



MI -Access Assessment Plan

Science

**Michigan Department of Education
Office of Educational Assessment and
Accountability**

TABLE OF CONTENTS

Purpose of the Assessment Plan	2
Background on MI-Access	2
Federal Influences	3
State Influences	3
Program Purpose and Implementation	3
Program Purpose	3
Program Implementation	4
First Phase of Development: Participation and Supported Independence	4
Second Phase of Development: MI-Access Functional Independence	6
Third Phase of Development: New Participation and Supported Independence v1.5 Assessments in the Content Areas of English Language Arts and Mathematics	6
Fourth Phase of Development: Development of MI-Access Science Assessment	7
Participation in the MEAP Assessment	7
Development of the MI-Access Functional Independence, Supported Independence, and Participation Science Assessments and the Assessment Plans	9
Reviewing Resources	10
Universal Test Design	11
Description of the MI-Access Functional Independence Science Assessments	12
Assumptions Underlying the Functional Independence Science Assessment	12
Constructs Assessed	12
Grades Assessed	13
Science Benchmarks	13
Assessment Format	13
Assessment Blueprint	14
Assessment Administration	15
Assessment Results	15
Sample Assessment Items	15
Description of the MI-Access Supported Independence Science Assessments	16
Assumptions Underlying the Supported Independence Science Assessment	16
Constructs Assessed	16
Grades Assessed	16
Science Benchmarks	16
Assessment Format	16
Assessment Blueprint	17
Assessment Administration	18
Assessment Results	18
Sample Assessment Items	18
Description of the MI-Access Participation Science Assessments	19
Assumptions Underlying the Participation Science Assessment	19
Constructs Assessed	19
Grades Assessed	19
Science Benchmarks	19
Assessment Format	19
Assessment Blueprint	20
Assessment Administration	21
Assessment Results	21
Sample Assessment Items	21
Participation and Supported Independence Assessment Activities and Scoring Rubrics	22
MI-Access Participation Rubric	22
MI-Access Supported Independence Rubric	22
Appendix A: Fall 2007 and Spring 2008 Functional Independence Science Official Released Items	23
Appendix B: Fall 2007 and Spring 2008 Supported Independence Science Official Released Items	39
Appendix C: Fall 2007 and Spring 2008 Participation Science Official Released Items	48
Appendix D: Example Picture Cards	57
Appendix E: Science Assessment Plan Writing Team Members	63

Purpose of the Assessment Plan

This document constitutes the MI-Access Science Assessment Plan for Functional Independence, Supported Independence, and Participation. It was created to:

- provide important and pertinent background information on MI-Access, why it was developed, the three MI-Access assessments, and how the MI-Access Science assessments were developed and implemented;
- describe what the MI-Access Functional Independence, Supported Independence, and Participation assessments look like, including who is assessed, what Michigan Curriculum Framework content areas are assessed, the format of the assessments, the blueprints, and sample assessment items;
- enable districts, schools, special educators, and others to begin aligning curriculum, assessment, and instructions as needed; and
- inform students, parents, teachers, curriculum specialists, administrators, and the public about the new MI-Access Science assessments.

Plan: 1. A detailed scheme, program, or method worked out beforehand for the accomplishment of a task, goal, or objective. 2. A systematic arrangement of details; an outline or sketch.

Background on MI-Access

MI-Access, Michigan's Alternate Assessment Program, consists of three statewide assessments (each of which is comprised of one or more components) designed specifically for students with disabilities. All three assessments are based on Extended Grade Level Content Standards (EGLCEs), Extended High School Content Expectations (EHSCEs), and/or Extended Benchmarks (EBs). Students participate in MI-Access because their Individualized Education Program (IEP) Teams determined it is *not* appropriate for them to participate in the Michigan Educational Assessment Program (MEAP), even with assessment accommodations.

The three current MI-Access assessments are:

- MI-Access Participation, which was administered for the first time statewide in 2002 (English language arts and mathematics only), and now also measures the Michigan Curriculum Framework Content Benchmarks, 2000 Version for Science;
- MI-Access Supported Independence, which was also administered for the first time statewide in 2002 (English language arts and mathematics only), and now also measures the Michigan Curriculum Framework Content Benchmarks, 2000 Version for Science;
- MI-Access Functional Independence, which was administered for the first time statewide to students in grades 3 through 8 in fall 2005 and students in grade 11 in spring 2006 in the content area of English language arts and mathematics, and now also measures the Michigan Curriculum Framework Content Benchmarks, 2000 Version for Science;

Why were alternate assessments needed? There are a number of reasons, all of which help to explain why MI-Access is part of the Michigan Educational Assessment System (MEAS).

Federal Influences

MI-Access was created, in part, to comply with several federal legislative initiatives, including the Individuals with Disabilities Education Act (IDEA) of 1997, Section 504 of the Rehabilitation Act of 1973, the Elementary and Secondary Education Act (ESEA) and its Title programs (I–IX), and most recently the No Child Left Behind Act of 2001 (NCLB) and the 2004 reauthorization of IDEA. In different ways, these laws maintain that assessments are an integral part of educational accountability because they provide valuable information that can benefit students by regularly measuring their progress against agreed-upon standards. They also maintain that *all* students—including those with disabilities—should be part of each state’s accountability system and should not be treated separately.

Michigan Educational Assessment System (MEAS): State Board of Education-approved assessment system, comprised of three state assessment programs: (1) the Michigan Educational Assessment Program (MEAP), MI-Access, and the English Language Proficiency Assessment (ELPA) for English language learners.

