



**Connections Between the Montgomery County
Public Schools Assessment Program and the
Maryland School Assessment**

Theresa Alban, Ph.D.
Joy Mordica, Ph. D.
Jennifer Nielsen, Ph. D.

February 2004



OFFICE OF SHARED ACCOUNTABILITY

Dr. Theresa Alban, Acting Director

850 Hungerford Drive
Rockville, Maryland 20850
301-279-3925

Dr. Jerry D. Weast
Superintendent of Schools

Dr. Frieda K. Lacey
Chief of Staff

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Introduction

The Maryland School Assessment (MSA) includes tests in reading and mathematics for Grades 3 through 8 and Grade 10. These tests are designed to comply with the federal mandates of the *No Child Left Behind Act*, which require that all students demonstrate proficiency in reading and mathematics by 2014. The MSA was given for the first time in March 2003 to students in Grades 3, 5, 8, and 10.

The MSA tests in reading and mathematics are aligned with the Maryland Content Standards and include a combination of selected response items and constructed response items. These tests are used to determine whether a student is basic, proficient, or advanced in the content area based on a criterion-referenced scale score. Schools are expected to meet annual measurable objectives for the percentage of students achieving at the proficient and advanced category, in order to eventually meet the goal of 100% of students achieving this status.

In order for teachers to monitor the performance of students in reading and mathematics, it is important to have locally developed assessment tools that are aligned with the MSA and are predictive of the student's performance on the MSA. The Montgomery County Public Schools Assessment Program (MCPS AP) was designed to provide teachers, administrators, and parents with a means of monitoring student progress toward proficiency in reading and mathematics.

The assessment tools that comprise the MCPS AP in reading and mathematics are at various stages of development and refinement. Student outcome data for the MCPS AP have been collected and monitored, with the plan to eventually compare performance on the MCPS AP with performance on the MSA. The first administration of the MSA in the 2002–2003 school year provided this opportunity. The purpose of this paper is to describe the relationship between student performance on the MCPS AP and the MSA.

Vision and Purpose of the Montgomery County Public Schools Assessment Program

The MCPS AP supports a process of continuous improvement by providing assessment instruments aligned with the curriculum and staff development that enables teachers to monitor student progress and make instructional decisions to meet the needs of individual students. By understanding the connection between assessment, planning, and instruction, teachers are better able to support students in achieving higher levels of performance.

The fundamental beliefs underlying the assessment vision are as follows:

- Curriculum, instruction, and assessment must be aligned.
- Ongoing assessment is an essential component of teaching and learning.
- The assessment program should be consistent with the philosophy of a shared accountability system with system administrators, teachers, students, and parents striving for improvement.

To achieve this vision, it is essential that assessment instruments do the following:

- Be age-appropriate, varied in rigor, and culturally sensitive.
- Be used to provide feedback and regular reports to students and parents in a systematic manner.
- Produce data that teachers can use to adjust instruction.
- Be based on authentic work products while interweaving problem solving and critical thinking into the learning process.

The MCPS AP will consist of a set of assessment instruments and associated administration, staff development, scoring, analysis, and reporting procedures. The purposes of the MCPS Assessment Program are as follows:

- To inform instruction for teachers and principals.
- To inform students and parents of students' progress.
- To serve as a predictor of performance on state-mandated summative assessments.
- To report the systemwide progress of students.

Montgomery County Public Schools Assessment Program Primary Reading and the Maryland School Assessment

The MCPS AP Primary Reading assessments have been administered for more than five years and have undergone continuous refinement in order to create an assessment tool that provides a measure of student progress in reading from kindergarten through Grade 2. The Primary Reading assessments consist of two components—foundational skill assessments and text-reading proficiency. Benchmark performance standards have been established for each of the foundational skill assessments and a text-level benchmark has been set for each grade. In kindergarten, students are expected to read a Level 3 text with 90% or higher accuracy. By Grade 1, students are expected to read a Level 16 text with 90% or higher accuracy and to demonstrate adequate comprehension of the text by scoring a 4 or 5 out of 5 oral comprehension questions. By Grade 2, students are expected to read a Level M text with 90% or higher accuracy and to demonstrate adequate comprehension by scoring a 2 or 3 out of 3 on written comprehension questions.

