

1. INTRODUCTION

1.1. Background

In 2002, the Maryland State Department of Education (MSDE), in order to conform to the requirements of the new federal program “No Child Left Behind,” retired its award-winning *Maryland School Performance Assessment Program* and adopted a testing program known as the *Maryland School Assessment (MSA)*. The new program, like its predecessor, was based on the *Voluntary State Curriculum*, which set reasonable academic standards for what teachers were expected to teach and for what students were expected to learn in schools.

The MSA assesses students’ proficiency in mathematics and reading, and it is administered to students in grades 3 through 8. It should be noted that in 2007 the MSA was administered using a new vendor and applying a different IRT method (e.g., the Rasch model); therefore, a transformation of scale scores using equipercentile method was conducted in that year. Detailed information on scale score transformation can be found in Appendix C, *Year 2006 MSA-Math Recalibration Results from 3PL IRT to the Rasch Model Using Equipercentile Method* in the *2007 MSA-Math Technical Report*.

Also in 2007, the U.S. Department of Education issued guidance for the development of Alternative Assessment based on Modified Academic Achievement Standards (also known as AA-MAAS or “Modified Assessments”). These guidelines are based on grade-level academic content standards and modified academic achievement standards. Adhering to these guidelines, Maryland, in 2008, developed the Modified Maryland School Assessment (Mod-MSA) based on grade-level academic content standards and modified academic achievement standards.

The Mod-MSA is an alternate assessment to the Maryland School Assessment Program (MSA) for students with disabilities who meet specific eligibility criteria and who are unable to participate in the MSA, even with accommodations. Students are identified through the Individualized Education Program (IEP) process for participation in the Mod-MSA.

Prior to the first administration of the Mod-MSA tests (Grades 6 to 8 in spring 2009 and Grades 3 to 5 in spring 2010), approximately 95% of the students, regardless of their eligibility, had taken the Maryland School Assessments (MSA) examination. The Mod-MSA assessments in reading and mathematics were designed for students with disabilities who, based on a decision-making process undertaken by their Individual Educational Planning (IEP) team, met specific eligibility criteria. The Mod-MSA tests, as stated above, are alternates to the tests in the MSA Program. The alternate assessments based on modified achievement standards (AA-MAS) are commonly referred to as 2% assessments. They are specified by the guidelines set by the U.S. Department of Education (DOE) and are based on the U.S. DOE final rule, of April 9, 2007¹. According to the rule, although states may test more than 2% of the population using the AA-MAS, they may report only 2% as proficient or above proficiency, for Adequate Yearly Progress (AYP) determinations.

The Mod-MSA assesses and reports student attainment on modified indicators and objectives in mathematics and reading content standards. In 2009, the test was administered concurrently with

¹ U.S. DOE rule published Monday, April 9, 2007, in the Federal Register as “Title I-Improving the Academic Achievement of the Disadvantaged; Individual of Disabilities Education Act, Final Rule.”

the MSA to students in grades 6 through 8 while in 2010 grades 3 through 5 were also included in the Mod-MSA administration.

1.2. Rationale for the 2010 Mod-MSA: Mathematics

Federal law requires that states align their tests with their state content standards. MSDE worked carefully and rigorously to construct new tests (i.e., the Mod-MSA) that provide a strong alignment as defined by the U.S. Department of Education.

The State Curriculum, which defined what students should know and be able to do at each grade level, helped schools understand the standards more clearly and included more specificity with indicators and objectives. The format of the State Curriculum has specified standards statements, topics, indicators, and objectives. Standards are broad, measurable statements of what students should know and be able to do. Topics, indicators and objectives provide more specific content knowledge and skills that are unique at each grade level.

While 100% of the standards should be tested, it was not the case that every indicator would necessarily be tested each year for the Mod-MSA. Consequently, the State Curriculum has specified curricular indicators and objectives for the Mod-MSA that have contributed directly to measuring content standards that were aligned to the MSA.

By measuring students' achievement against the established academic standards, the 2009 Mod-MSA: Mathematics fulfills two main purposes. First, the Mod-MSA: Mathematics was designed to inform parents, teachers, and educators of what students actually learned in schools by providing specific feedback that can be used to improve the quality of schools, classrooms, and individualized instructional programs, and to model effective assessment approaches that can be used in classrooms. Second, the Mod-MSA: Mathematics serves as an accountability tool to measure performance levels of individual students, schools, and districts against the new academic standards.

1.3. Eligibility Criteria for the Mod-MSA: Mathematics

Appendix F provides the criteria that were used for identifying students with disabilities for participation in the Mod-MSA: Mathematics

1.4. Test Administration of the 2010 Mod-MSA: Mathematics

Test Materials

All test materials had to be stored in a secure location prior to test administration. The school test coordinator (STC) provided test administration training and test materials to the test examiners. The daily testing materials tracking record (or an equivalent form designed by the local education agency (LEA) was used to track the distribution and return of test books.