State Influences

MI-Access also was developed in response to various State Board of Education (SBE) policies, priorities and goals. The two Goals that related most directly to MI-Access at the time of its development called for the state to (1) increase the participation and performance of students with disabilities on statewide assessments, and (2) develop guidelines for participation in alternate assessments for students for whom participation in the MEAP was inappropriate. Furthermore, in November 2001, when the SBE adopted a policy creating the MEAS, it stated that:

Alternate assessments: Assessments used to measure the learning progress and performance of students with disabilities who, according to their IEP Teams, it is not appropriate to participate in general education assessments, even with assessment accommodations (i.e., the MEAP).

“It shall be the policy of the State Board of Education that each local and intermediate school district and public school academy will ensure the participation of *all* students in the Michigan Educational Assessment System.”

MI-Access helps achieve the SBE’s policies, priorities, and goals in a number of ways. It provides (1) access to the high standards reflected in Michigan’s Model Content Standards for the general curriculum, (2) access to the statewide assessment system for students with disabilities, and (3) access to meaningful results showing student performance.

Program Purpose and Implementation

Program Purpose

The overall purpose of MI-Access is to provide teachers, parents, and others with a point-in-time picture of what students with disabilities in a certain grade know and are able to do. The activities selected for the assessments—all of which were designed with input from Michigan classroom teachers—are applicable to real-world situations; that is, they reflect the knowledge and skills students need to be successful in school and as adults.

The MI-Access Participation and Supported Independence assessments use structured, on-demand standardized assessment formats, which are appropriate for the population being assessed. The MI-Access Participation and Supported Independence assessments, for example, use standardized selected-response or assessment activities observed by two assessment administrators, a Primary and a Shadow assessment administrator. These

activities explicitly measure the content areas of English language arts, mathematics, and science and are administered during the course of a typical school day. The two assessment administrators observe the students at the same time and score the students using a standardized scoring rubric.

The MI-Access Functional Independence assessments are not based on teacher observation, but instead resemble more traditional paper and pencil tests. They incorporate selected-response items designed in such a way that students can demonstrate their knowledge and skills in a manner consistent with their level of cognitive functioning.

To ensure that MI-Access complies with state and federal legislation, all of its assessments are linked with the Model Content Standards and Benchmarks contained in the *Michigan Curriculum Framework*.

Program Implementation

Given the enormity and importance of the task of developing MI-Access, the MDE divided its implementation into four phases.

Standardization: In test administration, maintaining a constant testing environment and conducting the test according to detailed rules and specifications, so that testing conditions are the same for all test takers.

Taken from "Standards for Educational and Psychological Testing," American Educational Research Association.

First Phase of Development: Participation and Supported Independence

The first generation of MI-Access Participation and Supported Independence assessments were developed in the first phase. MI-Access *Participation* assessments are designed specifically for students who have, or function as if they have, *severe* cognitive impairment. These students are expected to require ongoing support in adulthood. They may also have both considerable cognitive and physical impairments that limit their ability to generalize or transfer learning, and thus may make determining their actual abilities and skills difficult. For that reason, the first generation of the MI-Access Participation assessments focused only on how a student responded to the *opportunity to participate* in an activity, not on how well he or she carried out that activity.

The MI-Access *Supported Independence* assessments are designed for students who have, or function as if they have, *moderate* cognitive impairment. These students are expected to require ongoing support in adulthood. They may also have both cognitive and physical impairments that impact their ability to generalize or transfer learning; however, they usually can follow learned routines and demonstrate independent living skills. The Supported Independence assessments, therefore, are designed to provide students with opportunities to demonstrate their skills. Specifically, they measure how students perform certain tasks while acknowledging that they may require some allowable level of assistance to do so. (See Figure 1 for more information on the characteristics of students who would likely participate in MI-Access Participation and Supported Independence assessments.)

In the first two years of implementation, MI-Access Participation and Supported Independence assessments were administered once each year to students who were 9, 10, 13, 14, 17, and 18 years old. These ages were selected because (1) many students taking part in these assessments were not assigned a grade level, and (2) they ensured that students assessed with MI-Access were assessed with the same frequency as general education students (that is, the ages corresponded with the grades assessed by the MEAP).

Figure 1
Overview of MI-Access Participation and Supported Independence Students

Level of Independence	Student Characteristics	Anticipated Life Roles	Curriculum	Instruction	Likely State Assessment
Participation	Have, or function as if they have, severe or profound cognitive impairments that preclude their ability to (or our skills to ascertain their abilities to) generalize learning.	Are expected to participate in major adult living roles. Will require extensive, ongoing support in all areas of functioning throughout life. Will be dependent on others for most, if not all, daily living needs.	Focuses on the non-core Michigan Model Content Standards (career and employability, technology, health, and physical education). In addition, academic content standards that are provided in the <i>Michigan Curriculum Framework</i> and the Extended Grade Level Content Expectations, Extended Benchmarks, and Extended High School Content Expectations, presented in real-life contexts.	Requires collaboration among teachers, parents, and therapists to determine the “maximum extent possible” concept for each student. Encourages consistent instructional focus among educators. Requires that home, school, and community work together to integrate each student as much as possible into major life roles. Includes use of assistive devices and accommodations.	MI-Access Participation Content areas: English language arts, mathematics, and science
Supported Independence	Have, or function as if they have, moderate cognitive impairments that seriously impact their ability to generalize or transfer learning.	Are expected to achieve supported independence in adulthood. Will require some supervision throughout lives, but can learn skills to maximize independence.	Based on a combination of the non-core Michigan Model Content Standards (career and employability, technology, health, and physical education) and academic content standards found in the <i>Michigan Curriculum Framework</i> , and the Extended Grade Level Content Expectations, Extended Benchmarks, and Extended High School Content Expectations, presented in real-life contexts.	Direct instruction carried out within settings in which students are and will be expected to function.	MI-Access Supported Independence Content areas: English language arts, mathematics, and science

In 2003/2004, however, MI-Access Participation and Supported Independence were converted from ages to grades in order to comply with NCLB requirements of assessing a student once in elementary school, middle school, and high school. With that conversion, students in grades 4, 7, 8, and 11 were assessed since these were the grades in which English language arts and/or mathematics were assessed by the MEAP.

