STATE OF MICHIGAN
DEPARTMENT OF EDUCATION
LANSING

JENNIFER M. GRANHOLM
GOVERNOR

MICHAEL P. FLANAGAN
SUPERINTENDENT OF
PUBLIC INSTRUCTION

TO: State Board of Education

FROM: Mike Flanagan

DATE: May 30, 2006

SUBJECT: **INFORMATION ON PROPOSED METHOD FOR MEASURING STUDENT PROGRESS IN ACHIEVEMENT UNDER NO CHILD LEFT BEHIND AND EDUCATION YES!**

The purpose of this State Board of Education item is to present information about a proposed standards-based method for measuring student progress toward and beyond proficiency under No Child Left Behind (NCLB) and Education YES! (EdYES!). An executive summary of the methodology is provided below with sample student and school reports.

The proposed method of measuring student progress was developed by Joseph Martineau (MDE psychometrician) and Damian Betebenner (Boston College Assistant Professor) to satisfy NCLB policy concerns and technical quality standards as described by Rigney and Martineau (2005). This publication reviewed several other prominent publications describing technical and policy concerns with the measurement of student academic progress, and incorporated them into their guidelines for evaluating growth-based models for accountability. The proposed model is a customized hybrid of models developed by Betebenner (2005) and Hill (2005). It was reviewed and endorsed by the Office of Educational Assessment and Accountability (OEAA) Technical Advisory Committee (TAC) on March 29, 2006.

**The Proposed Model of Student Progress** – The OEAA can begin measuring student progress on the MEAP and MI-Access with the Fall 2006 assessment cycles, as it will be the first time in which two consecutive yearly assessments will have been administered in Mathematics, Reading, and Writing for students in adjacent grades 3 through 8. Progress in English language proficiency will be measured for the first time in Spring 2007, as that is the second cycle for English Language Proficiency Assessment (ELPA).

The measurement of student progress will be based on a value table for measuring student and school (aggregate) progress. The value table is created by subdividing the scales of the adjacent grades into performance categories at a finer granularity than the four performance levels on MEAP, the three performance levels on MI-Access, or the four performance levels on ELPA.



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The performance levels are divided into smaller categories to assure that student progress is recognized whether it is across the performance level boundaries or toward the next performance level boundaries. Because the performance levels tend to be wide, students and schools may exhibit extraordinary progress over a single year without moving a large number of students from one performance level (e.g. Apprentice) to the next (e.g. Basic). Over several grades, this type of progress may move many students into proficiency, which may not be recognized in the school setting where the greatest progress occurred. Dividing the performance levels into multiple categories allows for that type of progress to be recognized and reported. We are proposing that the value table be subdivided into additional levels (12 total for MEAP and ELPA, 9 for MI-Access).

The value table is essentially a table that places **values** on students' **transitions** from one performance category in one year to a different performance category in the next year. The values in the table are policy-defined values in that it is a judgment of which transitions should be more strongly valued than others. Value tables can be defined by specific policy statements that describe different types of transitions, the value placed on those different types of transitions, and the weights of the values (e.g. the importance of different types of transitions). The three basic values that can be assigned to any transition are **positive** (+), **neutral** (0), and **negative** (-).

In addition, the value tables are divided into two major sections: one section for students who already scored proficient (e.g. **Keeping Up**), and one for students who were not yet proficient (e.g. **Catching Up**). This distinction is important because it allows for different types of policy emphases for those two groups of students.

A sample value table is shown below, along with a brief explanation of the policy values and weights underlying the table. Similar tables could be created for MI-Access and ELPA. The positive, neutral, and negative values are represented in the table as medium gray, light gray, and dark gray respectively.