One purpose of setting benchmark performance targets is to enable teachers to feel confident that students are achieving at a level that would enable them to meet with success on the MSA. In the 2002–2003 school year, it was possible to examine the scores of Grade 3 students who had taken the MSA Grade 3 reading test relative to their level of performance on the MCPS AP (defined as the highest text-level read with 90% accuracy and adequate comprehension) in the previous year as second graders.

First, a correlation between MSA criterion-referenced scale scores and the Grade 2 text-reading level was determined. For the 8,729 students with performance measures on both assessments, a correlation coefficient of 0.597 was found, which was statistically significant at the .01 level. The magnitude of this coefficient suggests a solid relationship between the two measures of reading performance. The magnitude of coefficients predicting academic success rarely exceeds .3 or .4 (Nunnally & Bernstein, 1994).

Further evidence of the connection between the local and state assessments was determined by examining how many students were able to achieve proficiency on the MSA based on their text level on the Primary Reading assessments in Grades 1 and 2. The findings presented in Table 1 support the strong connection between the local and state reading assessments.

Table 1. Comparison of Student Performance on Local Assessments in Grades 1 and 2 with Performance on the MSA Grade 3 Reading

	Did not meet MSA Proficient Standard (Scale score \geq 404)		Met MSA Proficient Standard	
	<i>n</i>	% of total	<i>n</i>	% of total
All students who took spring 2001 assessments				
Did not meet Grade 1 benchmark (n=3,474)	1,893	54	1,581	46
Met Grade 1 benchmark (n=4,086)	426	10	3,660	90
All students who took spring 2002 assessments				
Did not meet end of Grade 2 benchmark (n=4,282)	2,500	58	1,782	42
Met end of Grade 2 benchmark (n=4,954)	383	7	4,571	93

Ninety percent of the students who met the Grade 1 benchmark on the MCPS AP Primary Reading went on to meet benchmark on the MSA. This statistically significant relationship $\chi^2(1, n = 7560) = 1714.4, P < .01$ is seen again in Grade 2. Ninety-three percent of the students who met the Grade 2 benchmark on the MCPS Assessment Program Primary Reading went on to meet benchmark on the MSA $\chi^2(1, n = 9,236) = 2744.5, P < .01$. These findings support a confidence teachers can feel that student performance on the Primary Reading assessments will point to potential success at meeting standards on the MSA.

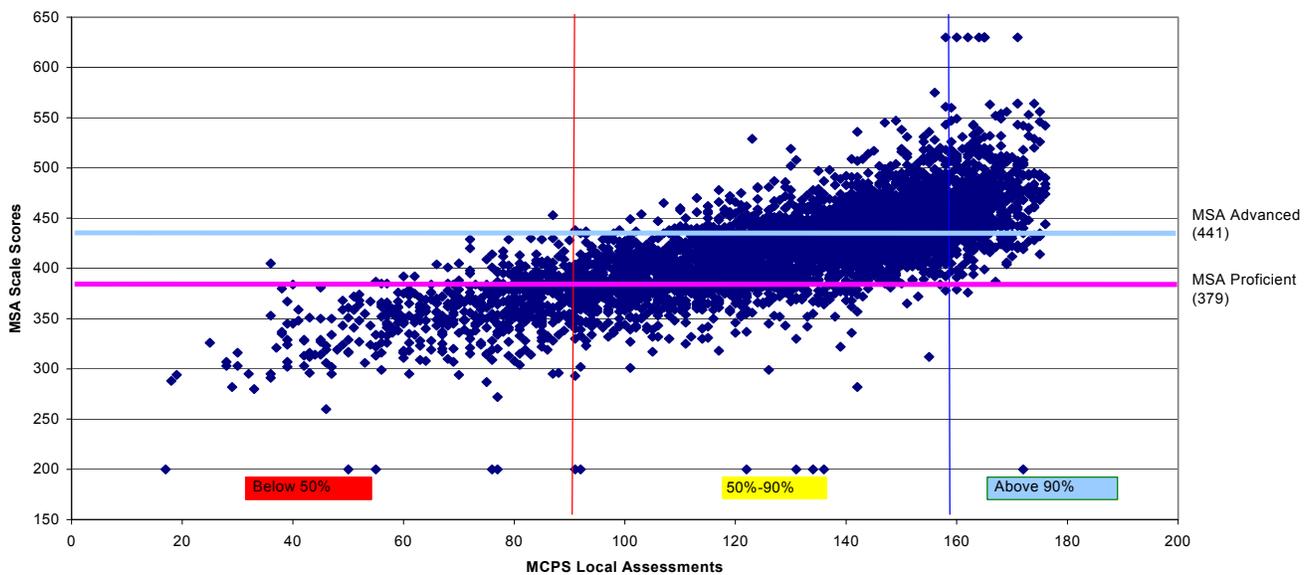
The Montgomery County Public Schools Assessment Program Grade 3 Mathematics and the Maryland School Assessment