In 2005/2006, grades 3, 5, and 6 were added as required by federal law. The first generation of the MI-Access Participation and Supported Independence assessments did *not* meet all of the NCLB criteria for alternate assessments based on alternate achievement standards. As a result, new Participation and Supported Independence assessments were completed in the third phase of development.

Second Phase of Development: MI-Access Functional Independence

The MI-Access Functional Independence assessments are designed for students whose IEP Teams have determined it is not appropriate for them to take part in the MEAP, the MEAP with assessment accommodations, MI-Access Participation, or MI-Access Supported Independence. This primarily involves students who have, or function as if they have, *mild* cognitive impairment. They also have a limited ability to generalize learning across contexts, their learning rates are *significantly slower* than those of their age-level peers, they have a restricted knowledge base, they tend not to be very aware of environmental cues or details, *and* they do not learn incidentally. In adulthood, these students will most likely be able to meet their own needs and live successfully in their communities without overt support from others. It was determined that these students could benefit from an assessment containing a mix of English language arts, mathematics, and science items presented in the contexts of daily living, employment, and community experience. (See Figure 2 for more information on the characteristics of students who would likely participate in the MI-Access Functional Independence assessments.)

The MI-Access Functional Independence assessments were implemented for the first time statewide in 2005/2006. They were administered in the fall to students in grades 3 through 8 and in the spring to students in grade 11. As required by federal law, the assessments include the subject areas of English language arts, mathematics, and science.

Figure 2 Overview of MI-Access Functional Independence Students					
Level of Independence	Student Characteristics	Anticipated Life Roles	Curriculum	Instruction	Likely State Assessment
Functional Independence	Have, or function as if they have, mild cognitive impairments that impact their ability to transfer and generalize learning across performance contexts. Learning rate is significantly slower than age-level peers (roughly one-half to three-quarters the rate). Restricted knowledge base. Tend not to be very aware of environmental cues or details. Do not learn incidentally.	Are expected to achieve a functional level of independence in adulthood with some supports.	Based on the <i>Michigan Curriculum Framework's</i> content standards, and the Extended Grade Level Content Expectations, Extended Benchmarks, and Extended High School Content Expectations. Focuses on basic academics, social effectiveness, health and fitness, community access and use, work, and personal and family living. Stresses minimal reliance on others and maximum functional independence.	Direct instruction and repetition with practical, authentic, and concrete experiences with academic content areas reflecting real world contexts. After mastery, should continue to present the concept/skill in gradually varying contexts and instructional situations to maximize knowledge/skill transfer. Includes frequent reminders to be alert to environmental cues. Highlights salient information and reduces distracting and irrelevant stimuli.	MI-Access Functional Independence Content areas: English language arts, mathematics, and science

Third Phase of Development: New Participation and Supported Independence Assessments in the Content Areas of English Language Arts and Mathematics

The third phase of completing MI-Access, Michigan's Alternate Assessment Program was to retire the first generation of MI-Access Participation and Supported Independence assessments and develop new ones which meet all of the NCLB criteria for alternate assessments based on alternate achievement standards. These assessments are referred to as the MI-Access Participation and Supported Independence assessments in the content

areas of English language arts and mathematics. The MI-Access Participation and Supported Independence English Language Arts and Mathematics Assessment Plan is available at www.michigan.gov/mi-access.

Fourth Phase of Development: Development of MI-Access Science Assessments

The fourth phase of completing the MI-Access assessments is the development of science assessments for all three levels of MI-Access. These assessments are required by NCLB to be implemented no later than the 2007/2008 school year. The development of these assessments began during the 2005/2006 school year and were piloted during the period from February 19 to April 6, 2007.

Participation in the MEAP Assessments

While there is a clear role for alternate assessments within the state’s assessment system, it is important to keep in mind that the vast majority of students with disabilities will still participate in the state’s general assessment (the MEAP) with or without assessment accommodations. Alternate assessment is **not** intended for **all** students with disabilities; it is only appropriate for a small percentage of them. MI-Access also is not appropriate for students with Section 504 Plans. (See Figure 3 for more information on the characteristics of students with disabilities who would likely participate in the MEAP.)

Figure 3 Overview of Students with Disabilities Who Would Likely Take the MEAP					
Level of Independence	Student Characteristics	Anticipated Life Roles	Curriculum	Instruction	Likely State Assessment
Full Independence	Have physical, emotional, or learning disabilities. Function in the normal range of intelligence. Have the cognitive ability to transfer or generalize learning across performance contexts. Have the capacity to apply knowledge and skills to the tasks, problems, or activities encountered in life.	Are expected to achieve full independence in adulthood.	Based on the <i>Michigan Curriculum Framework’s</i> content standards, Grade Level Content Expectations and High School Content Expectations.	Often requires accommodations, assistive devices, adaptive strategies, and/or technology to assure student success in the general curriculum. Needs to include knowledge and skills necessary to effectively use the above.	MEAP with or without accommodations Content areas: English language arts, mathematics, science, and social studies

Figure 4 shows when the existing MI-Access science assessments—Participation, Supported Independence, and Functional Independence—were developed and implemented.

