

# Elements of Quality Classroom Assessment Items

Michigan School Testing Conference

Clinic C1

Thursday, February 19, 2015

# **SELECTED RESPONSE ITEMS**

# Anatomy of a Selected Response Item

**Prompt** → There are lots of traditions associated with the Christmas season. Some of those traditions include plants.

**Stem** → 1. What is the Latin name for a Poinsettia?

**Distractor** → A. Euphorbia paralias

B. Euphorbia exigua

**Key** → C. Euphorbia pulcherrima

D. Euphorbia palustris



**Responses**

# General Tips for writing items:

All multiple-choice items should match a single **standard**.

With this in mind, ensure that items target significant facts or concepts, not trivial questions or overly specific details

*9 – 12.S.1.2 Students are able to evaluate and describe the impact of scientific discoveries on historical events and social, economic, and ethical issues*

Which of these people tried to disprove the theory of spontaneous generation?

# Avoid trivia

Who patented the first cotton gin in the United States?

- A. Catherine Greene
- B. Thomas Alva Edison
- C. Eli Whitney\*
- D. George Washington Carver

# More General Tips:

Use clear, precise and SIMPLE language in both the stem and the response options.

A quality item only includes language that is necessary to present the question.

Specific is terrific!

# Difficulty in an ELA item

- In a reading comprehension item, the difficulty should come mainly from the passage
- It may also come from the question the students answer
- Difficulty should **NOT** come from how hard it is to read the questions

# Avoid unclear language

Isaac Newton made significant contributions and discoveries in mathematics and science. Which of **these** best explains why **these** had such a great impact on **these** subjects during the Age of Enlightenment?

# Avoid generalizations

Why are simply written items better?

- A. They allow **more** students to understand what is being asked
- B. They are easier for **every** scorer to score
- C. They prevent **all** forms of cheating
- D. They reduce **none** of the time spent on testing

# Another Tip:

Avoid trick items, those which mislead or deceive the test takers into answering incorrectly.

# Tricky

Who discovered the cotton gin?

- A. Catherine Greene
- B. Leonardo Da Vinci
- C. Eli Whitney
- D. None of these\*

# Avoid opposites

Why is it best to avoid the use of “all of the above” as an option?

- A. It favors good test takers
- B. It favors poor test takers
- C. It reduces test anxiety
- D. It reduces item clarity

# **Tips about Writing Stems**

# Types of Multiple-Choice Stems

## Open-ended stem

One of the factors of  $x^2 - 5x - 36$  is \_\_\_\_

A  $x + 3$

B  $x - 4$

C  $x + 6$

D\*  $x - 9$

## Complete question stem

Which of the following is a factor of  $x^2 - 5x - 36$ ?

A  $x + 3$

B  $x - 4$

C  $x + 6$

D\*  $x - 9$

# Tips for writing stems:

When possible, a direct question is preferable to an open-ended stem, as it is ***generally*** easier to read

A good ear and professional judgment are called for:

# This open stem is better:

The flaw that led to Othello's defeat was his \_\_\_\_\_

- a. anger
- b. ignorance
- c. mistrust
- d. pride

# More tips for writing stems:

- Include the bulk of the content and information in the stem
- To reduce redundancy, the stem should include any words that would be repeated in each response option

# Avoid redundancy

The tips about item writing allow a greater number of which of these types of students to be able to answer the questions?

- A. The students that are visually impaired
- B. The students that are hearing impaired
- C. The students that are poor readers

# When redundancy is good:

Is the “same” information brief while making the choices more clear?

What did Odysseus do when he returned home?

- a. He reclaimed his family, title, and life\*
- b. He suffered defeat at the hands of his suitors
- c. He expanded his island kingdom of Ithaca
- d. He tried but failed to reconcile with Penelope

# The last tip for writing stems:

Try to restrict the use of negatives in the stem

This wording can produce bias in responding and complicate students' reasoning

When negatives are necessary, highlight them (**bold**, underline, CAPITAL LETTERS) to shift the focus

# Avoid negatives

Which of these is a rule about writing the stem for an item that you have **not** learned today?

- A. Stems should not use tricks
- B. Stems should not use “you”
- C. Stems should not be redundant

# Stems with a graphic/stimulus

Lead → The stem and leaf plot gives the ages of the people who answered survey questions after buying a pair of roller blades on an Internet auction.

