male and female and racial-ethnic groups by grade 8, the baseline for this study. The fact that SES and previous science grades impacted grade 8 outcomes for all subgroups provides schools with information that global programs for all low income students in science would be of value in elementary and middle school. Additionally, all students with low grades in science should be provided with interventions prior to high school. These insights align with the strategic use of data to guide how resources are spent thread that runs throughout this paper.

One very specific disappointment about this involved, multi-year study was that the one racial-ethnic group left out was Native Americans. While the overall NCES effort was designed to over sample African Americans, Latinos, Asian Americans AND Native Americans, there were not enough Native Americans in the subgroups (male and female) to include in the four year study. This explanation did help in outlining some of the issues related to obtaining meaningful Native American student achievement data but added to the frustration of same since information from the study was helpful and well presented and would have been more significant for this paper if it had been specific to Native Americans.

Use of Specialty group Data to Enhance Student Achievement in Eastern Upper Peninsula of Michigan

The Eastern Upper Peninsula of Michigan has a unique demographic with regard to Native American student population. While the 15 individual school districts within the Eastern Upper Peninsula School District’s service area comprise less than 1% of students in the state of Michigan, 11% of the state’s Native American students reside and attend school in the region. How do factors like concentration of one dominant ethnic group, relatively high
poverty rates and rurality influence student achievement relative to students in Michigan and the nation? A close look at trend data over four years in the EUP region will examine the individual specialty population data over time and compared to state and national data sets. In addition, the project will examine the potentially compounding influence of simultaneous membership in more than one at-risk specialty group.

When beginning any examination of data that focuses on gaps in student achievement between groups, it is important to acknowledge issues around why gaps in achievement may exist between and among specialty populations. In a 2004 article, Barton asked the question: “Why does the gap exist?” Barton conducted a meta-analysis and competent synthesis of research on the topic of student achievement gaps between different socioeconomic groups and ethnicities.

Barton focused on 14 factors that correlate with student achievement. He further organized these factors into two distinct categories; “Before and Beyond School” and “In School”. As listed (Barton, 2004, p.10) the factors identified are as follows:

**Before and Beyond School:**

- Birth weight
- Lead poisoning
- Hunger and nutrition
- Reading to young children
- Television watching
- Parent availability
- Student mobility
- Parent participation

- Parent involvement
- Parent education
- Parent employment
- Parent mental health
- Parent physical health
- Parent substance use
- Parent time in school
- Parent participation

- Parent income
- Parent education
- Parent employment
- Parent mental health
- Parent physical health
- Parent substance use
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- Parent time in school
- Parent participation

- Parent income
- Parent education
- Parent employment
- Parent mental health
- Parent physical health
- Parent substance use
- Parent time in school
- Parent participation
In School:

- Rigor of curriculum
- Teacher experience and attendance
- Teacher preparation
- Class size
- Technology-assisted instruction
- School safety

While different studies referenced in the article expanded on individual factors and their impact on either economically disadvantaged student groups or different ethnicities, these overarching factors persisted. The subtext of the work was the fact that low income and ethnic minorities are disadvantaged in “many” of the identified risk factors. The actual combination of risk factors is unique to each student but some generalizations to overall specialty populations were made.

Two aspects of this research were most relevant to the examination of specialty population data in the Eastern Upper Peninsula of Michigan. One was the striking similarity between this meta-analysis done by Barton (2004) and the currently very popular work of Marzano (2003), also a meta-analysis of educational research published in his *What Works in Schools*. Of particular note were the “In School” factors identified by Barton and expanded upon and reorganized by Marzano as “School” and “Teacher” level factors that influence student achievement outcomes. For example, one of Barton’s “In School” factors is rigor of curriculum which is much like Marzano’s guaranteed and viable curriculum indicator. Barton’s school safety is much like Marzano’s safe and orderly environment. Both
guaranteed and viable curriculum and safe and orderly environment are under Marzano’s school level factors. Where Marzano further breaks down school and teacher level indicators, Barton describes them more broadly as in school indicators. In Marzano’s schema, teacher level indicators like instructional strategies, classroom management, classroom curriculum design and collegiality/professionalism seem similar to Barton’s teacher experience and attendance, teacher preparation, class size and technology-assisted instruction.