The MCPS AP Grade 3 Mathematics assessment was piloted in selected schools during the 2002–2003 school year. The MCPS AP Grade 3 Mathematics assessment includes a series of unit assessments designed to assess student mastery of specific indicators for six content standards, which correspond to the standards set by the state of Maryland and which students are expected to master in order to achieve proficiency on the MSA. The MCPS AP Grade 3 Mathematics assessment includes both selected response and constructed response items and was designed to align with the MSA.

The items on each unit assessment correspond to specific indicators. In reporting performance on the unit assessments, items measuring certain indicators are grouped into categories, which are then grouped into the six content standards. If students get 90% or more of the total possible points for the content standard correct, they are identified as demonstrating complete understanding. Students who get 50% to 90% of the total possible points for the content standard are identified as developing understanding. Students who get less than 50% of the total possible points are coded as having minimal understanding. It was assumed that students with developing or complete understanding would be able to meet the standards for proficiency on the Grade 3 MSA in mathematics.

First, a correlation between MSA criterion-referenced scale scores and the Grade 3 on-grade-level items was determined. For the 4,701 students with performance measures on both assessments, a correlation coefficient of 0.749, which was statistically significant at the .01 level, was found. The magnitude of this coefficient suggests a solid relationship between the two measures of mathematics performance. Figure 1 graphically displays the strength of this positive relationship. Cut points of the proficiency levels for the local assessments and the Maryland Student Assessment are indicated with vertical and horizontal bars.

Figure 1. Grade 3 MSA Proficiency and MCPS Local Assessment Scores



Further evidence of the connection between the local and state assessments was determined by examining how many students were able to achieve proficient on the MSA, based on their level of understanding for the on-grade-level items on the assessments in Grade 3. The findings presented in Table 2 support the strong connection between the local and state mathematics assessments. The majority of students in each level of understanding on the local mathematics assessments also scored at the corresponding proficiency level of the MSA. For example, the majority (81.2%) of students classified as having complete understanding on the MCPS Mathematics assessment scored advanced on the MSA. Likewise, few students who were classified as having complete understanding of the mathematical concepts assessed on the MCPS Mathematics assessment scored at the basic and proficient levels on the MSA. This trend also holds true for those students who were classified as developing understanding and minimal understanding.