**Sample Value Table**

| Prior grade performance level | | Current Grade Performance Level | | | | | | | | | | | | Transition Category |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Apprentice | | | Basic | | | Met | | | Exceeds | | | |
| | | Low | Mid | High | Low | Mid | High | Low | Mid | High | Low | Mid | High | |
| Apprentice | Low | -1 | 1 | 2 | 4 | 5 | 6 | 9 | 10 | 11 | 13 | 14 | 15 | Catching Up |
| | Mid | -2 | -1 | 1 | 3 | 4 | 5 | 8 | 9 | 10 | 12 | 13 | 14 | |
| | High | -3 | -2 | -1 | 2 | 3 | 4 | 7 | 8 | 9 | 11 | 12 | 13 | |
| Basic | Low | -5 | -4 | -3 | -1 | 1 | 2 | 5 | 6 | 7 | 9 | 10 | 11 | |
| | Mid | -6 | -5 | -4 | -2 | -1 | 1 | 4 | 5 | 6 | 8 | 9 | 10 | |
| | High | -7 | -6 | -5 | -3 | -2 | -1 | 3 | 4 | 5 | 7 | 8 | 9 | |
| Met | Low | -9 | -8 | -7 | -5 | -4 | -3 | 0 | 1 | 2 | 4 | 5 | 6 | Keeping Up |
| | Mid | -10 | -9 | -8 | -6 | -5 | -4 | -1 | 0 | 1 | 3 | 4 | 5 | |
| | High | -11 | -10 | -9 | -7 | -6 | -5 | -2 | -1 | 0 | 2 | 3 | 4 | |
| Exceeds | Low | -13 | -12 | -11 | -9 | -8 | -7 | -4 | -3 | -2 | 0 | 1 | 2 | |
| | Mid | -14 | -13 | -12 | -10 | -9 | -8 | -5 | -4 | -3 | -1 | 0 | 1 | |
| | High | -15 | -14 | -13 | -11 | -10 | -9 | -6 | -5 | -4 | -2 | -1 | 1 | |

The following table provides a set of policy values and weights that define the sample value table shown above.

| | Direction of Transitions | | |
|---|---|---|---|
| | Upward | No change | Downward |
| Location | o Within apprentice (+1)<br>o Within basic (+1)<br>o Within met (+1)<br>o Within exceeds (+1)<br>o Across basic cut (+2)<br>o Across met cut (+3)<br>o Across exceeds cut (+2) | o Within apprentice (-1)<br>o Within basic (-1)<br>o Within met (0)<br>o Within exceeds (0) | o Within apprentice (-1)<br>o Within basic (-1)<br>o Within met (-1)<br>o Within exceeds (-1)<br>o Across exceeds cut (-2)<br>o Across met cut (-3)<br>o Across basic cut (-2) |
| Size | Weight upward and downward transitions by number of categories transitioned | | |

In this sample table, moving across a minor performance level boundary (e.g. *basic* or *exceeds*) is valued twice as heavily as moving within a performance level, and moving across the main AYP boundary (e.g. *met*) is weighted three times as heavily. In addition, remaining stable is valued neutrally if students already met standards, but valued negatively if students had not yet met standards.

**Uses of Progress Data** – Individual students would be assigned scores from the value table. Aggregate scores (e.g. for schools and districts) would be calculated by calculating an average of the individual student scores for the group of students.

It is anticipated that individual student progress scores and targets will be used to aid instructors in targeting assistance to students, and may be used to identify students exhibiting excellent progress for recognition. Target scores would be set in a manner that provides aggressive goals for individual student and school progress but that are reasonable in that students and schools are capable of meeting those targets as shown by state data, so as to encourage educators to work with students to make the gains needed for progress to occur. Progress reports including target and actual scores would be reported for both students and schools. School reports would include both "catching up" and "keeping up" scores and targets.

It is anticipated that individual school and district scores will be used as a part of Education YES! grade calculations. For NCLB and AYP purposes, it is likely that only the "catching up scores" will be used to achieve safe harbor. However, in a recent discussion with a United States Department of Education (USED) official, it was mentioned that the "keeping up" models developed here may be acceptable under NCLB. Therefore, it may be helpful to apply to the USED to allow Michigan to incorporate both the "catching up" and "keeping up" scores in safe harbor calculations.

USED has recently announced that two states will be allowed to pilot growth models for NCLB/AYP purposes, and that a remaining eight slots will be open for 2006/2007. It is hoped that Michigan will be awarded one of those slots for this program.

**Characteristics of the Proposed Model** – The proposed model meets the following criteria listed by Rigney & Martineau (2005):

1. Consistency with policy goals of proficiency for all students
2. Freely available for scientific scrutiny to enhance and validate the model
3. Based on alignment to content standard and performance standards
4. Holding high expectations for all students regardless of current achievement
5. Can integrate MEAP and MI-Access results into a single system
6. Balances fairness toward students with fairness toward educators by setting targets based upon observable transitions
7. Can be adapted to monitor the progress of different groups of children
8. Is an appropriate statistical model for the MEAP, MI-Access, and ELPA scales
9. Consistency of reporting mechanisms with policy goals.

**Developing the Value Table and Policy Statement Table** – The example shown above is just one sample of a value table that could be created. In fact, each person would probably fill in the cells differently – some placing more value on upward movement, some placing more value (negatively) on downward movement, others might place less value in moving students from the Met to the Exceeded categories, and so forth.