The other striking aspect of Barton’s (2003) work that is relevant to this work is the complexity of factors that influence gaps in student achievement between and among specialty populations. It is easy to look at a difference in the percent proficiency between economically disadvantaged and not economically disadvantaged students and agree that something must be done but teasing out the best approach to eliminate the gaps leads right back to this list of factors. Some factors are “controllable” at a school district level but others go beyond the classroom and school and must be addressed at the societal level. Barton’s before and beyond school indicators like birth weight, lead poisoning, television watching, parent availability and student mobility are clearly outside of a school’s direct control. Additional indicators like parent participation, hunger and nutrition and reading to young children may have school components but are fairly indirect and would most likely be addressed through community outreach or school based programs like free and reduced lunch.

This context provides a clear focus for educators in that there are factors like rigor of curriculum, teacher experience and attendance, teacher preparation, class size, technology-assisted instruction and school safety that can be controlled at the K-12 level and have the potential to greatly improve outcomes for all students. It is also critical to examine which factors are in place in an individual school or district and how this impacts specialty
population student achievement data. A robust school improvement process would encourage a building or district to address these indicators strategically with data as support for specific efforts.
Chapter III – Results and Analysis Relative to Problem

Student academic achievement data is generated by the Michigan Department of Education, Office of Educational Assessment and Accountability in the form of research files made available to individual and intermediate school districts (ISDs). In addition to the research file, there are a small set of standard reports available to districts and ISDs. These reports include basic proficiency reports at the district, building and individual grade level.

In addition, there are demographic reports that detail proficiency levels of specialty populations broken out from all others or an additional comparison group. For example, with regard to economically disadvantaged and special education students, the reporting categories are “economically disadvantaged (ED)” or “not economically disadvantaged (NED)” and “students with disabilities (SWD)” or “all students except those with disabilities (AESWD)”. Gender is simply reported as “male” or “female”. Ethnicity is reported as one of the following:

- American Indian / Alaskan Native
- Asian/ Pacific Islander
- Black, Not of Hispanic Origin
- Hispanic
- White, Not of Hispanic Origin
- Multiracial

The data are provided on all these specialty populations, gender, ethnicity, socioeconomic and special education status though gender is not a reportable specialty population for compliance with NCLB. That data are available for program monitoring and improvement purposes only.
Additional reports available from OEAA include item analysis, individual student and parent reports. The evolution of the data warehouse has made additional data sets, like district and regional interim assessments and attendance, available to teachers and administrators in a timely manner. More importantly, electronic warehousing of data allows all users to compare and manipulate all the available data sets which provide a range of reports not previously possible. Each parameter of the state standardized assessments and other locally generated or otherwise available data can be uploaded into a data warehouse. Once matched on a student’s unique identifier code (UIC) and rostered to the correct school and classroom teacher, all data are available for analysis.

Data for this project has been generated using both OEAA available data and data from reports specifically generated using the Eastern Upper Peninsula’s data warehouse, Data Director. In addition to the above, some reports have been displayed using Microsoft excel as this provided a concise tool for reporting.

Four years’ of district and EUPISD proficiencies for the following specialty populations has been collected:

- Ethnicity
- Socioeconomic
- Special Education
- Gender

ISD level data reflects all the districts within the Eastern Upper Peninsula service area including St. Mary’s parochial school but excluding three other small private school that do not participate in MEAP testing. All data sets are also compared to state averages.
The first stage of information gathering for this project was the collection of proficiency data for multiple years. Proficiency data provides a relatively quick method of gauging general trends over time. There is variation in proficiency levels, statewide, from year to year. This variation is partially based on the difficulty of individual tests, unique cohort characteristics or year-to-year variations in cut scores which determine the number of answers as student must get correct to be considered proficient. In an attempt to correct for this variation when examining district level data over time, the difference between individual district level for each grade level and content is compared to the statewide proficiency for that same test was determined. This simple calculation adds a relativity factor in that all interpretations from that data then have the implied “relative to students statewide” additional analysis. Tables 19 and 20 reflect these results.