Table 2. Comparison of Student Performance on Local Mathematics Assessments in Grade 3 with Performance on the MSA Grade 3 Mathematics

Maryland Student Assessment Benchmarks	Minimal Understanding		Developing Understanding		Complete Understanding	
	<i>n</i>	% of total	<i>n</i>	% of total	<i>n</i>	% of total
Basic on MSA	392	74.8	382	10.5	2	0.4
Proficient on MSA	131	25.0	2251	62.0	101	18.4
Advanced on MSA	1	0.2	995	27.4	446	81.2
Totals (<i>n</i> =4,701)	524	100	3628	100	549	100

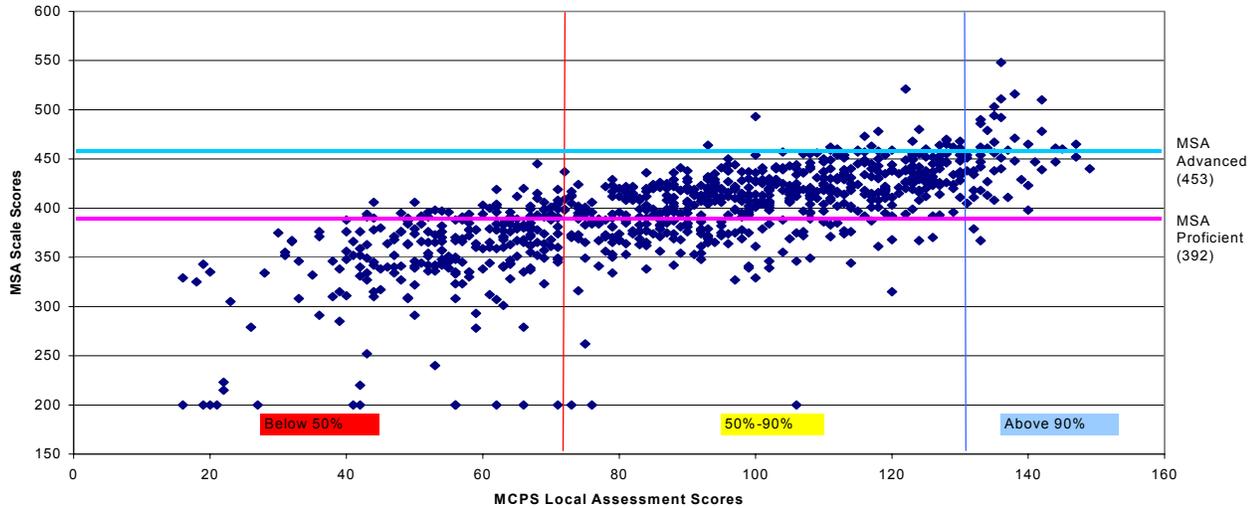
**Montgomery County Public Schools Assessment Program
Grade 5 Mathematics and the Maryland School Assessment**

The MCPS AP Grade 5 Mathematics assessment also was piloted in selected schools during the 2002-2003 school year. The MCPS AP Grade 5 Mathematics assessment includes a series of unit assessments designed to assess student mastery of specific indicators for six content standards, which correspond to the standards set by the state of Maryland, and which students are expected to master in order to achieve proficiency on the MSA. The MCPS AP Grade 5 Mathematics assessment includes both selected response and constructed response items and was designed to align with the MSA.

The items on each unit assessment correspond to specific indicators. In reporting performance on the unit assessments, items measuring certain indicators are grouped into categories, which then are grouped into the six content standards. If students get 90% or more of the total possible points for the content standard correct, they are identified as demonstrating complete understanding. Students who get 50% to 90% of the total possible points for the content standard are identified as developing understanding. Students who get less than 50% of the total possible points are coded as having minimal understanding. It was assumed that students with developing or complete understanding would be able to meet the standards for proficiency on the Grade 5 MSA in mathematics.

As with the Grade 3 data, a correlation between MSA criterion-referenced scale scores and the Grade 5 on-grade-level items was determined. For the 2,552 students with performance measures on both assessments, a correlation coefficient of 0.668, which was statistically significant at the .01 level, was found. This finding also suggests a solid relationship between the two measures of mathematics performance. Figure 2 graphically displays the strength of this positive relationship. Cut points of the proficiency levels for the local assessments and the MSA are indicated with vertical and horizontal bars.