Stem	Leaf
1	7 7 8 8 8 8
2	9 0 1 3 3 5
3	2 4 6 7
4	1 3 3 5 7 9
5	9 4 5
6	2
7	0 3

Key:

3 | 2 means 32

Question → What is the median age of the people who answered the survey questions?

# **Tips for Writing Response Options**

# Tips for writing response options

Utilize direct and clear terminology in all response options.

When response options contain unnecessary, irrelevant, or scientific verbiage, the assessment may be testing reading comprehension.

# Avoid unhelpful vocabulary

The promiscuous use of sprays, oils, and antiseptics in the nose during acute colds is a pernicious practice because it may have a deleterious effect on:

- A. the spreading of infection to the sinuses
- B. damage to the olfactory nerve
- C. destruction of white blood cells
- D. congestion of the mucous membrane in the nose

# Another tip for writing options:

Ensure that distractors are plausible, close to the same length, and equally attractive to students who do not know the correct response

# Avoid different lengths & details

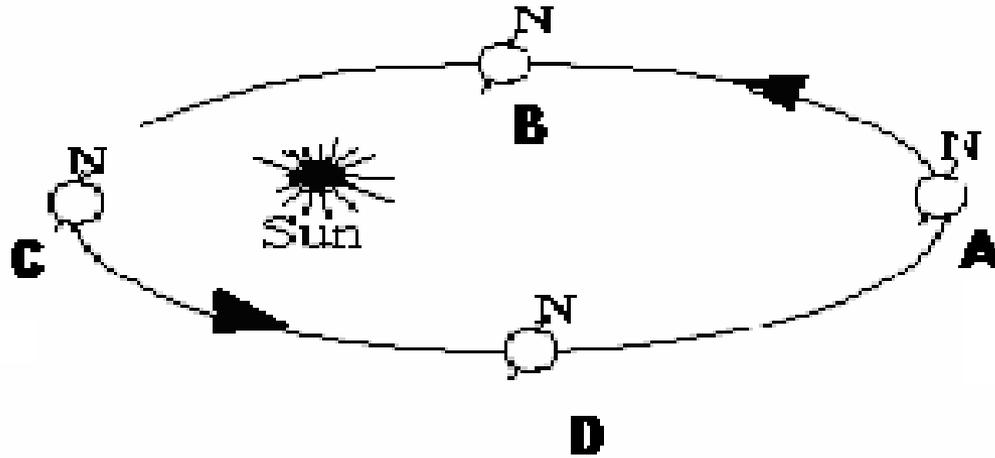
- A. Survey the next 20 customers
- B. Survey all the people living within one-half mile
- C. Survey a large random sample of people living within the listening range of that particular radio station\*
- D. Survey customers at the shop

# Organize the Options

Place response options in a logical order (chronological, numerical, etc.) if there is one.

This format assists in reading and reviewing different options during the selection process

# Order helps



Summer is represented by what point?

A. Point C

C. Point D

B. Point A

D. Point B

# The last tip for writing options:

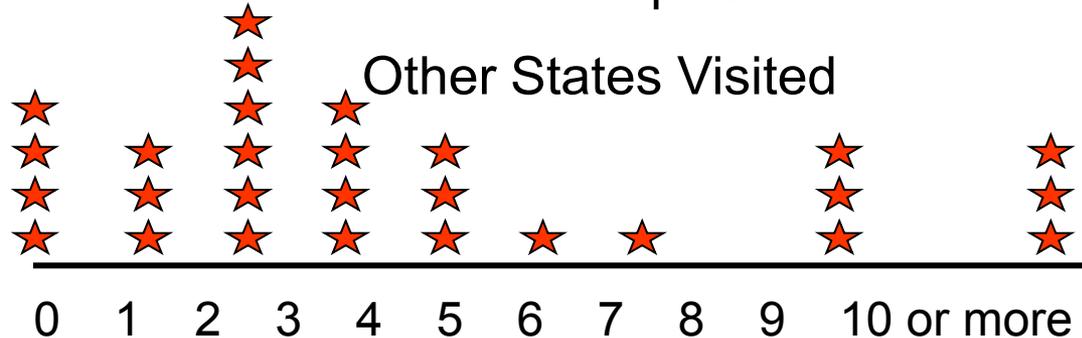
To write good options that don't give irrelevant clues to the correct answer:

- Ensure that all response options are grammatically consistent with the stem
- Make all options equivalent in length, style, & structure
- Avoid repeating key words from the stem in the correct response option

**“Do Not Do” these**

# Helpful “do not do”: synonyms

Miguel surveyed his classmates to learn the number of different states each one had visited outside of Michigan. His results are shown in the line plot below.