Specialty group proficiency data could also be examined in this same manner. This data is compared to statewide data for the same grade level and content area but is, annually, compared to specialty group proficiencies statewide. In so doing, some general interpretations regarding the academic achievement levels of specialty populations in the EUPISD service area or an individual district can be made relative to those same specialty populations statewide. There is one additional calculation that is made with each specialty group and that is the comparison between the specialty group and the “other” breakout population. For example, in the EUPISD service area, the predominant ethnic groups are Native American and White. The data therefore, is represented as the difference between proficiencies of Native American and White students at each grade level and content.

The examination of data, over time, for the districts in the EUPISD service area does reveal positive and negative trends, specific areas of concern and confirmations that academic
achievement is improving overall and at the specialty population level. There is variation from district to district, between content areas (mathematics and English language arts) and between specialty populations (gender and socioeconomic status). The findings reveal that representation of the data in these ways, at this level and over time can provide information necessary for districts to make decisions around instruction, remediation and overall programming. Following are examples of findings from the project that may be helpful, at the district and/or regional level, for future programming.

Direct analysis of the data as presented allows for general statements like those that follow to be made.

- District G performs below the state average at the early elementary level in both mathematics and language arts but academic achievement in these content areas improves at the middle school level. (Tables 19 and 20)
- There are fluctuations between grade levels, in both mathematics and language arts, at District I Elementary school. (Tables 19 and 20)
- Proficiency levels in mathematics are consistently higher than language arts at District J elementary and middle school. (Tables 19 and 20)

There are many more general statements that can be drawn out of the data as presented. In examining the specialty population data, similarly broad findings can be stated. The following examples illustrate statements that can be made by examination of data presented.

- In 2008/2009, economically disadvantaged students in District J had a 10% or greater deficiency in math proficiency for grades 3 through 8 when compared with not economically disadvantaged students. This is consistent with 2007/2008 and 2006/2007 data. There has been improvement, however, particularly at the middle
school level, as the gap between economically disadvantaged and not economically
disadvantaged students was as high as 40% in 2006/2007 in grade 6 & 7 while in
2008/2009, these proficiency gaps were 20% and 10% in grades 6 & 7 respectively.

- Native American students in the Eastern Upper Peninsula service area score
  consistently higher in mathematics, grades 3 through 8, than Native American
  students in the State of Michigan overall. (Tables 9 and 17)

- Economically disadvantaged students in the Eastern Upper Peninsula service area
  continue to demonstrate higher proficiency levels in mathematics, grades 3-8, than
  economically disadvantaged students in the State of Michigan overall. Moreover,
  while state scores have improved between 2005/2006 through 2008/2009, EUP
  schools maintained these higher proficiencies. (Tables 10 and 18)

As with general population statements, there are many other statements that can be
drawn out of the mathematics and language arts data presented by school or specialty
population over time.

The results presented in this way do not directly address implications of interventions
that may have occurred from one year to the next. An example of data use that could be
looked at through this lens would be gender and ELA data at District A. Upon review of the
gender data, over grade span, in 2005/2006 (see Table 21), staff and administrators became
concerned with the large gap between males and females, particularly in language arts. In an
attempt to minimize the gap by the following year, the district launched very specific
professional development offerings, the introduction of specific strategies to further engage
males in language arts and put a monitoring process in place. The results, as affirmed by
2006/2007 MEAP gender data were striking (see Table 22 and summary table below). Given
this example, which layers an intervention strategy with the data itself, the following statement could be made:

- The proficiency gap between males and females from 2005/2006 to 2006/2007 was reduced, grades 3-7 as depicted in the following table.

### District A ELA data: Gender Proficiencies Difference (female – male)

<table>
<thead>
<tr>
<th>Year</th>
<th>Grade 3</th>
<th>Grade 4</th>
<th>Grade 5</th>
<th>Grade 6</th>
<th>Grade 7</th>
<th>Grade 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005/2006</td>
<td>16</td>
<td>-2</td>
<td>15</td>
<td>25</td>
<td>21</td>
<td>31</td>
</tr>
<tr>
<td>2006/2007</td>
<td>-21</td>
<td>-2</td>
<td>12</td>
<td>5</td>
<td>5</td>
<td>41</td>
</tr>
</tbody>
</table>

*Negative numbers indicate males outscored females at these grade levels.*

Parallel to the improved academic outcomes of males during this period, District A launched a major intervention program that included staff training, modification of instructional strategies at the classroom level and a monitoring program to track incremental progress of all students against specific language arts outcomes.
Chapter IV - Recommendations and Conclusions

There has been an explosion of data available to educators since the passage of No Child Left Behind legislation in 2001. The collection of data may have initially been rooted in compliance matters associated with state and federal mandates. Expanded and timely data sets are now available to educators at all levels. The manipulation process has become more automated through the improvements in data warehousing, the development of state facilitated programming like Data 4 Student Success and the professional emphasis on use of data to drive instructional programming.

