Effective Uses of Technology for Measuring Challenging Content in Classroom-Embedded Formative Assessments:

What Works for English Learners

TESOL Conference
Toronto, Ontario Canada
March 25-28, 2015

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Policy Context

• Meaningful ACCESS
  – Access to language programs
  – Access to core content curriculum
  – Access to materials including content curriculum and assessments
Current Assessment Context

• New College and Career Readiness Standards
  – Common Core State Standards
  – Next Generation Science Standards

• New state-level computerized content assessments
  – Smarter Balanced Assessment Consortia
  – Partnership for Assessment of Readiness for College and Careers (PARCC)

New standards are more challenging, yet new assessments have not changed enough and offer more limited response mechanisms
Formative Assessments

• The Common Core and Next Generation standards encourage the use of ongoing classroom-embedded, formative content assessments to help students learn.

• These include
  – end-of-topic or end-of-unit tests from textbooks or online
  – worksheets and teacher built tests
  – strategies teachers use in the classroom to collect information from students, for instance through observations or during projects.
Think About What Technology Can Do...

- Technology can fundamentally improve the measurement of challenging content knowledge and skills for ELs so they don’t fall behind or get tracked in remedial coursework.

- How?
  By making use of multi-semiotic representations to primarily convey meaning in addition to using text.
  By offering novel response mechanisms.
Why Bother with Multisemiotic Representations?

Students with literacy and language challenges ARE learning complex content in their classrooms.

*How?*

By using multiple modalities students and their teachers have learned to successfully convey content that is beyond the students’ language proficiency.

This means successful assessment adaptations need to include ways to:

- convey meaning *to* the student
- convey meaning *from* the student

These adaptations may be useful for other students as well.
What Does This Mean for Content-Embedded Assessment?

Properly constructed, these methods can

- Broaden how we present the problems.
- Broaden how students are allowed to respond.
- Broaden our understanding of how students conceptualize knowledge and use skills.

Usually it is best if multiple avenues of access are built into each of the tasks at each of these points.
Conveying Meaning in Formative Assessment Contexts
Formative Assessment Items

- The next two slides show typical item examples that may or may not be used with accommodations. These slides are from the state-consortia tests; however they are similar to those found in end-of-unit tests and online.
Example: Smarter Balanced

Smarter Balanced Assessment Item: http://sampleitems.smarterbalanced.org/itempreview/sbac/index.htm
Example: PARCC

PARCC Sample Item:
Response Mechanisms in Assessment Contexts
Five swimmers compete in the 50-meter race. The finish time for each swimmer is shown in the video.

- 23.42
- 23.18
- 23.21
- 23.35
- 23.24

Men’s 50 Meter Freestyle

Explain how the results of the race would change if the race used a clock that rounded to the nearest tenth.
Response: PARCC

Part B

For the lines in Part A that do **not** represent a proportional relationship, explain why they do not.

For each line in Part A that does **not** represent a proportional relationship, describe how you would change the coordinates of one of the two given points on the line to create a proportional relationship.

PARCC Sample Item:
The ONPAR approach to response mechanisms

Visual Representations
Language
Show how to **estimate the number of marbles** in the **jar**.
Show how to estimate the number of marbles in the jar.

Count the number of marbles on the top of the jar, then multiply by the amount of rows of marbles in the jar.
Show how to estimate the number of marbles in the jar.

12 marbles per layer

6 layers

12 * 6 = 72
Show how to estimate the number of marbles in the jar.

12 marbles on the bottom row

there are about 7 rows in the jar

12x7 = 84 marbles
Scientific Models
Use the **amino acid differences** to make a **cladogram** for the **bacteria**.
Draw the Lewis structures for **H₂O**, **CO₂** and **CH₄**.
Draw the Lewis structures for $\text{H}_2\text{O}$, $\text{CO}_2$, and $\text{CH}_4$. 

- **H}_2\text{O}**: 
  - H-O-H

- **CO}_2**: 
  - O=C=O

- **CH}_4**: 
  - H-C=H
Make a Bohr model of a helium atom.
Supported Language
Explain your answer.

Because

? ? ? ?

and

? ? ? ?

- salt
- sand
- water
- filter
- absorbs
- does not absorb
- dissolves in
- does not dissolve in
- floats in
- sinks in
The big paperclip is heavier than the small paperclip. Explain.

<table>
<thead>
<tr>
<th>Magnets</th>
<th>Maximum distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3 cm</td>
</tr>
<tr>
<td>3</td>
<td>6 cm</td>
</tr>
<tr>
<td>5</td>
<td>8 cm</td>
</tr>
</tbody>
</table>

1 magnet
5 magnets
7 magnets

3 cm
5 cm
6 cm
8 cm

1 magnet
5 magnets
7 magnets

1 magnet
5 magnets
7 magnets

but

at

Question: 1 of 1
Summarize why the balls take different times to fall.

If [ ] and [ ], then [ ].
If [ ] and [ ], then [ ].
Why did the balloon rise?

- heat
- causes
- causes
- therefore
- is greater than
- is less than
- to decrease
- to increase
- air
- balloon
- density
- mass
- molecule motion
- molecule size
- temperature
- volume
How does the *power plant* affect the *lake ecosystem*?
Research
Research-Based

- 4 federally funded grants, one currently underway
- 1 privately funded grant
- About 150 cognitive labs
- Experimental trials with randomized ONPAR and traditional forms
- ELs at different levels of English proficiency and native English speakers

ALL grants show ONPAR works, for ALL students, including English learners!!
Find more examples at: www.ONPAR.us

For more information about the tasks or to get involved:

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