What percent of the students Miguel polled had visited more than 5 states outside of Michigan?

# “do not” forget formatting!

Carol asked her 4 best friends, Alice, Clark, Ruth, and Matt, if she could measure their heights in inches. She found that Alice was 58 inches tall; Clark was 62 inches tall; Ruth was 60 inches tall; and Matt was 61 inches tall. To the nearest inch, what was the mean height of Carol’s 4 friends?

Carol measured the heights of each of her 4 best friends. Her results are shown below.

Alice: 58 inches    Ruth: 60 inches

Clark: 62 inches    Matt: 61 inches

To the nearest inch, what is the mean height of Carol’s 4 friends?

# Too much info?

“High temperatures and heavy rainfall characterize a humid climate. People in this kind of climate usually complain of heavy perspiration. Even moderately warm days seem uncomfortable. Which climate is described?”

- or -

# Too much info?

Which term below describes a climate with high temperatures and heavy rainfall?

(12 words vs. 30)

Example taken from: Haladyna, T. (1999). Developing and validating multiple-choice test items, 2<sup>nd</sup> edition. Erlbaum.

# “do not” create complexity:

What is (are) the capital(s) of Bolivia?

A. La Paz      B. Sucre      C. Santa Cruz

1) A only

2) B only

3) C only

4) Both A and B

5) All of the above

# “do not” use “all of the above”

- Recognition of one wrong option eliminates it, and
- Recognition of two right options identifies it as the answer

Generally,

avoid “none of the above”

- Some writing tests use a form of “None of the Above”
  - (correct as it is)

# “do not” overlap distractors

For example:

Due to budget cutbacks, the university library now subscribes to fewer than \_\_\_\_ periodicals.

- 1) 25,000
- 2) 20,000 \*
- 3) 15,000
- 4) 10,000

# another overlap:

Even without knowing the stem, students would select the overlapping response:

- 1) Before breakfast
  - 2) With meals \*
  - 3) On a full stomach
  - 4) Before going to bed
- \*eating & time of day

What's right and  
what's wrong with  
each of these?

# What's wrong?

Round 1169 to the nearest hundred.

- A. 1170
- B. 1100
- C. 1000
- D. 200

# What's wrong?

Which of these is a safety precaution that should be taken during summer field investigations in Michigan?

- A. Wear close toed shoes
- B. Wear a cotton shirt
- C. Wear protective clothing
- D. Wear a cool hat

Four is the \_\_\_\_\_ of these numbers?

4, 5, 6, 2, 4, 3

- A. Mean
- B. Median
- C. Mode
- D. range

Oregon is known for the rainfall it gets.  
Which of these is the historical amount  
of summer days with rain?

- a. 100%
- b. 0.25
- c. Less than  $1/3$
- d. One half

A baseball card shop has this sign:

**Baseball Cards For Sale**

\$0.25 for 2 cards

\$0.50 for 4 cards

\$0.75 for 6 cards

How many can you buy for \$5?

A. 40

C. 36

B. 36

D. 10

# **RUBRICS**

Let's think (good) pizza!