Recommendations

I would highly recommend that educators continue to utilize standardized test data as it becomes available. The maintenance and expansion of tools like data warehouses would also bolster access and utility of data, at many levels, to teachers and administrators. The increased aggregation of local data will also be key to a strong culture of data driven instruction and remediation.

Professional development will be the next frontier of data use for all educators. Access to student, classroom, building and district level data by teachers has not been typical. Ready access to data is becoming the norm and, in fact, teachers and administrators are being asked to use volumes of data in decision making. The conversion to this new educational landscape will require extensive training on collecting, analyzing and communicating data effectively. The use of data from multiple sources is becoming more common from parent teacher conferences to federal reporting on Title services. Teachers and administrators that are fluent
in data analysis will become more effective educators in times of limited resource availability and escalated compliance.

Allocation of resources is also being influenced by the availability of data. Federal consolidated Title funds now require extensive data support during both the application process and at the reporting phase when schools demonstrate the effectiveness of the programming put in place with these funds.

The effective and timely use of data will assist districts in becoming more efficient with regard to resource allocation while continuing to improve student academic outcomes against state standards. Once the data collection processes and assessment instruments became somewhat consistent, the use of MEAP data, at least over time, became more useful. Determinations like the time of year the testing was conducted (spring vs. fall) and what grade levels would be tested for each content area (now grades 3 through 8 for mathematics and ELA vs. formerly grades 4 & 8 for math and 4 & 7 for ELA) have been established and have been consistent for four years.

This four year segment of data is available to all schools in the State of Michigan. To say that the data is “out there” for use, however, is not helpful. What needs to be layered with simple availability of data is a sense of what data is important at any one time. The use of overall, general population data is helpful when doing a quick check to answer simple questions like “How is a district doing in overall, with regard to student proficiency in math &/or ELA when compared with the prior year?” The information is summative: it is not timely enough be used formatively at the classroom level. It can, however, be very useful at the district planning level and should be used to gauge strength of curriculum, specific areas of concern and to address broad resource allocation issues. The specialty population data,
particularly over time, can be very useful to first point out the need for possible specialized programming and then provide monitoring data to determine, at least in a general sense, whether that programming had any impact on this level of student academic performance. The District A gender information above would be an example of such use.

The clear depiction and analysis of data can be very effective in framing both successes and areas of concerns at the regional and individual district level. This is true of both general and specialized population data and across all content areas. Additional statistical analysis would be required to tackle more complex intricacies such as direct comparison of districts with very low student numbers per grade level or intervention program efficacy based solely on MEAP outcomes. What the compilation and reporting of data in this format provides is summative information, for use by teachers and administrators, in framing large issues and providing general feedback at grade levels, by content area and by specialty population. The fact that there is great variation between districts, especially at the specialty population and content level, indicates that this data is useful in initiating questions and discussion about programming. The mere reporting of data in this format provides more specific feedback than has been available before the onset of broad educational data collection.

Data in this format and at this level of specificity is also helpful as members of the educational community communicate with parents, the broader community and other agencies or entities that have an interest in student achievement. As schools become more and more accountable to boards and communities around resources allocation, the data to support decisions is helpful in providing context and “justifying” expenses by reporting student achievement improvements. Other examples of external data use would include communication with local tribes regarding Native American student status or improvement,
grant writing and recruiting by districts with high student achievement scores. The most
direct use of data to impact student achievement is to continuously monitor all aspects of
curriculum refinement, instructional practices and formative and summative assessment
systems in use at the classroom, building and district level.