Figure 4 MI-Access Science Assessments Development Timeline Functional Independence, Supported Independence, and Participation		
Task	Timeline	Status/Comments
Development of the MI-Access Science Assessment Plan	July 2005 – December 2007	Completed
Convene MI-Access Science Assessment Plan Writing Team (APWT) to extend the Michigan Curriculum Framework Science Benchmarks.	July 2005 - September 2006	Completed Draft Science Extended Benchmarks (EBs) developed for FI, SI, and P populations.
Field Review of Draft Science EBs.	October 2006 - January 2007	Completed
Convened MI-Access Science APWT to recommend item formats, draft assessment blueprints, and draft sample items.	March 2006	Completed
Science assessment item writing	April 2006- June 2006	Completed
Science item SRC and CAC review	July 2006	Completed
Develop Science Pilot assessment booklets	November 2006	Completed
Develop <i>Spring 2007 Science Pilot Coordinator and Assessment Administrator Manual</i>	November- December 2006	Completed
Science Pilot assessment administration	February 27- April 6, 2007	Completed
Develop online survey for field review of Science Pilot assessments	February 2007	Completed
SRC and CAC item review of piloted items with data.	June 25-28, 2007	Completed
Items selected for operational Fall 2007 Science Assessments	July 2007	Completed
PLDs-draft and refine for grades 3-8 and 11	November 2007	Completed
First operational Science assessments administered for grades 5 and 8	October 8 - November 16, 2007	Completed
Items selected for first operational Spring 2007 Science assessments (Grade 11)	Fall 2007	Completed
Operational Science assessment administered for grade 11	February 18- March 28, 2008	Completed
MI-Access Science Standard Setting for operational assessments (grades 5 & 8)	December 5-6, 2007	Completed
NAAC alignment study	September - October 2007	Completed
MI-Access Science Standard Setting for operational assessment (grade 11)	May 2008	April 29-30, 2008
Technical Report	July/August 2008	Received August 2008
Science EBs aligned to new K-7 Science Grade Level Content Expectations (GLCEs) and Science High School Content Expectations	To be determined	New Science EGLCEs approved by the Michigan State Board of Education in December 2007.

Development of the MI-Access Functional Independence, Supported Independence, and Participation Science Assessments and the Assessment Plan

As a first step in developing the MI-Access Science assessment plan-and ultimately the assessments themselves-the MDE convened an Assessment Plan Writing Team (hereafter referred to as the APWT) of approximately 40 educators and parents experienced in working with learners with special needs. The MDE's goal was to establish a well-balanced team of individuals representing a broad spectrum of backgrounds and experience, including general and special education teachers, parents, teacher consultants, administrators, school psychologists, and so forth. The group also was intentionally geographically and demographically diverse. (See Appendix E for a list of team members.)

During the course of five 2-day meetings conducted over an eight-month period the APWT developed all the elements of the assessment plan. The process began in the first meeting by writing Extended Benchmarks based on the Michigan Science Frameworks. The Science APWT was divided into four groups by science subject matter/strand – Constructing New Scientific Knowledge, Reflecting on Scientific Knowledge, Using Life Science, Using Physical Science, and Using Earth Science. Each group was composed of 5-8 people and contained at least one general education content specialist who served as facilitator. Each group studied one domain or cluster of science content standards and benchmarks at a time, and beginning with the first cluster, they answered the following questions for each of the three grade-level spans (elementary, middle school, high school):

Assessment Plan: Much like a builder's blueprint, an assessment plan guides how an assessment is built or developed. It includes detailed information on (1) the assumptions underlying the assessment; (2) the populations and subject areas assessed; (3) the number of assessment items and their formats; (4) prototype items to guide item writers; and (5) other information clarifying how and why the assessment should be developed.

- "What is the fundamental meaning or content of this cluster of standards and benchmarks?"
- "What are the underlying key concepts and understandings?"
- "What knowledge and skills will be assessed?"

APWT members wrote 1-3 statements which sufficiently captured the content and skills of the benchmark. Groups were instructed to express this as a measurable and observable student performance.

During the second meeting the process continued as the APWT reviewed, refined, and smoothed the Functional Independence Extended Benchmarks drafted during the first meeting. The sub-groups also began discussion of the Participation and Supported Independence Extended Benchmarks after visiting the Wing Lake Developmental Center to attain a better understanding of the Participation and Supported Independence student populations.

The third meeting of the APWT was devoted first to ensuring that the FI Extended benchmarks were aligned both vertically and horizontally. Then, following a discussion dialogue of the supported independence and participation populations and using the Functional Independence Extended Science Benchmarks as a basis, the science groups began drafting Extended Science Benchmarks for the supported independence and participation populations. For each statement, committee members identified the key concepts students would need to understand at the elementary, middle school, and high school levels.

The fourth meeting of the APWT included time for participants to become familiar with various alternate assessments and item formats via presentations of a local assessment and of four different state assessments. Discussion followed in which participants considered the pros and cons of each model presented. Sub-groups then continued to revise and refine the draft Participation and Supported Independence Extended Benchmarks and generate additional key concepts and real-world contexts. They also determined which extended benchmarks were appropriate to assess at the state level. Finally, sub-groups drafted preliminary prototypes of the P/SI science assessment items.

The fifth and final meeting of the APWT consisted of making minor revisions to drafts of the new document which consolidated the Participation, Supported Independence, and Functional Independence Extended Benchmarks for science to ready them for field review. The other task was to generate assessment blueprints and preliminary item specifications for the science assessments to allow item writers to begin developing assessment items. The APWT divided into sub-groups by population. The Participation sub-group discussed item format, distribution of item types, and scoring rubrics. They developed a Scoring Rubric for Assessment Activities, a Flowchart for Scoring Rubric, Prototype Assessment Activities, methods for maintaining reliability and validity, and some particulars to be included in the item specifications. The Supported Independence sub-group discussed their beliefs, assumptions, and expectations for the SI population and its assessment. From this, they developed a test blueprint and the most appropriate item format. Two separate sub-groups were formed to discuss the FI assessment and then met together to reconcile their work and make final recommendations. Both FI sub-groups used the Critical Decisions template to focus their discussion of beliefs, assumptions, and expectations for the FI population and its assessment. Following this, each group began to prioritize the extended benchmarks in order to facilitate the development of a test blueprint and item specifications. In addition, item prototypes were developed.

