T A M I

Test Accessibility and Modification Inventory

Purpose

The Test Accessibility and Modification Inventory (TAMI)™ is an evaluation tool that is designed to facilitate a comprehensive analysis of tests and test items for the purpose of enhancing access and meaningful responses from all students. The inventory is divided into two parts: Item Analysis (pages 2-3) and Computer-Based Test Analysis (pages 5-6). The first part is organized into six categories based on the key elements of a test item (highlighted with an example on page 4). The second part is organized into four sections based on the key dimensions of computer-based tests.

Many existing tests and test items can be improved with regard to accessibility, content relevance and difficulty, and fairness. By using the TAMI systematically, new and existing tests and test items can be improved to enhance testing practices for students.

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Item Analysis

1. On the accompanying TAMI Item Accessibility Worksheet, record the the name and/or purpose of the test, the rater's name or ID number, and the date.
2. Record the number and content area of the target item and briefly describe the construct (i.e., performance objective or skill) the item is designed to measure.
3. Read the Item Analysis category descriptions on pages 2-3 (below). On the TAMI Item Accessibility Worksheet, circle the rating that best describes the overall accessibility of the item for that category:
   0 = Not Accessible; 1 = Minimally Accessible; 2 = Moderately Accessible; 3 = Maximally Accessible
4. Beside each rating, record any specific areas that could be improved (e.g., 1.1, 1.2).
5. Place the sum of your item ratings in the Total Item Accessibility Rating box.
6. Record any specific recommendations for improving the item in the box below the Total Item Accessibility Rating.

0 = Not Accessible   **1 =** Minimally Accessible   **2 =** Moderately Accessible   **3 =** Maximally Accessible

1. Passage / Item Stimulus

1.1 Passage and/or item stimulus vocabulary and sentence complexity are grade-appropriate.

1.2 Paragraphs are appropriate in length.

1.3 Each line in poems is numbered.

1.4 Idioms or jargon are avoided (unless they are defined and related to the item content).

1.5 Sentence structure is as simple as possible given the construct being measured.

1.6 Text includes only words essential for responding to the item(s), with minimal extraneous verbiage.

1.7 Essential words or vocabulary terms use **bold** font to facilitate identification.

1.8 Readability analyses indicate appropriate grade level.

1.9 Passage or stimulus does not require construct irrelevant knowledge and skills for item response.

1.10 Passage and/or stimulus is viewable on the same page as visuals, item stem, and answer choices.

1.11 Other: _____

2. Item Stem

2.1 Item stem reflects intended content standard(s) and/or objective(s).

2.2 Text includes all requisite information for responding.

2.3 Text includes only words essential for responding to the item, with minimal extraneous verbiage.

2.4 Readability analyses indicate appropriate grade level.

2.5 Item vocabulary and sentence complexity are grade-appropriate.

2.6 Item stem is as direct as possible and uses the active voice.

2.7 Idioms or jargon are avoided (unless defined and related to the item content).

2.8 Essential words or vocabulary terms use **bold** font to facilitate identification.

2.9 Item stem is positively worded (i.e., avoiding **not** questions).

2.10 When the item references a specific part of a passage or poem, the relevant sentence or excerpt is included with the item stem.

2.11 Other: _____

Definition of Accessibility

The extent to which an environment, system, or product eliminates barriers and permits equal access to all components and services for all individuals.

[1] Not all items include visuals. If an item has no visuals and no visuals are required, rate the item as maximally accessible (3) for Visuals. If an item has no visuals but visuals are needed, rate the accessibility of the item based on the extent to which visuals are needed to enhance the accessibility of the item.

3. Visuals[1]

3.1 Visuals are included when necessary.

3.2 Visuals are relevant to essential item content.

3.3 Visuals are connected to the text (e.g., pictures, graphics, direction icons).

3.4 Visuals clearly represent intended images.

3.5 Visuals use colors with sufficient contrast.

3.6 Visuals convey information using more than distinctions between colors.

3.7 Essential words or vocabulary terms use **bold** font to facilitate identification.

3.8 Visuals include labels and supportive text if necessary (e.g., titles, row and column headers for graphs).

3.9 Circles, arrows, or highlighting are used for important elements of visuals.

3.10 Supportive text is located close to related visuals.

3.11 When visuals are self-explanatory, words are not added.

3.12 Other: _____

4. Answer Choices[2]

4.1 Text includes only words essential for responding to the item, with minimal extraneous verbiage.

4.2 Answer choices are about equal in length.

4.3 All distractors are plausible ("attractors").

4.4 All answer choices (of a multiple choice item) are necessary.[2]

4.5 No distractors could be eliminated without reducing the validity of the inference(s) intended by the item.[2]

4.6 The order and construction of the answer choices are logical and deliberate.

4.7 Other: _____

[2] The body of research on multiple-choice items indicates the optimal number of answer choices usually is three. When reducing the number of distractors of an item, the least-selected choice should be removed unless an implausible or unintentionally misleading choice would remain.