Areas for Further Research

Additional state level standardized test data becomes available each year. Interim
assessment data, generated at either the local district or regional level, becomes available at
more frequent intervals. It is becoming increasingly important for districts to collect, analyze
and react to data as quickly as possible to intervene on behalf of all students. Data on specialty
populations should also be closely monitored at every interval to identify trends, progress
monitor effectiveness of intervention and accelerated programs and monitor achievement gaps.

Use of data in these ways may be largely classroom or building level action research
closely aligned with ongoing school improvement efforts but deeper analysis of trends over
time and specific program monitoring may be conducted.

Summary and Conclusions

Educational data is becoming more critical as No Child Left Behind expectations
increase through 2013 and resources become more closely aligned with student achievement
outcomes. Educators will be required to become better “creators” and “consumers” of data as
it pertains to individual students, classrooms, grade levels, buildings, districts, regions (ISDs),
states and nations. As such, the direct analysis of already available data would be a way to
case into the use of relevant data. Data is most meaningful when used to support or refute
some aspect of educational programming. Prior to the depiction and refinement of data into
clear graphs and tables, many important decisions were made based on beliefs, feelings or
impressions. What initiated this project was concern that little or no data was available,
generated or considered when important educational decisions were being made. Also critical
in any meaningful school improvement process is a good sense of baseline data, where are we
starting from and what incremental steps can we take to achieve our goals. School
improvement plans are getting more sophisticated as programming becomes more focused on
success against state standards for all students. This refinement is exhibited programmatically
in areas such as Response to Instruction (RTI). Seeking out data from a variety of accurate
sources, or generating not yet available information, is an important method of lending
objective, outcome based information to all conversations around curriculum, instruction and
assessments. With these fundamental components of school processes in place and being
continuously monitored, schools will become institutions where all students will succeed
against not only minimal standards established be the state or federal government but as
genuine learners beyond their K-12 experience.
References


Muller, P. A., Stage, F. K., & Kinzie, J. (2001). Science achievement growth


Table 3: EUPISD vs. State of Michigan- ELA 2005/2006

Table 4: EUPISD vs. State of Michigan- ELA by Gender 2005/2006
Table 5: EUPISD vs. State of Michigan- ELA by Ethnicity 2005/2006

Table 6: EUPISD vs. State of Michigan- ELA by Socioeconomic Status 2005/2006

Table 8: EUPISD vs. State of Michigan- Mathematics by Gender 2005/2006

Table 11: EUPISD vs. State of Michigan – ELA 2008/2009

Table 12: EUPISD vs. State of Michigan – ELA by Gender 2008/2009

Table 14: EUPISD vs. State of Michigan - ELA by Socioeconomic Status 2008/2009
Table 15: EUPISD vs. State of Michigan – Mathematics 2008/2009

Table 16: EUPISD vs. State of Michigan – Mathematics by Gender 2008/2009
Table 17: EUPISD vs. State of Michigan – Mathematics by Ethnicity 2008/2009

Table 18: EUPISD vs. State of Michigan – Mathematics by Ethnicity 2008/2009
### Table 19: District Comparison to State Proficiency Levels 2005/2006 – 2008/2009 ELA - All Students

*Note: Emtpy cells indicate N<10. Proficiency levels for grades below 10 are not reported by OEA due to limitations in mailing limits.*

<table>
<thead>
<tr>
<th>Grade</th>
<th>A</th>
<th>A-</th>
<th>B+</th>
<th>B</th>
<th>B-</th>
<th>C+</th>
<th>C</th>
<th>C-</th>
<th>D+</th>
<th>D</th>
<th>F</th>
</tr>
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<tbody>
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<td>7th</td>
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</tbody>
</table>

*Student: anomaly*
Table 20: District Comparison to State Proficiency Levels 2005/2006 – 2008/2009 Math - All Students

<table>
<thead>
<tr>
<th>District</th>
<th>Grade 8</th>
<th>Grade 7</th>
<th>Grade 6</th>
<th>Grade 5</th>
<th>Grade 4</th>
</tr>
</thead>
<tbody>
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<td>District A</td>
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<tr>
<td>District B</td>
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<td>District C</td>
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<td>District D</td>
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<tr>
<td>District E</td>
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</tr>
</tbody>
</table>

Note: Empty cells indicate N < 10. Proficiency levels for Grade 10 are not reported by OEA due to limitations in maintaining student anonymity.