The value tables needed for each assessment should be developed using a representative group of educators and other citizens. One table is needed for each pair of grades and in each content area assessed, although there is no reason why they would need to be different across grades or subject areas.

With approval of the State Board of Education, OEAA staff would convene panels for each pair of grades (e.g., grades 3 and 4, grades 4 and 5, and so forth) who would be given the charge to develop the value table such as shown in the illustration above. This process could follow several steps.

1. All panelists would meet as a large group and receive an orientation to the assessment program for which they would be helping to set standards. Panelists would also be orientated to the concept of the value table and what is entailed in completing the value table.

2. Then, panelists would be provided an orientation to the assessments for which they would construct a value table. For example, the grade 3/4 MEAP mathematics panel would be given an opportunity of taking each assessment.

3. The panelists would be given a simplified version of the activity in which they are presented with a 4 x 4 table that shows only the four MEAP achievement levels (i.e., Apprentice, Basic, Met and Exceeded) for last year and this year. Each panelist would be asked to place a value in each of the 16 cells of this table. Panelists would be told that no value could exceed a given number, such as 15 or -15.

4. After panelists had individually completed the values table, the panelists would discuss their ratings (and the rationale for them) as a group to determine a group consensus.

5. Panelists would then state explicitly the assumptions that guided their consensus values table. These assumptions or policy statements would be recorded in a policy statement table.

6. This process would be repeated for the larger table (for MEAP, for example, the value table would be 12 x 12 as illustrated above) and a corresponding policy statement table would also be prepared.

7. Before the panelists have completed their work, they would be provided impact data on the number of students who fell in each cell and a representative sample of schools and what overall progress measure would be reported for each school in the sample. Then, panelists would make their final determinations of the values to place in each cell.

**Determining Progress Grades for Education YES!** – As the panelists in the activity described above complete their work, the sample school reports showing the progress that would be reported for each school would be used for another activity. Combined with an overall summary of actual student progress from the 2005 assessments to the same ones in 2006, panelists would be asked to recommend how much progress a

school would need to make in order to receive an "A," a "B," a "C," and so forth in the Education YES! state accreditation system.

**Approval of the State Board of Education** – Once the panelists had made their recommendations, OEAA staff will review these, make any necessary changes to assure their coherency across grades, and seek State Board of Education approval of these criteria. Upon approval of the State Board of Education, these progress criteria would be used to report the achievement results of each program (MEAP, MI-Access, and ELPA) starting with the Fall 2006 assessments.

**Sample (and Preliminary) Progress Score Reports**

Individual students' progress would be reported according to the individual value tables. To aid instruction and to give progress targets for the next year, performance categories and performance targets would be reported. Sample score reports for individual students are given in Appendix A. Development of final reports would take place with the assistance of Michigan educators and other stakeholders to assure readability and usefulness.

Individual schools and district progress reports would also be issued including actual scores and targets for individual schools and districts, both for progress in helping students who are not yet proficient to catch up, and in helping students who are already proficient to keep up. Sample score reports for a school or district are given in Appendix B. Development of final reports would take place with the assistance of Michigan educators and other stakeholders to assure readability and usefulness.

## Appendix A: Sample Individual Student Progress Reports

### Parent Report Samples

**John's progress score: -2**

Last year, John scored in the *middle of the Apprentice* performance level. His target for this year was to score in the *high end of the Basic* performance level. This year, John did not reach his target, but fell behind by scoring in *low end of the Apprentice* performance level. John's target for next year is to score in the *high end of the Apprentice* performance level.

**John's progress score: -1**

Last year, John scored in the *middle of the Apprentice* performance level. His target for this year was to score in the *high end of the Basic* performance level. This year, John did not reach his target, but remained in *middle of the Apprentice* performance level. John's target for next year is to score in the *high end of the Basic* performance level.

**John's progress score: 0**

**Last year, John scored in the *low end of the Met Standards* performance level. His target for this year was to score in the *low end of the Exceeded Standards* performance level. This year, John continued to score in the *low end of the Met Standards* performance level. John's target for next year is to score in the *low end of the Exceeds Standards* performance level.**

**John's progress score: 1**

Last year, John scored in the *middle of the Apprentice* performance level. His target for this year was to score in the *high end of the Basic* performance level. This year, John did not reach his target, but remained in *middle of the Apprentice* performance level. John's target for next year is to score in the *high end of the Basic* performance level.