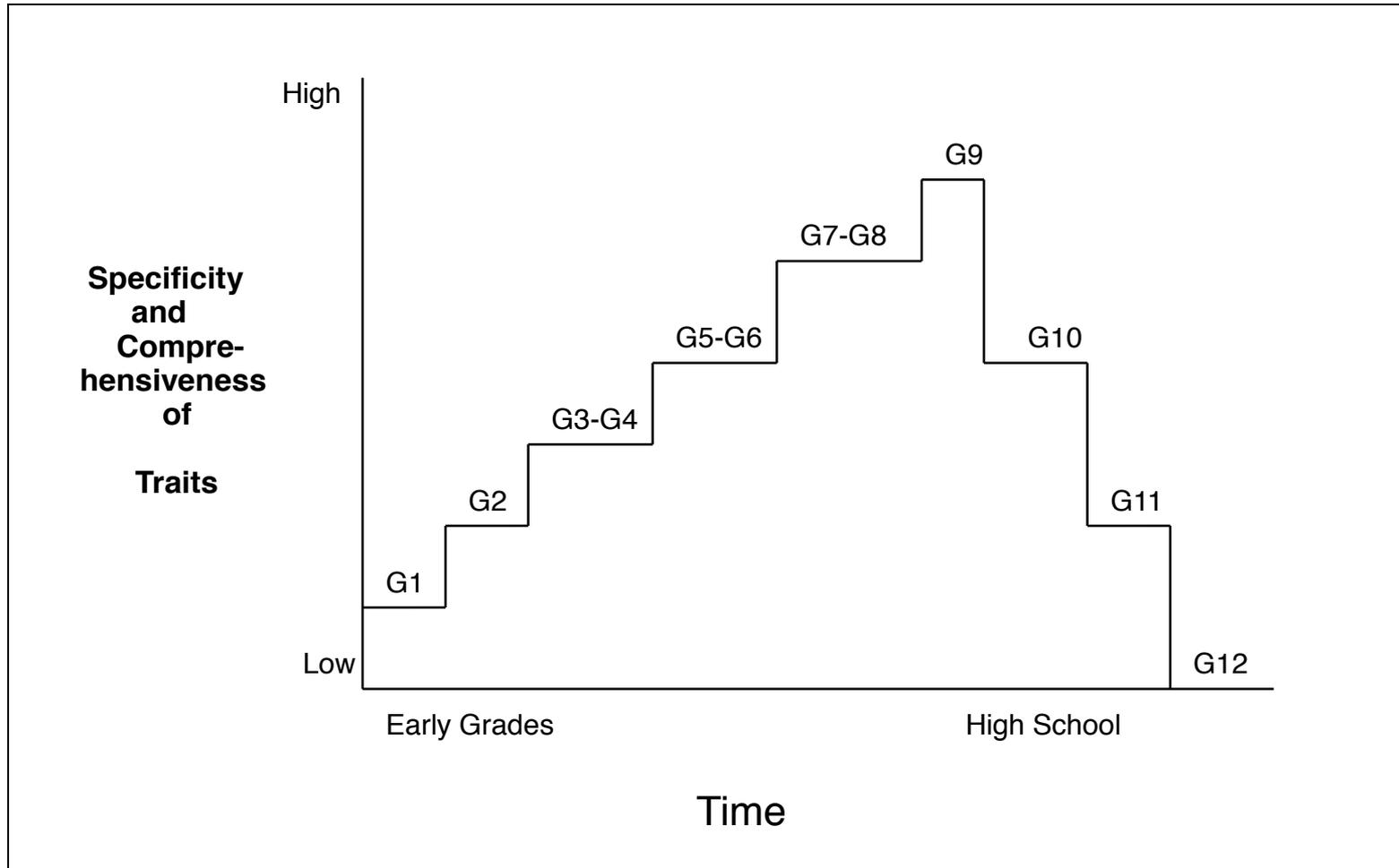
# Look at what you've got...

- You have the beginnings of a checklist....a simple rubric.
- Checklists are good for
  - Younger students just getting started with rubrics
  - Tasks where there are specific things that are essential
  - Giving a list of elements of quality in response to a task
- However, Checklists may be
  - Too prescriptive for use as summative assessment
  - Too structured for creative approaches to a task
  - “giving away the answers”
- You may want to collapse checklist elements into traits.

# Analytic Trait Rubrics

- Once you've described the analytic traits, you can give them a scale (1-3, 1-4, 1-5, etc.) for use in rating
- Analytic Trait Rubrics are much less “giving away the answer” than checklists
- Very useful for formative assessment as they list the dimensions of quality but not how to satisfy them
- The traits should be expressed in “value neutral language”
- Analytic-Trait rubrics can be tailored to the level of the students using them.

# Analytic-Trait Rubrics Across the Grades



-Adapted from A Teacher's Guide to Performance Based Learning and Assessment, ASCD 1996

# Holistic Rubrics

- Distill an entire response down to a single number
- Typically have 4 to 6 levels
- Provide general narratives describing the levels of performance
- May be generic or task-specific
- Are much more summative in nature than checklists or analytic trait rubrics
- Usually need to be refined as more samples of student work are encountered
- The highest level does not represent “perfection”

Write the narrative for level 4  
(best performance) of your  
pizza (hotel, restaurant, car)  
rubric.

Yes, you must use complete sentences! 😊 Adjectives are  
good! 😊

You have 7 Minutes!