At the conclusion of this fifth and final meeting, the extended benchmarks were ready to be prepared for field review. The extended benchmark prioritization, assessment blueprints, and preliminary item specifications plans were ready to be incorporated into item specifications for use by item writers. The knowledge and expertise of Michigan educators and parents was integral to the successful development of the assessments.

Reviewing Resources

- Characteristics of P, SI, and FI populations (from the FI Assessment Plan)
- *Michigan Curriculum Framework* Science Content Standards and Benchmarks
- Worksheets – Functional Independence with strand subheadings and columns for elementary, middle, and high school. A fourth column – “Assessable at State Level?” – will be used at subsequent meetings.
- *Early Learning Expectations for Three- and Four-Year-Old Children* section –*Early Learning in Science*, pp. 61-62
- *Early Learning Expectations for Three- and Four-Year-Old Children*, approved by the SBE in March, 2005
- The *Michigan Curriculum Framework* is the foundation of local curricula in general education programs. Since the U.S. Education Department and NCLB require that states link *all* statewide assessments with the same content standards, or a subset of those standards, this document guided content development for the MI-Access Functional Independence assessments.
- The AUEN document, titled *Educational Performance Expectations for Achieving Functional Independence in Major Life Roles*, helped the team better define the student population and develop appropriate sample assessment items.
- Federal legislation, including IDEA and NCLB, was thoroughly reviewed to ensure that the assessment met all federal requirements and guidelines.

- A review of alternate assessment efforts in other states as well as presentations of other potentially applicable assessment tools helped the team focus on its charge and begin formulating what Michigan's new assessments would look like.
- MI-Access 2005/2006 Sample Individual Student Reports from the 2005/2006 Handbook for Participation and Supported Independence and the 2005/2006 Handbook for Functional Independence
- Wisconsin's Alternate Performance Indicators
- Utah's Alternate Assessment Book
- MAASE Supported Independence Curriculum Guide
- Science Assessment Blueprint Critical Decisions template
- Functional Independence English Language Arts Item Specifications, February 7, 2006
- Functional Independence Mathematics Item Specifications, February 17, 2006
- MI-Access Participation Sample Booklet, November 2005
- MI-Access Supported Independence Sample Booklet, November 2005

Universal Test Design

When developing the MI-Access science assessments, universal design principles were used. "Universally designed" assessments are based on the premise that every child deserves to participate in assessment, and that assessment results should not be affected by disability, gender, race, or English language proficiency. In addition, universally designed assessments aim to reduce the need for assessment accommodations by removing access barriers associated with the tests themselves. (National Center for Educational Outcomes, *Universal Design Applied to Large Scale Assessments, Synthesis Report 44.*)

What does that mean in practice? There are several elements of universal design that the APWT used to prepare its plans and blueprints. Following is a brief discussion of some of them.

Accessibility: The MI-Access science assessments include a broad range of students with diverse learning needs and universal design provides students with meaningful opportunities to demonstrate their competence using content standards extended from, and explicitly linked to, those used for the general state assessment.

Accommodations: The need for assessment accommodations can be reduced if assessments are developed thoughtfully and with the broad student assessment population clearly in mind. To that end, particular characteristics of the student populations that would be participating in science assessments were considered at each stage of development. Furthermore, barriers will be removed whenever possible, such as (1) using graphs or pictures only when necessary and accompanying them with verbal/textual descriptions, (2) eliminating distracting or purely decorative pictures, (3) designing the assessments to be administered in multiple, short sessions to reduce the need for extra breaks and/or extended time, and (4) allowing multiple access and response modes to further reduce the need for assessment accommodations. At every turn, efforts to reduce barriers were explored to ensure that students would have every opportunity to participate fully and meaningfully in the assessments.

Assessment Accommodation: An assessment procedure that is intended to minimize the impact of a student's disability on his/her performance on the assessment. Decisions regarding accommodations should be made on an individual, case-by-case basis, and should be based on the relative appropriateness to a disability and the impact the disability has on the student.

Clear Constructs: The APWT made a concerted effort to remove what the National Center for Educational Outcomes (NCEO) refers to as non-construct-oriented cognitive, sensory, emotional, and physical barriers. In other words, it wanted to make sure that students could participate in the assessments in the same way they participate in instruction, if it did not change what was being measured by the assessments. For example, if students access print by having it read to them during instruction, then they should be able to have the assessments read to them without affecting the validity of their scores. The intent of the APWT was to develop proposed assessments that measure a student’s ability to comprehend what is read or seen, not how he or she accesses the information. This principle was applied to both the English language arts and mathematics content areas, in addition to science.

Instructions and Procedures: As assessment items were developed, Michigan educators recommended that simple, clear, and intuitive instructions and procedures be used. It also recommended that item writers employ consistent components in every assessment activity, such as the scoring focus, the performance context, and in addition, it recommended that all directions given to assessment administrators be clear and direct so that student knowledge would be assessed as opposed to the administrator’s ability to discern meaning from the instructions. While there are other universal design principles that the APWT followed, these examples demonstrate the group’s attempt to ensure that the MI-Access assessment activities are accessible, are designed to meet the unique and varying needs of the student populations being assessed, and yet are still valid in that they measure the Extended Benchmarks.

Following are the detailed assessment descriptions that were developed by each APWT subgroup. They are the cornerstones of the MI-Access Science Assessment Plan, and give a clear view of what the assessment for each student population looks like.