Before testing began, the test examiners (TEs) carefully inventoried all test materials given to them, as they were accountable for the return of all secure materials at the end of testing. The TEs checked to ensure they had all the materials they needed for testing.

Test-related examiners manuals (EMs) were developed for the 2010 Mod-MSA: Mathematics for use in all grades 3–8. Developed in partnership with MSDE, the EMs contained instructions for preparation and administration of the test. In addition to the EMs, one test administration and coordination manual (TACM) was developed for use collaboratively by Pearson and MSDE.

Included in this manual were instructions for preparation of materials for testing, monitoring of testing, and packaging of materials for return to Pearson for scoring. The TACM was distributed and reviewed during a workshop in January for STCs and LACs, with duplicates sent to each school along with its testing materials.

For the test examiner, Pearson provided the following materials:

- Examiner’s Manual- Mathematics

For each student, Pearson provided the following materials:

- Test/Answer Book
- Special accommodations testing materials, if necessary

For each student, the following additional materials were provided by school or brought in by students:

- Two No. 2 pencils with erasers
- Blank scratch paper
- Calculator (all grades)
- Classroom ruler with both U.S. customary and metric measurements (all grades)
- Classroom protractor for grades 6 through 8

Each classroom used for the assessment also needed the following additional materials:

- Sign for the door reading "Testing: Do not disturb"
- Digital clock or a watch, or clock with a second hand

Test Administration Schedule

The primary test window for Mod-MSA: Reading was established by MSDE (March 8–17, 2010, with online testing held March 8-23, and make-up testing held March 18–23, 2010). The test materials were delivered to schools (Examiner’s Manuals, Test/Answer Books, and Test Coordinator’s Kit) on or before February 22, 2010. However, each Local Education Agency (LEA) set a specific schedule for administration of the Mod-MSA: Mathematics within that window for their district. For a given grade and content area, all testing had to take place on the same schedule within each LEA. Each LEA schedule was submitted to MSDE in advance and approved by the state. For example, all grade 6 mathematics had to be administered on the same days throughout the LEA. In addition, each content area at each grade was tested on two days during the window.

The Mod-MSA: Mathematics schedule allowed approximately 2 1/2 hours for testing on each of the two days (including preparation time and breaks). Unless a student’s IEP provided for extended time, students were required to submit their test books at the end of testing regardless whether they had answered all items. Unanswered items received a score of zero.

Students were allotted 26–50 minutes per test section. All mathematics items tested on Day 1 permitted students to use calculators while Day 2 items did not allow the use of calculators.

If a student was absent on the testing days, a make-up test was administered on any two consecutive days within the testing window. If a school had an unscheduled closing or delayed

opening that prohibited the administration from occurring on the scheduled testing dates, the STCs were consulted by LACs to determine the testing schedule to be followed.

During the administration of the 2010 Mod-MSA: Mathematics, MSDE had testing monitors in selected schools observing administration procedures and testing conditions. All monitors had identification cards for security purposes. There was no prior notification of which schools would be monitored, but monitors followed local procedures for reporting to the main office of each school and giving proper notification that an MSDE monitor was in the building.

Student Participation

All students in grades 3 through 8 had to participate in the 2010 MSA or Mod-MSA. The only exception was that students with severe cognitive disabilities were assessed by the *Alternate Maryland School Assessment* (ALT-MSA) instead of either the regular MSA or Mod-MSA.

Accommodations for Assessment

Accommodations for assessment of students with disabilities (i.e., students having an Individualized Education Program or a Section 504 Plan) and students designated as English Language Learners (ELL) had to be approved and documented according to the procedures and requirements outlined in the document entitled “Maryland Accommodations Manual: A Guide to Selecting, Administrating, and Evaluating the Use of Accommodations for Instruction and Assessment” (MAM). A copy of the most recent edition of this document is available electronically on the LAC and STC Web pages at <https://docushare.msde.state.md.us/docushare>.

No accommodations could be made for students merely because they were members of an instructional group. All accommodation had to be based on individual needs and not on a category of disability area, level of instruction, environment, or other group characteristics. Responsibility for confirming the need and appropriateness of an accommodation rested with the LAC and school-based staff involved with each student’s instructional program. A master list of all students and their accommodations had to be maintained by the principal and submitted to the LAC, who provided a copy to MSDE upon request. Please refer to Section 1 of the 2010 TACM for further information regarding testing accommodations.