Source: Rodriguez, M.C. (2005). Three options are optimal for multiple-choice items: A meta-analysis of 80 years of research. *Educational Measurement: Issues and Practice, 24*(2), 3-13.

Goals of Modification

1. Increase access for all test takers;
2. Remove extraneous material;
3. Maintain the same depth of knowledge;
4. Improve efficiency;
5. Increase validity of inferences from test results.
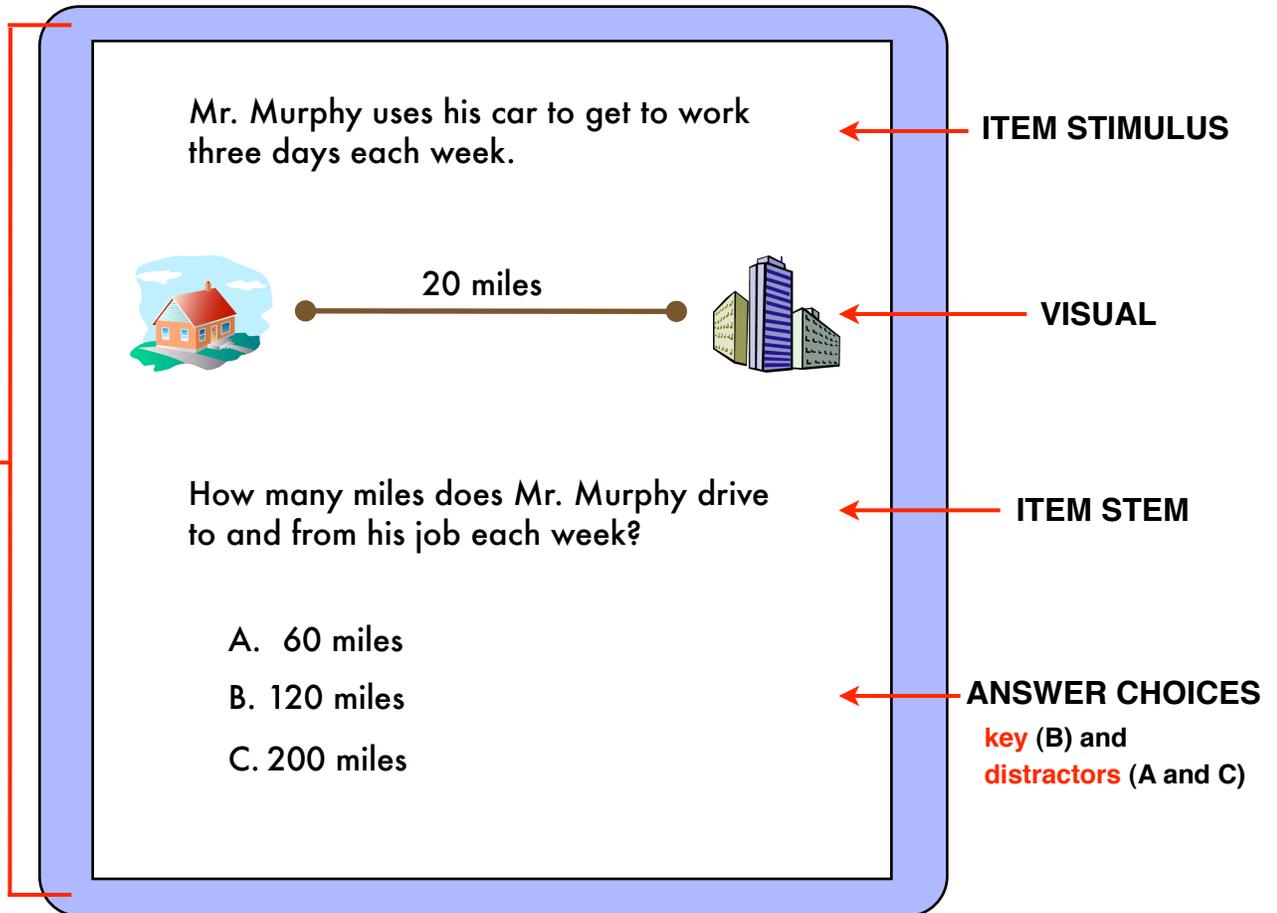
5. Page / Item Layout