**John's progress score: 2**

Last year, John scored in the *middle of the Apprentice* performance level. His target for this year was to score in the *high end of the Basic* performance level. This year, John did not reach his target, but he made progress toward proficiency by scoring in the *low end of the Basic* performance level. John's target for next year is to score in the *low end of the Met Standards* performance level.

**John's progress score: 3**

Last year, John scored in the *middle of the Apprentice* performance level. His target for this year was to score in the *high end of the Basic* performance level. This year, John reached his target, an exceptional performance! John's target for next year is to score in the *high end of the Met Standards* performance level.

**Sample Individual Student Report for Educators**

| Progress Report for John Doe | | |
|---|---|---|
| Performance | Grade 4 | Mid Apprentice |
| | Grade 5 | Low Apprentice |
| Target | Grade 5 | High Basic |
| | Grade 6 | High Apprentice |
| Progress Score | Grade 4 to 5 | -2 |

**Sample Roster Report for Educators**

| | Performance | | Target | | Progress |
|---|---|---|---|---|---|
| Name | Grade 4 | Grade 5 | Grade 5 | Grade 6 | Score |
| Doe, John | Mid A | Low A | High B | High A | -2 |
| . | | | | | |
| . | | | | | |
| . | | | | | |

## Appendix B: Sample School/District Progress Reports

### Individual School (or District) Report

| Scoring Category | Grade | Fall 06 Target | Fall 06 Score | Fall 06 Category | Fall 07 Target |
|---|---|---|---|---|---|
| Catching up | 3 | 2.6 | -1.0 | Falling behind | 2.6 |
| | 4 | 2.8 | 0.0 | Modest progress | 2.7 |
| | 5 | 2.6 | 1.1 | Good progress | 2.8 |
| | 6 | 2.5 | 3.6 | Excellent progress | 2.6 |
| Keeping up | 3 | 3.6 | -2.0 | Falling behind | 3.4 |
| | 4 | 3.8 | 0.5 | Inadequate progress | 3.5 |
| | 5 | 2.9 | 1.1 | Modest progress | 2.9 |
| | 6 | 3.2 | 3.6 | Excellent progress | 3.3 |

### Catching Up Report for Schools in a District (or Districts in an ISD)

| School name | Grade | Fall 06 Target | Fall 06 Score | Fall 06 Category | Fall 07 Target |
|---|---|---|---|---|---|
| Elmwood Elementary | 3 | 3.6 | -2 | Falling behind | 3.4 |
| Elmwood Elementary | 4 | 3.8 | 0.5 | Inadequate progress | 3.5 |
| Elmwood Elementary | 5 | 2.9 | 1.1 | Modest progress | 2.9 |
| Elmwood Elementary | 6 | 3.2 | 3.6 | Excellent progress | 3.3 |
| . | | | | | |
| . | | | | | |
| . | | | | | |

### Keeping Up Report for Schools in a District (or Districts in an ISD)

| School name | Grade | Fall 06 Target | Fall 06 Score | Fall 06 Category | Fall 07 Target |
|---|---|---|---|---|---|
| Elmwood Elementary | 3 | 2.6 | -1 | Falling behind | 2.6 |
| Elmwood Elementary | 4 | 2.8 | 0 | Modest progress | 2.7 |
| Elmwood Elementary | 5 | 2.6 | 1.1 | Good progress | 2.8 |
| Elmwood Elementary | 6 | 2.5 | 3.6 | Excellent progress | 2.6 |
| . | | | | | |
| . | | | | | |
| . | | | | | |

In these progress reports, the descriptions are determined in the following manner, but will be developed in final form with the assistance of Michigan educators and other stakeholders.

| Aggregate Score | Catching up | Keeping up |
|---|---|---|
| Score < 0 | Falling behind | Falling behind |
| 0 ≤ Score < 1 | Inadequate progress | Modest progress |
| 1 ≤ Score < Target | Modest progress | Good progress |
| Score ≥ Target | Excellent progress | Excellent progress |

## References


Betebenner, D. (2005, June). *Performance Standards in Measures of Educational Effectiveness.* Paper presented at the 25th Annual Conference on Large Scale Assessment of the Council of Chief State School Officers, San Antonio, TX.

Hill, R. (2005, June). *Measuring Student Growth Through Value Tables.* Paper presented at the 25th Annual Conference on Large Scale Assessment of the Council of Chief State School Officers, San Antonio, TX.

Rigney, S. L., & Martineau, J. A. (2005). NCLB and Growth Models: In Conflict or in Concert? In R. L. Lissitz (Ed.), *Longitudinal and Value Added Models of Student Performance* (pp. 47-81). Maple Grove, MN: JAM Press.