# To Summarize...

- We started off listing the elements of quality for a particular task (developed a checklist)
- We combined similar elements into traits (developed traits for an analytic trait rubric)
  - Assigning a scale to each trait turns the list of traits into an analytic trait rubric
- We wrote narratives describing levels of performance (developed the narratives for the levels of our holistic rubric)

The First step in designing rigorous rubrics is to identify one or more specific learning goals that will be the target of instruction.

Marzano, R.J. (2010). Formative assessment and standards-based grading.

Students will be able to  
differentiate heritable traits  
from nonheritable traits in  
real-world scenerios

Next, we determine content that is  
more complex and less complex  
than the content of the goal.

# 3 Levels of complexity:

- More Complex: Students will be able to discuss how heritable traits and nonheritable traits affect one another
- Learning Goal: Students will be able to differentiate heritable traits from nonheritable traits in real-world situations
- Simpler Content: Students will be able to recognize accurate statements about and isolated examples of heritable and nonheritable traits.

# Back to our traits example:

- Score 4: Students will be able to discuss how heritable traits and nonheritable traits affect one another
- Score 3: Students will be able to differentiate heritable traits from nonheritable traits in real-world scenerios
- Score 2: Students will be able to recognize accurate statements about and isolated examples of heritable and nonheritable traits
- Score 1: With help, partial success at score 2 and score 3 content
- Score 0: Even with help, no success

# More information!

- [www.michiganassessmentconsortium.org](http://www.michiganassessmentconsortium.org)
- We have a series of learning modules that cover all aspects of assessment development that are available to you...for free!

# Home of the MAC

The screenshot shows a web browser window with the URL <http://michiganassessmentconsortium.org/>. The browser's address bar also shows several open tabs: "Take a screen capture (print yo...", "XFINITY Connect: Inbox", and "Michigan Assessment Cons...". The website's header features the logo for the Michigan Assessment Consortium, which includes a stylized 'A' and the text "MICHIGAN ASSESSMENT CONSORTIUM". A search bar is located to the right of the logo. Below the header is a navigation menu with the following items: Home, About MAC, Resources, Common Assessment Module Series, Events, Contact, and Membership. A secondary navigation bar contains links for "MAC Board of Directors Bios", "MAC Reads!", "MAEIA", and "Professional Learning". The main content area features a large banner image of a man and a woman looking at a document together. To the right of the image is the text "Improving Education THROUGH Quality Assessment". Below the banner, there are three main sections: "Upcoming Events" with two event listings, "MAC Resources" with a link to "Assessment Literacy Standards" and a paragraph of text, and a featured article titled "Dr. James Popham - Formative Assessment in Action" with a sub-heading "Formative Assessment in Action" and a paragraph of text. The article also includes a "Read More >" link. Below the article is another link for "School Improvement Conference Resources: Assessment Literacy Standards and Improvement Frameworks 2.0: A Perfect Pairing" with a "Read More >" link. At the bottom, there is a link for "Cognitive Coaching Advanced Seminar: Part I (July 29-31, 2015)" with a "Read More >" link and a date range "July 29, 30, 31, 2015".

http://michiganassessmentconsortium.org/

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Improving Education  
THROUGH Quality Assessment

**Upcoming Events**

**Feb 18** [2015 Michigan School Testing Conference](#)  
02/18/2015 - 8:30am

**Jul 29** [Cognitive Coaching Advanced Seminar: Part I](#)  
07/29/2015 - 8:00am

**MAC Resources**

[Assessment Literacy Standards](#)

We are interested in opinions regarding the **content** of the standards and **clarity of the language** used in the standards document. Feedback on the draft standards from educators and the community is a vital part of the standards development process.

To **review** the standards, please click on the link above to go to the Assessment Literacy Standards page.

To view a 14 minute video with Rick Stiggins, about Assessment Literacy, please click [here](#).

• [Assessment Literacy Standards](#) -

**Dr. James Popham - Formative Assessment in Action**

**Formative Assessment in Action**

Defining the what and why of formative assessment in the classrooms .

The limitations of formative assessment will be discussed with participants and any new updates in the area of formative assessment.

[Read More >](#)

**School Improvement Conference Resources: Assessment Literacy Standards and Improvement Frameworks 2.0: A Perfect Pairing**

Assessment Literacy Standards and Improvement Frameworks 2.0: A Perfect Pairing

[Read More >](#)

**Cognitive Coaching Advanced Seminar: Part I (July 29-31, 2015)**

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July 29, 30, 31, 2015

Many thanks!

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