Description of the MI-Access Functional Independence Science Assessments

Assumptions Underlying the Functional Independence Science Assessments

The APWT Functional Independence science sub-group recommended that the MI-Access Functional Independence science assessments would be based on the fundamental meaning or content of the existing Michigan Curriculum Framework Science Content Benchmarks, 2000 version (MCF v.2000). Appropriate knowledge and skills based on the key concepts and understandings of the framework standards and benchmarks would be assessed. All items would be aligned to extended benchmarks, related to key concepts, related to real-world contexts, and reflect functional life skills.

It is understood that the MI-Access Functional Independence student population accesses information—including scientific information and concepts—in a variety of ways. While some students will read written text, others will use listening, viewing, speaking, and visual representation (such as drawing) skills when responding during the assessment activities. Therefore, the science assessments will pay close attention to the needs of non-reading and non-writing students, and will be designed in such a way that they measure a student’s knowledge of scientific concepts as opposed to his or her reading and/or writing ability.

Constructs Assessed

The MI-Access Functional Independence science assessments assess much of the same content as the MEAP. There are differences, however, in the number of assessment items and the depth, breadth and complexity has been reduced appropriately for the population being assessed. In addition, many of the standard and nonstandard accommodations that

students with disabilities need to participate fully in the MEAP are not needed to participate in MI-Access Functional Independence assessments. This is because the latter assessments are universally designed, which means they were developed in such a way that the need for accommodations is reduced, if not eliminated, by removing barriers to accessing the assessment to demonstrate what students know related to science.

Grades Assessed

In order to meet federal requirements (NCLB), the MI-Access Functional Independence science assessments are administered to students in grades 5, 8 and 11. The student populations taking part in these assessments are described in detail in Figure 2 on page 6.

Science Benchmarks

In the *Michigan Curriculum Framework*, there are five Science strands. Under each strand there are two to five content standards-or broad curriculum statements common to all grades-that describe what students should know and be able to do by the time they graduate from high school.

Following each of the content standards, there are one to six benchmarks that describe the knowledge and skills students must have in order to achieve particular content standards. The benchmarks are not written at individual grade levels, but instead are written for grade-level spans, to represent elementary, middle school, and high school science content.

Assessment Format

While item difficulty varies by grade-span specific MI-Access Functional Independence science assessments, they generally are designed the same way.

- When possible, items are provided in a real-world context.
- Hands-on materials or objects—such as electrical appliances, containers of liquids, and so forth—may be used as long as the material or object does NOT change the nature of a question or elicit a different response.
- Multiple choice items will have 3 answer choices in a text and/or picture format.
- Sample items can be found in Appendix A.

Functional Independence Assessment Blueprint

Figure 5 is the blueprint for the operational MI-Access Functional Independence Science assessments (administered for the first time in fall 2007). It lists the number of core items on each assessment. The number of items per strand and per standard within a strand is shown for each grade span (Elementary, Middle, and High School).

Figure 5				
MI-Access Science Assessment Blueprint				
(Number of Core Items per Standard)				
Strand	Standard	Elementary	Middle	High
Constructing New and Reflecting on Scientific Knowledge				
C	CN	2	2	2
R	RO	2	2	2
Subtotal		4	4	4
Using Life Science Knowledge				
L	CE	0	1	2
L	OR	7	7	8
L	HE	2	0	0
L	EV	1	2	0
L	EC	3	4	4
Subtotal		13	14	14
Using Physical Science Knowledge				
P	ME	3	7	7
P	CM	4	3	3
P	MO	2	3	2
P	WV	3	1	3
Subtotal		12	14	15
Using Earth Science Knowledge				
E	GE	2	2	5
E	HY	2	2	3
E	AW	2	2	3
E	SS	0	2	1
Subtotal		6	8	12
TOTAL		35	40	45

Figure 6 indicates the number of core items on the assessment, as well as the number of field-test items that will be embedded at each grade level. Student scores will be based on their performance on the core items. All of the items will use the multiple-choice format and yield up to one point. Data will be collected about student performance on the embedded field test items, but will not count toward student's overall score.

Figure 6				
MI-Access Functional Independence				
Science Assessment Grade Span	Number of Core Items	Number of Embedded Field-Test Items	Total Number of Items on Assessment	Number of Items Released each Year
Elementary	35	8	43	6
Middle	40	10	50	6
High	45	10	55	9

Assessment Administration

In the past, the MI-Access assessment window ran from the last two weeks in February through the month of March. Starting in 2005/2006, students in grades 3-8 have been assessed in the fall and students in grade 11 are assessed in the spring. Each assessment window is open for six weeks. It is estimated that the MI-Access Functional Independence Science assessments will take 60 to 90 minutes. Assessment administrators, however, will be allowed to determine how much time to dedicate to assessment administration and how much of the assessment to administer at one time.

Assessment Results

The Elementary Science assessment has a total value of 35 points. The Middle School Science assessment has a total value of 40 points. The High School Science assessment has a total value of 45 points. Students receive one overall score for Science, as well as a score for each of the five strands.

Sample Assessment Item

Below is a sample of a Functional Independence science item.

00 Which object is attracted by a magnet?

- A plastic ruler
- B steel needle
- C rubber ball

Description of the MI-Access Supported Independence Science Assessments

Assumptions Underlying the Supported Independence Science Assessments

The APWT Supported Independence science sub-group recommended that the science assessments would be based on the fundamental meaning or content of the existing Michigan Curriculum Framework Science Content Benchmarks, 2000 version (MCF v.2000). Appropriate knowledge and skills based on the key concepts and understandings of the framework standards and benchmarks would be assessed. All items would be aligned to extended benchmarks, related to key concepts, related to real-world contexts, and reflect functional life skills.

It is understood that the MI-Access Supported Independence student population accesses information—including scientific information and concepts—in a variety of ways. While some students will read written text, others will use listening, viewing, speaking, and visual representation (such as drawing) skills when responding during the assessment activities. Therefore, the science assessments will pay close attention to the needs of non-reading and non-writing students, and will be designed in such a way that they measure a student's knowledge of scientific concepts as opposed to his or her reading and/or writing ability.

Constructs Assessed

The MI-Access Supported Independence science assessments assess much of the same content as the MEAP. There are differences, however, in the number of assessment items and the depth, breadth and complexity has been reduced appropriately for the population being assessed. In addition, many of the standard and nonstandard accommodations that students with disabilities need to participate fully in the MEAP are not needed to participate in MI-Access Supported Independence assessments. This is because the latter assessments are universally designed, which means they were developed in such a way that the need for accommodations is reduced, if not eliminated, by removing barriers to accessing the assessment to demonstrate what students know related to science.

Grades Assessed

In order to meet federal requirements (NCLB), the MI-Access Supported Independence science assessments are administered to students in grades 5, 8 and 11. The student populations taking part in these assessments are described in detail in Figure 1 on page 5.

Science Benchmarks

In the *Michigan Curriculum Framework*, there are five Science strands. Under each strand there are two to five content standards-or broad curriculum statements common to all grades-that describe what students should know and be able to do by the time they graduate from high school.

Following each of the content standards, there are one to six benchmarks that describe the knowledge and skills students must have in order to achieve particular content standards. The benchmarks are not written at individual grade levels, but instead are written for grade-level spans, to represent elementary, middle school, and high school science content.

Assessment Format

While item difficulty varies on specific grade-level MI-Access Supported Independence science assessments, they generally are designed the same way.

- When possible, all items are provided in a real-world context.

- Hands-on materials or objects—such as electrical appliances, containers of liquids, and so forth—may be used as long as the material or object does NOT change the nature of a question or elicit a different response.
- Selected-response items will have 3 answer choices in a picture format.
- Sample items can be found in Appendix B.

Supported Independence Assessment Blueprint

Figure 7 is the blueprint for the operational MI-Access Supported Independence Science assessments (administered for the first time in fall 2007). It lists the number of core items on each assessment. The number of items per strand and per standard within a strand is shown for each grade span (Elementary, Middle, and High School).

Figure 7				
MI-Access Science Assessment Blueprint				
(Number of Core Items per Standard)				
Strand	Standard	Elementary	Middle	High
Constructing New and Reflecting on Scientific Knowledge				
C	CN	1	1	1
R	RO	1	1	1
Subtotal		2	2	2
Using Life Science Knowledge				
L	CE	1	1	1
L	OR	5	5	5
L	HE	0	0	0
L	EV	0	0	0
L	EC	1	1	1
Subtotal		7	7	7
Using Physical Science Knowledge				
P	ME	1	1	1
P	CM	0	0	0
P	MO	1	1	1
P	WV	1	1	1
Subtotal		3	3	3
Using Earth Science Knowledge				
E	GE	1	1	1
E	HY	2	2	2
E	AW	1	1	1
E	SS	1	1	1
Subtotal		5	5	5
TOTAL		17	17	17

Figure 8 indicates the number of **core** items on the assessment, as well as the number of **field-test** items that will be embedded on the operational assessment at each grade span. The embedded items will be distributed in a manner similar to the core items, that is, approximately 50% will come from Strand III (Life Science), 20% from Strand IV (Physical Science), and 30% from Strand V (Earth Science).

Student scores will be based on their performance on the core items. All of the items will use the selected-response format. All items will be scored using the MI-Access Supported Independence Rubric and yield up to two points per item. Data will be collected about student performance on the embedded field test items, but will not count toward student's overall performance score.

Figure 8 MI-Access Supported Independence				
Science Assessment Grade Span	Number of Core Items	Number of Embedded Field-Test Items	Total Number of Items on Assessment	Number of Items Released each Year
Elementary	17	5	22	3
Middle	17	5	22	3
High	17	5	22	3

Assessment Administration

In the past, the MI-Access assessment window ran from the last two weeks in February through the month of March. Starting in 2005/2006, students in grades 3-8 have been assessed in the fall and students in grade 11 are assessed in the spring. Each assessment window is open for six weeks. It is estimated that the MI-Access Supported Independence Science assessments will take 60 to 90 minutes. Assessment administrators, however, will be allowed to determine how much time to dedicate to assessment administration and how much of the assessment to administer at one time. Many of the items are designed to be administered during normal daily routines.

Assessment Results

Each Supported Independence Science assessment has a total possible value of 68 points (17 core times x 2 possible points per item x 2 assessment administrators = 68). Students receive one overall score for Science, as well as a score for each of the five strands.

Sample Assessment Item

Below is a sample of a Supported Independence science item.

00 Which animal is a reptile?



turtle



frog



mouse

Note: The test administrator will be provided with an 8 1/2 X 11 picture of a turtle, an 8 1/2 X 11 picture of a frog, and an 8 1/2 X 11 picture of a mouse.

Description of the MI-Access Participation Science Assessments

Assumptions Underlying the Participation Science Assessments

The APWT science sub-group recommended that the MI-Access Participation science assessments would be based on the fundamental meaning or content of the existing Michigan Curriculum Framework Science Content Benchmarks, 2000 version (MCF v.2000). Appropriate knowledge and skills based on the key concepts and understandings of the framework standards and benchmarks would be assessed. All items would be aligned to extended benchmarks, related to key concepts, related to real-world contexts, and reflect functional life skills.

It is understood that the MI-Access Participation student population accesses information—including scientific information and concepts—in a variety of ways. While some students will read written text, others will use listening, viewing, speaking, and visual representation (such as drawing) skills when responding during the assessment activities. Therefore, the science assessments will pay close attention to the needs of non-reading and non-writing students, and will be designed in such a way that they measure a student's knowledge of scientific concepts as opposed to his or her reading and/or writing ability.