Figure 2. Grade 5 MSA Proficiency Levels and MCPS Local Assessment Scores



Further evidence of the connection between the local and state assessments was determined by examining how many students were able to achieve proficiency on the MSA based on their level of understanding for the on-grade-level items on the assessments in Grade 5. The findings presented in Table 3 support the strong connection between the local and state mathematics assessments. The majority of students in each level of understanding on the local mathematics assessments also scored at the corresponding proficiency level of the MSA. For example, the majority (68.6%) of students classified as developing understanding on the MCPS Mathematics assessment scored proficient on the MSA. Few students who were classified as developing understanding of the mathematical concepts assessed on the MCPS Mathematics assessment scored at the basic and advanced levels on the MSA. This trend also holds true for those students who were classified as having minimal understanding. However, only 46% of students who were classified as having complete understanding on the MCPS local mathematics assessments scored advanced on the MSA. This suggests that the MCPS local assessment cut points for Grade 5 do not discriminate between students scoring advanced and those scoring proficient on the MSA. Adjustments to the cut points for developing understanding and complete understanding may increase the correlation between the MCPS local assessments and the MSA for Grade 5.

Table 3. Comparison of Student Performance on Local Mathematics Assessments in Grade 5 with Performance on the MSA Grade 5 Mathematics

Maryland Student Assessment Benchmarks	Minimal Understanding		Developing Understanding		Complete Understanding	
	<i>n</i>	% of total	<i>n</i>	% of total	<i>n</i>	% of total
Basic on MSA	598	81.7	409	23.6	1	1.1
Proficient on MSA	134	18.3	1,189	68.6	46	52.9
Advanced on MSA	0	.0	135	7.8	40	46.0
Totals (<i>n</i> =2,552)	732	100	1,733	100	87	100

Summary

The MCPS AP Primary Reading is a strong indicator of student performance on the Grade 3 Reading MSA.

- 90% of the students who achieved Grade 1 benchmark performance on the MCPS AP Primary Reading in spring 2001 went on to achieve proficiency on the Grade 3 MSA Reading in March 2003.
- 93% of the students who achieved Grade 2 benchmark performance on the MCPS AP Primary Reading in spring 2002 went on to achieve proficiency on the Grade 3 MSA Reading in March 2003.

Students' performance on the MCPS AP Mathematics unit assessments in Grades 3 and 5 show strong alignment with their performance on the Grades 3 and 5 Mathematics MSA.

- In Grade 3, there is a statistically significant correlation of 0.749 between performance on the MCPS AP unit assessments and the Mathematics MSA.
- 89% of the students who demonstrated “developing understanding” on the Grade 3 MCPS AP unit assessments were able to achieve proficient or above on the Grade 3 Mathematics MSA.
- 98% of the students who demonstrated “complete understanding” on the Grade 3 MCPS AP unit assessments were able to achieve proficient or above on the Grade 3 Mathematics MSA.
- In Grade 5, there is a statistically significant correlation of 0.668 between performance on the MCPS AP unit assessments and the Mathematics MSA.
- 76% of the students who demonstrated “developing understanding” on the Grade 5 MCPS AP unit assessments were able to achieve proficient or above on the Grade 5 Mathematics MSA.
- 99% of the students who demonstrated “complete understanding” on the Grade 5 MCPS AP unit assessments were able to achieve proficient or above on the Grade 5 Mathematics MSA.

Recommendations

For the MCPS AP to fulfill its purpose of serving as a predictor on state-mandated summative assessments, it is essential that the connections between student performance on the MCPS AP and the MSA continue to be monitored, particularly as additional grade levels are added to the MSA. Additionally, it is crucial that the collaboration between the Office of Shared Accountability and the Office of Curriculum and Instruction to support assessment refinement continue.

The following recommendations are provided to support this ongoing effort:

1. Individual items on the MCPS AP in both reading and mathematics need to be continuously monitored and improved based on analyses of student performance data.
2. As the state provides additional subtest data on the MSA, the monitoring of the correlation between MSA and MCPS AP data will need to include indicator level analyses.
3. Teachers and administrators will continue to need training to support them in the appropriate use of MCPS AP data as a means of monitoring student performance to ensure success on MSA.