5.1 All text is printed in standard typeface, using a minimum of 12-point text.

5.2 There is sufficient space between lines (leading).

5.3 There is high contrast between text and background colors.

5.4 All text can be read in a traditional, left-to-right, top-to-bottom way, with consistent left-margins.

5.5 Text is formatted appropriately with regard to breaks and unbroken blocks.

5.6 The entire item (stimulus, visuals, stem, and answer choices) is visible on the same page/screen.

5.7 Page includes ample white space to prevent the item from appearing cluttered.

5.8 Right margin is unjustified (staggered).

5.9 Visuals are integrated into the item stimulus and item stem, rather than placed off to the side.

5.10 Other: _____

6. Fairness

6.1 Item content shows respect for different groups as defined by societal roles, beliefs, ethnicities, genders, disabilities, etc.

6.2 Item does not require construct-irrelevant knowledge and skills that may make the item more difficult for some test-takers regardless of the construct being measured.

6.3 Item avoids material that may unnecessarily evoke emotion or controversy.

6.4 Item uses appropriate terminology to describe individuals and groups.

6.5 Item avoids stereotypes, overgeneralizations, and oversimplifications when characterizing individuals and groups.

6.6 Other: _____

Anatomy of a Test Item

Mr. Murphy uses his car to get to work three days each week. ← **ITEM STIMULUS**

20 miles ← **VISUAL**

OVERALL PAGE & ITEM LAYOUT

How many miles does Mr. Murphy drive to and from his job each week? ← **ITEM STEM**

A. 60 miles

B. 120 miles

C. 200 miles

← **ANSWER CHOICES**
key (B) and **distractors** (A and C)

Depth of Knowledge (DOK)

Level	Depth of Knowledge	Definition / Characteristics	Bloom's Taxonomy
1	**Recall**	Recall facts, definitions, information, concepts, or procedures; one correct response; one step.	**Knowledge**
2	**Skills & Concepts**	Basic reasoning; apply information or conceptual knowledge; one correct response; two or more steps.	**Comprehension & Application**
3	**Strategic Thinking**	Complex reasoning; apply conceptual knowledge to draw conclusions, solve problems, or evaluate solutions; more than one correct response.	**Analysis**
4	**Extended Thinking**	Analysis and integration of knowledge and skills from multiple sources; may include selection, design, prediction, measurement, evaluation, etc.	**Synthesis & Evaluation**

Computer-Based Test Analysis

Directions for Rating Computer-Based Tests

1. On the accompanying TAMI Computer-Based Test Accessibility Worksheet, record the the name and/or purpose of the test, the rater's name or ID number, and the date.
2. Read the Computer-Based Test Analysis category descriptions on pages 5-6 (below). On the TAMI Computer-Based Test Accessibility Worksheet, circle the rating that best describes the overall accessibility of the test for that category:
   0 = Not Accessible; 1 = Minimally Accessible; 2 = Moderately Accessible; 3 = Maximally Accessible
3. Beside each rating, record any specific areas that could be improved (e.g., 1.1, 1.2).
4. Place the sum of your test ratings in the Total Test Accessibility Rating box.
5. Record any specific recommendations for improving the test in the box below the Total Test Accessibility Rating.

0 = Not Accessible **1 =** Minimally Accessible **2 =** Moderately Accessible **3 =** Maximally Accessible

1. Test Delivery System

1.1 Test-delivery system (login, user selection, test selection, test navigation, response selection) is intuitive and user-friendly;

1.2 Test delivery system requires no extraneous input.

1.3 Navigation is clear, intuitive, and easy to learn.

1.5 Navigation and response selection requires only a pointing device (e.g., a mouse) or a touch screen.

1.6 Alternative input methods are available for test-takers with special needs (e.g., speech recognition or a touch screen for test-takers who are not able to operate a mouse).

1.6 Icons are of sufficient size to permit navigation and response selection with minimal manual dexterity.

1.7 All navigation and item selection icons include text labels.

1.8 Icons and text make sense out of context (e.g., **Go to the next question** rather than **Click here**.)

1.9 Visual feedback is given for all successful input (i.e., an animation or other indicator).

1.10 Font size can be increased or decreased with one click without accessing menus.

1.11 A zoom function is available for all item elements.

1.12 An on-screen indicator of test progress is available.

1.13 For timed tests, an on-screen clock is available.

1.14 Pop-up translations and definitions of key words or phrases are available when such assistance does not affect test validity.

1.15 Progress is saved automatically after each completed item.

1.16 There is an option for the test-taker to quit and return to the same place after breaks.

1.17 Naviation system includes the ability to return to any item within the test or test section at any time.

1.18 System permits test-takers to create persistent marks to the extent they are permitted on a paper-based equivalent test.