Large-Print and Braille Test Books and Kurzweil™ Test Forms on CD

The Mod-MSA: Mathematics was administered to those requiring (1) large-print Student Test/Answer Books, (2) Braille Test Books, or (3) Kurzweil™ Test Forms on CD for a verbatim reading accommodation. For large-print and Braille Test Books, student responses were transcribed into the standard-size Test/Answer Book following testing.

The student’s name, LEA number, and school number were written on the large-print Test/Answer Book for proper transcription into the standard-size Test/Answer Book.

The pre-printed student ID label was affixed to the standard-size Test/Answer Book containing the transcribed responses, and not to the large-print Test/Answer Book or Braille books. The bubbles on the demographic page of the standard-size Test/Answer Book were not filled in if there was a pre-printed student ID label for the student.

A certified test examiner (TE) transcribed the student responses into a standard-size Test/Answer Book exactly as given by the student. The standard-size Test/Answer Book with the pre-printed or general label attached was returned to Pearson with all other Test/Answer Books.

Large-print Test/Answer Books and Braille Test/Answer Books containing the original student responses prior to transcription were returned with non-scorable materials. Any Test/Answer Books used as source documents for transcription were invalidated by drawing a large slash across the student demographic page with a black permanent marker.

Once the student responses had been transcribed, the transcribed Test/Answer Book was returned for scoring with the standard-size materials. Specific packing instructions are provided in the 2010 TACM in section 4.

Verbatim Reading Accommodation and Kurzweil™ Test Form on CD

Students who had a verbatim reading accommodation documented in their Individual Education Plan (IEP), ELL Plan, or Section 504 Plan—and who received that accommodation in regular instruction—received the accommodation on the 2010 Mod-MSA: Mathematics. The accommodation was provided by a live reader or through technology. Section 1 of the 2009 TACM provided information on verbatim reading instruction. Technology used to provide the verbatim reading accommodation was Kurzweil™ reading software. Official, secure electronic copies of the test were ordered through the LAC. MSDE encouraged (but did not require) the use of the Kurzweil™ software to ensure uniformity in the delivery of the verbatim reading accommodation throughout the state.

Students using Kurzweil™ software had to familiarize themselves with its operation prior to the test administration. When there were technical difficulties with Kurzweil™ software, a certified staff member was used instead. Kurzweil™ Test Form CDs were shipped by Pearson. After testing, schools returned the CDs to Pearson with the non-scorable secure materials.

Administration Procedures for Students with IEP, 504 Plan, or ELL Plan Permitting Dictated Responses or Use of Word Processor

A student whose IEP, 504 Plan, or ELL Plan permitted a dictated response had his/her responses transcribed at the school level by an eligible TE, or by a staff member working under the direct supervision of a certified TE, into the student's Test/Answer Book with a pre-printed or generic ID label attached.

A student whose IEP, 504 Plan, or ELL plan permitted the use of a word processor had his/her responses transcribed by hand or under the direct supervision of an eligible TE or STC exactly as the student entered his/her responses on the word processor. The student's responses were always transcribed at the school level into the student's Test/Answer Book with the pre-printed or generic ID label attached. After the student's responses had been transcribed, the word processor memory was cleared. The original word-processed printout was returned to Pearson with the non-scorable materials.

Test Format

All grade levels of the Mod-MSA: Mathematics used either a test book format in which students wrote their answers directly in the test book, or used an online format which presented the test items on a computer screen and allowed students to select their answer choices by clicking on the corresponding answer bubble displayed onscreen. There was one form per grade of the Mod-MSA: Mathematics.

Since the Test/Answer Books were scanned for scoring, students were encouraged not to use highlighting in any part of the book. Although students might be accustomed to using highlighting in daily instruction, highlighting in the Test/Answer Book could obliterate

information in a student's book when it was scanned for scoring. As an alternative to highlighting, students were allowed to lightly circle or underline information in test items or perform calculations to help them in responding, as long as markings did not interfere with the bubbled answer choice area and/or the track marks along the outside margins of each page.

Security of Test Materials

The following code of ethics conforms to the *Standards for Educational and Psychological Testing* developed by the American Educational Research Association, the American Psychological Association, and the National Council on Measurement in Education (2008):

It is breach of professional ethics for school personnel to provide verbal or nonverbal clues or answers, teach items on the test, share writing prompts, coach, hint, or in any way influence a student's performance during the testing situation. A breach of ethics may result in invalidation of test results and local education agency or MSDE disciplinary action. (Pearson, p. 13)

The Test/Answer Books for the 2010 Mod-MSA were confidential and kept secure at all times. Unauthorized use, duplication, or reproduction of any or all portions of the assessment was prohibited, which is reflected by the following statement:

Violation of security can result in prosecution and/or penalties as imposed by the Maryland State Board of Education and/or State Superintendent of Schools in accordance with the COMAR 13A.03.04 and 13A.12.05. (p. 13)

All materials were treated as confidential and placed in locked areas. Secure and non-secure test materials were as follows:

- Secure materials: Test/Answer Books (including large-print and Braille), Kurzweil™ test forms on CD, and used scratch paper
- Non-secure materials: TACM, Examiner's Manuals, unused pre-printed student and generic ID labels, unused FedEx return shipping labels, and unused green/orange shipping labels

1.5. Quality Control Procedures

As a standard quality control procedure, Pearson created a test deck for the Mod-MSA program. The test deck began when Quality Assurance (QA) entered mock data into the enrollment system, which was transferred to the materials requisition system; the order was packaged by our distribution center, and shipped to the QA Department. Pearson then reviewed the packing list against the data entered, the materials algorithms applied, the materials packaged against the packing list, and the actual packaging of the documents. These documents were then used to create a test deck of mock data, along with advance copies of documents that were received from the printer. Advance printer copies were inclusive of documents throughout the print run to ensure we were randomly testing printed documents. The Maryland test deck was a comprehensive set of all documents that:

Verified all scan positions for item responses and demographics to verify scanning setup and scan densities

Verified the handling of blank documents through the system

Tested all demographic and item edits

Verified pre-id bar code read, match and no-match

Verified attemptedness rules applied by subtest

Verified duplicate student handling (same test duplicate, different test duplicate)

Verified duplicate student with different demographic rules applied

Verified the document counts to the enrollment, pre-id and actual document receipt

Verified pre-id matching and application to student record

Verified various raw score points and access to dummy and live scoring tables

Verified cut scores applied

Verified valid score on one subtest and invalid score on other subtest

Verified scoring applied to Braille and Large Print

Verified valid and invalid multiple choice responses

Verified all special scoring rules

Verified all summary programs for rounding

Verified summary inclusion and exclusion (Braille, standard and non-standard student summarization)

Verified each scoring level for group reporting

Verified all reporting programs for accuracy in all text and data presented

Verified class, school, district, and state summary data on home reports

Verified all data file programs to assure valid information in every field

Verified data descriptions for accuracy against data file

Created compare-programs to allow for update of files

The Maryland test deck was the first order processed through the Maryland system to verify all aspects of the materials packaging, scanning, editing, scoring, summary, and reporting. Pre-determined conditions were included in the test deck to assure the programs were processing all data to meet the requirements of the program with zero defects. Processing of live orders could not proceed until each phase of the test deck had been approved by Pearson's Quality Assurance Department. An issues log with sign-off approvals was utilized to ensure Pearson was addressing any issues that arose in the review of the test deck data across all functional groups at the company.

Prior to release of any order for reporting, Pearson received a preliminary file from Scoring Operations to run a key check to ensure that all scoring keys had been determined and applied accurately. Any item that was not performing as expected was flagged and reviewed by content specialist and psychometrician. Upon completion of the key check, Pearson proceeded to run the pilot-level reports.

Pearson ran the pilot district utilizing live data. The pilot district included multiple buildings, all grades, and any unique accommodations. A formal pilot review process was conducted with Pearson staff experts prior to release of the information to MSDE.

Upon completion of the processing of all district-level data, Pearson Scoring Operations provided the Quality Assurance Department with one or more state-level data files, along with state data for review and approval. Pearson Quality Assurance programmers duplicated all data independently to ensure accurate interpretation of the expected results. A series of SAS programs were run on these files to ensure 100% accuracy. The programs included, but were not limited to:

- Statewide duplicate student
- Statewide frequency distribution of demographic variables
- District/Building/N-count
- Statewide raw and scale cut score tables
- The use of Proc Means to verify summary statistics
- Item response listing to verify all constructed responses were scored and within the valid range
- Normative data check for all raw scores
- Reader resolution report to verify all readings and resolution combinations

Upon complete review and approval by Quality Assurance, Pearson posted the statewide student files to a secure FTP site for review by MSDE.

1.6. Item Bank Construction

The Mod-MSA: Mathematics item bank is constructed and maintained by Pearson in the form of computer files and paper copies. This enables test items to be readily available to both Pearson and MSDE staff for reference, test construction, test book design, and printing.

Pearson maintains a computerized statistical item bank to store supporting and identification information for each item. The information stored in this item bank for each item is as follows:

- Unique item number (UIN)
- Test administration year and season
- Test form
- Grade level
- Item type
- Item stem and options
- Subject code and description
- Process code and description
- Standard code and description
- Topic code and description
- Indicator code and description
- Objective code and description
- Item status
- Item statistics (Classical and Rasch)