Constructs Assessed

The MI-Access Participation science assessments assess much of the same content as the MEAP. There are differences, however, in the number of assessment items and the depth, breadth and complexity has been reduced appropriately for the population being assessed. In addition, many of the standard and nonstandard accommodations that students with disabilities need to participate fully in the MEAP are not needed to participate in MI-Access Participation assessments. This is because the latter assessments are universally designed, which means they were developed in such a way that the need for accommodations is reduced, if not eliminated, by removing barriers to accessing the assessment to demonstrate what students know related to science.

Grades Assessed

In order to meet federal requirements (NCLB), the MI-Access Participation science assessments are administered to students in grades 5, 8 and 11. The student populations taking part in these assessments are described in detail in Figure 1 on page 5.

Science Benchmarks

In the *Michigan Curriculum Framework*, there are five Science strands. Under each strand there are two to five content standards-or broad curriculum statements common to all grades-that describe what students should know and be able to do by the time they graduate from high school.

Following each of the content standards, there are one to six benchmarks that describe the knowledge and skills students must have in order to achieve particular content standards. The benchmarks are not written at individual grade levels, but instead are written for grade-level *clusters*, including elementary, middle school, and high school science content.

Assessment Format

While item difficulty varies on specific grade-level MI-Access Participation science assessments, they generally are designed the same way.

- When possible, all items are provided in a real-world context.

- Hands-on materials or objects—such as electrical appliances, containers of liquids, and so forth—may be used as long as the material or object does NOT change the nature of a question or elicit a different response.
- Selected response items will have 2 answer choices in a picture format.
- Observation activities will also be included.
- Sample items can be found in Appendix C.

Participation Assessment Blueprint

Figure 9 is the blueprint for the operational MI-Access Participation assessments (administered for the first time in fall 2007). It lists the number of core items on each assessment. The potential number of items per strand and per standard within a strand is shown for each grade span (Elementary, Middle, and High School).

Figure 9 MI-Access Science Assessment Blueprint (Number of Core Items per Standard)				
Strand	Standard	Elementary	Middle	High
Constructing New and Reflecting on Scientific Knowledge				
C	CN	1	1	1
R	RO	1	1	1
Subtotal		2	2	2
Using Life Science Knowledge				
L	CE	1	1	1
L	OR	4	4	4
L	HE	0	0	0
L	EV	0	0	0
L	EC	0	0	0
Subtotal		5	5	5
Using Physical Science Knowledge				
P	ME	1	1	1
P	CM	0	0	0
P	MO	2	2	2
P	WV	2	2	2
Subtotal		5	5	5
Using Earth Science Knowledge				
E	GE	1	1	1
E	HY	1	1	1
E	AW	1	1	1
E	SS	0	0	0
Subtotal		3	3	3
TOTAL		15	15	15

Figure 10 indicates the number of **core** items on the assessment, as well as the number of **field-test** items that will be embedded on the operational assessment at each grade span. The embedded items will be distributed in a manner similar to the core items, that is, approximately 40% will come from Strand III (Life Science), 40% from Strand IV (Physical Science), and 20% from Strand V (Earth Science).

Student scores will be based on their performance on the core items. All the items will be Selected-Response (SR) format. All items will be scored using the MI-Access Participation Rubric and yield up to three points per item. Data will be collected about student performance on the embedded field-test items, but will not count toward the student's overall performance score.

Figure 10 MI-Access Participation				
Science Assessment Grade Span	Number of Core Items	Number of Embedded Field-Test Items	Total Number of Items on Assessment	Number of Items Released each Year
Elementary	15	5	20	3
Middle	15	5	20	3
High	15	5	20	3

Assessment Administration

In the past, the MI-Access assessment window ran from the last two weeks in February through the month of March. Starting in 2005/2006, students in grades 3-8 have been assessed in the fall and students in grade 11 are assessed in the spring. Each assessment window is open for six weeks. It is estimated that the MI-Access Participation Science assessments will take 60 to 90 minutes. Assessment administrators, however, will be allowed to determine how much time to dedicate to assessment administration and how much of the assessment to administer at one time. Many of the items are designed to be administered during normal daily routines.

Assessment Results

Each Participation Science assessment has a total possible value of 90 points (15 core items x 3 possible points per item x 2 assessment administrator = 90). Students receive one overall score for Science, as well as a score for each of the five strands.

Sample Assessment Items

Below are samples of Participation science items.

Sample 1: Activity-Based Item

Activity: The student will correctly identify where to put paper for recycling following a familiar instructional routine using newspaper and when given directions (e.g., “Show me where we put old newspapers”, or “Tell me what we do to save paper”).

Scoring Focus: Conserving resources

Sample 2: Selected-Response Item

00 Which animal lives in water?



frog



mouse

Note: The test administrator will be provided with an 8½ X 11 picture of a frog and an 8½ X 11 picture of a mouse.

Participation and Supported Independence Scoring Rubrics

MI -Access Participation Rubric

- Based on student responding correctly
- Levels of assistance
- 3-point rubric with 3 condition codes

Score Point	Definition
3	Responds correctly with no assessment administrator assistance
2	Responds correctly after assessment administrator provides verbal/physical cues
1	Responds correctly after assessment administrator provides modeling, short of hand-over-hand assistance
Condition Codes - All condition codes result in no points. A Incorrect response B Resists/refuses C Assessment administrator provides hand-over-hand assistance and/or step-by-step directions	

MI -Access Supported Independence Rubric

- Based on student responding correctly
- Levels of assistance
- 2-point rubric with 3 condition codes

Score Point	Definition
2	Responds correctly with no assessment administrator assistance
1	Responds correctly after assessment administrator provides verbal/physical cues
Condition Codes - All condition codes result in no points. A Incorrect response B Resists/refuses C Assessment administrator provides hand-over-hand assistance and/or step-by-step directions	