1.19 Access to other functions (e.g., email, web browsers, instant messaging) is restricted.

1.20 Other: _____

2. Test Layout

2.1 Layout of page, passage, stimulus, stem, and answer choices is consistent throughout the test.

2.2 Pages are designed to draw attention toward on-screen elements necessary to complete test items.

2.3 Pages contain sufficient blank space so as not to appear cluttered.

2.4 Passages, stimuli, or visuals that are paired with multiple items remain on the screen for each item.

2.5 When item passages and/or stimuli cannot fit on the same page as visuals, item stems, and answer choices, each element can be viewed with one click.

2.6 Other: _____

3. Training

3.1 System includes a training module to familiarize test-takers with login, user selection, test selection, test navigation, response selection, and other essential elements.

3.2 Test-takers are trained in the test-delivery system prior to the actual test event.

3.3 Other: _____

4. Audio

4.1 Audio is used only when text and/or visuals require narration or explanation to facilitate access to essential item content.

4.2 Audio is not used to narrate lengthy text passages when no visual is present (except to accommodate test-takers with visual impairment).

4.3 Whenever possible, audio supplements item text and/or visual content, rather than duplicating it.

4.4 Test-takers may point-and-click on individual words to be read aloud at any time during item completion to facilitate access to item content.

4.5 Audio supports text and visuals and is not used alone for content that may need to be referenced during completion of items.

4.6 Audio and corresponding text are presented sequentially rather than simultaneously to minimize redundancy and cognitive load.

4.7 Computer has adjustable volume.

4.8 Headphones are available to facilitate hearing and focus.

4.9 Unnecessary audio (i.e., beeps, system sounds) is eliminated.

4.10 Other: _____

Item Accessibility Worksheet

Directions for Rating Items

1. Record the the name and/or purpose of the test, the rater's name or ID number, and the date.
2. Record the number and content area of the target item and briefly describe the construct (i.e., performance objective or skill) the item is designed to measure.
3. Read the Item Analysis category descriptions on pages 2-3 of the accompanying inventory. Then circle the rating that best describes the overall accessibility of the item for that category:
   0 = Not Accessible; 1 = Minimally Accessible; 2 = Moderately Accessible; 3 = Maximally Accessible
4. Beside each rating, record any specific areas that could be improved (e.g., 1.1, 1.2).
5. Place the sum of your item ratings in the Total Item Accessibility Rating box.
6. Record any specific recommendations for improving the item in the box below the Total Item Accessibility Rating.

Test Name:		**Rater:**
		Date:

Content Area / Item #:	**Grade Level:**	**Target Construct(s) / Skill(s):**

CATEGORY:	RATING:	RECOMMENDED ITEM MODIFICATIONS:
1. Passage / Item Stimulus	0 1 2 3	Passage / Item Stimulus:
2. Item Stem	0 1 2 3	Item Stem:
3. Visuals	0 1 2 3	Visuals:
4. Answer Choices	0 1 2 3	Answer Choices:
5. Page / Item Layout	0 1 2 3	Page / Item Layout:
6. Fairness	0 1 2 3	Fairness:
Total Item Accessibility Rating: (Possible Range: 0 - 18)		Overall:

Integrated Summary of Recommended Item Modifications:

Final Changes:

For copies of this page, please visit the TAMI™ web page at:
http://peabody.vanderbilt.edu/tami.xml

Computer-Based Test Accessibility Worksheet

Directions for Rating Computer-Based Tests

1. Record the the name and/or target construct of the test, the rater's name or ID number, and the date.
2. Read the Computer-Based Test Analysis category descriptions on pages 5-6 of the accompanying inventory. Then circle the rating that best describes the overall accessibility of the test for each category:

   0 = Not Accessible; 1 = Minimally Accessible; 2 = Moderately Accessible; 3 = Maximally Accessible
3. Beside each rating, record any specific areas that could be improved (e.g., 1.1, 1.2).
4. Place the sum of your test ratings in the Total Test Accessibility Rating box.
5. Record any specific recommendations for improving the test in the box below the Total Test Accessibility Rating.

Test Name / Target Construct(s):	Grade(s):	Rater:
		Date:

CATEGORY:	RATING:	RECOMMENDED TEST MODIFICATIONS:
1. Test Delivery System	0 1 2 3	**Test Delivery System:**
2. Test Layout	0 1 2 3	**Test Layout:**
3. Training	0 1 2 3	**Training:**
4. Audio	0 1 2 3	**Audio:**
Total Test Accessibility Rating: (Possible Range: 0 - 12)		**Overall:**

Integrated Summary of Recommended Test Modifications:

Final Changes: