USING FORMATIVE ASSESSMENT DATA TO GUIDE INSTRUCTION

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Key Data Systems
What is a Formative Assessment?

• Goal: Monitor student learning and instruction to provide ongoing feedback to improve student learning.
• Generally low stakes
  – Little or no point value
• Does not have to be given as a “test”
• Not about the assessment, but about how the assessment is used
Defining Features of Formative Assessment

• Formative assessment is a *process*, not any particular test
• It is used not just by teachers, but by *both teachers and students*
• Formative assessment takes place *during instruction*
• It provides *assessment-based feedback*
  – Quality feedback: evaluative vs. descriptive
• The function of this feedback is to help teachers and students make *adjustments* that will *improve achievement*
The Garden Analogy

• If we think of our children as plants ...
  – Summative assessment of the plants is the process of simply measuring them. It might be interesting to compare and analyze measurements but, in themselves, these do not affect the growth of the plants.
  – Formative assessment, on the other hand, is the equivalent of feeding and watering the plants appropriate to their needs - directly affecting their growth.
What Works in Improving Student Achievement?
Formative Assessment Cycle

- TFAs
- CFAs
- IFAs
- EOY
- State Test
Professional Learning Communities

USING FORMATIVE ASSESSMENT DATA IN OUR PLCS
Start with the Key Questions

• What do we want them to learn/know?

• How will we know if they learned it?
  – If they did not learn it, why?

• What will we do if they did or did not learn it?
What do we want them to learn/know?

FOCUSED FORMATIVE ASSESSMENT
Start with the End in Mind

• What do we want them to learn/know?
• New Standards that require new ways of assessing learning.
  – More in line with college and workforce expectations
  – Rigorous
  – Require analysis with explanation
Item Types

- Multiple choice, single correct response
- Multiple choice, multiple correct responses
- Evidence-based selected response
- Hot text: select text and reorder text
- Matching tables
- Equation/Numeric
- Fill-in tables
- Drag and drop
- Short text
- Graphing
- Hot spot
ELA Average Percent Correct

- **MC**: 2015 - 62.17, 2016 - 62.95
- **HT**: 2015 - 45.42, 2016 - 44.31
- **CR**: 2015 - 35.26, 2016 - 35.49
- **MS**: 2015 - 31.46, 2016 - 31.78
- **EBSR**: 2015 - 31.36, 2016 - 26.96
Math Average Percent Correct

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>MC</td>
<td>61.1</td>
<td>67.5</td>
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<tr>
<td>MA</td>
<td>48.2</td>
<td></td>
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<tr>
<td>ECR</td>
<td>44.7</td>
<td>46.1</td>
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<tr>
<td>G</td>
<td>45.7</td>
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<tr>
<td>EQ</td>
<td>28.9</td>
<td>32.9</td>
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<tr>
<td>CR</td>
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<td>32.6</td>
</tr>
<tr>
<td>MS</td>
<td>28.8</td>
<td>24.1</td>
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</table>
How will we know if they learned?

DATA ANALYSIS
Using Assessment Data

• Standard Analysis
  – Identify most successful standards
    • What practices were in place which enabled students to be successful?
  – Identify most missed standards
    • How are students performing on standards that were taught?

• Item Analysis
  – Item detail
    • How are student performing on specific skills within standard(s)?
  – Item type
    • How are students performing based on item type/DOK?
Standards-Based Report

6.EE.3 Apply the properties of operations to generate equivalent expressions.

<table>
<thead>
<tr>
<th>Question</th>
<th>Correct</th>
<th>Incorrect</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Average Percent Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>29 (EQ)</td>
<td>9</td>
<td>23</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>29%</td>
</tr>
<tr>
<td>27 (DD)</td>
<td>14</td>
<td>18</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>44%</td>
</tr>
<tr>
<td>28 (MC)</td>
<td>20</td>
<td>12</td>
<td>1</td>
<td>2</td>
<td>20</td>
<td>9</td>
<td>61%</td>
</tr>
</tbody>
</table>
Which answer correctly shows the distributive property in the following expression?

\[7(5b + 8)\]

A. \[91b\]
   
   Rationale: Student(s) may have correctly distributed the 7 but then incorrectly added 35b to 56.

B. \[43b\]
   
   Rationale: Student(s) distributed 7 to 5b, but then added 8 to it to get 43b.

C. \[35b + 56\]

D. \[35b + 8\]
   
   Rationale: Student(s) correctly distributed the 7 by the 5b, but did not distribute the 7 to the 8 to get 56.
Question 28 (Multiple Choice)

Which answer correctly shows the distributive property in the following expression?

7(5b + 8)

A. 91b
   Rationale: Student(s) may have correctly distributed the 7 but then incorrectly added 35b to 56.

B. 43b
   Rationale: Student(s) distributed 7 to 5b, but then added 8 to it to get 43b.

C. 35b + 56

D. 35b + 8
   Rationale: Student(s) correctly distributed the 7 by the 5b, but did not distribute the 7 to the 8 to get 56.
Question 27 (Drag and Drop)

Drag a term into each box to create an expression equivalent to \(4(3e - 8j)\).

\[4(3e - 8j) = 12e - 32j\]

Terms:
- \(12j\)
- \(1e\)
- \(24j\)
- \(4j\)
- \(7e\)
- \(8j\)
A student is asked to apply the distributive property to the expression $4(2x – 5y)$ to produce an equivalent expression. The student's work is shown below.

\[
4(2x – 5y) \\
= 4 \times 2x – 5y \\
= 8x – 5y
\]

Three students each make a claim about the student's work as shown in the table.

<table>
<thead>
<tr>
<th>Student</th>
<th>Claim</th>
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<tbody>
<tr>
<td>1</td>
<td>The expression $8x – 5y$ is not equivalent because the student did not multiply the $y$ term by 4.</td>
</tr>
<tr>
<td>2</td>
<td>The expression $8x – 5y$ is not equivalent because the student multiplied the $x$ term by 4 instead of the $y$ term.</td>
</tr>
<tr>
<td>3</td>
<td>The expression $8x – 5y$ is equivalent because the student multiplied the original equation by 4.</td>
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Which student’s claim is correct? Student 1
A student is asked to apply the distributive property to the expression 4(2x – 5y) to produce an equivalent expression. The student's work is shown below.

\[
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Three students each make a claim about the student's work as shown in the table.

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Which student’s claim is correct? 

Student 3
Best Practices

• Look across grade levels and content area teams for best instructional practices

• Openness to teaching innovation that makes the difference.
What will we do if they didn’t learn?

INSTRUCTIONAL RESPONSE AND FOLLOW-UP
Four-Steps to Perfect Process

1. Teacher displays a well-written, standards-based item to students
2. Teacher assigns students (individually or in groups) various tasks related to the item
3. Students (groups) consider the item, determine the solution to the task, and write an argument supporting the solution
4. Students (groups) share the results to the class
Assigning Tasks to Small Groups

Prove or Explain
- Determine the correct response and prove or explain why it is correct

Rewrite
- Write a new stem where one of the incorrect responses would be correct

Find Error
- Determine what error the student made that would have drawn them to an incorrect response
  • defend the error

Create a Trick
- Determine another incorrect response that would “trick” a student and cause them to make that choice
  • defend the choice
Grade 4 Math

- **Group 1: Prove and Explain your reasoning**
  - Why is the correct answer(s) correct?
- **Group 2: Rewrite**
  - How could the question (stem) be changed to make the incorrect responses correct?
- **Group 3: Find Error and support your reasoning**
  - Why are the incorrect choices there?
  - Example: Why would a student choose option B?
- **Group 4: Create Trick and support your choice**
  - What is another incorrect choice a student might make?

This set of place-value blocks represents a number. The value of this number can be represented in many different ways.

For numbers 1a–1d, choose Yes or No to show whether the value is equivalent to the number represented by the place-value blocks.

1a. 200 + 90 + 12
   ○ Yes ○ No
1b. Three hundred two
   ○ Yes ○ No
1c. 1 hundred + 20 tens + 2 ones
   ○ Yes ○ No
1d. 300 + 12
   ○ Yes ○ No
Group 1: Prove or Explain your Reasoning

• 1a, 1b, and 1c are correct. The place-value blocks total 302. The number 302 can be written in all of the following ways.
  – \(200 + 90 + 12\)
  – Three hundred two
  – 1 hundred + 20 tens + 2 ones

• I know this is correct because the groups of place-value blocks break down as follows:

\[
\begin{align*}
\text{\(200\)} & = 200 \\
\text{\(90\)} & = 90 \\
\text{\(12\)} & = 12
\end{align*}
\]
Group 2: Rewrite the Stem

• To make 1d correct, you would need to change the stem so that there is a total of 312 place-value blocks.

• New stem: For numbers 1a-1d, choose Yes or No to show whether the value is equivalent to the number represented by the place-value blocks.
Group 3: Find the Error and Support your Reasoning

- A student may have selected 1d because they do not understand place value. They also may have counted the place-value blocks as follows:
- Incorrectly counting 10 tens instead of 9 to get 100.
Group 4: Create a Trick and Support your Choice

- Students may have counted the hundreds and tens correctly, but did not carry the ones within the ones blocks and came up with 200 + 90 + 2.
Oh Yeah? Prove It!!!

Why is the correct answer the correct answer, smarty pants?

It's 0 because $4 - 2 = 2$ and you didn't subtract the denominator.
You Be the Teacher!

Rewrite the question so that a different answer choice is correct.

Which of the following problems has the answer of \( \frac{6}{5} \)?

- A. \( \frac{5}{10} - \frac{3}{5} \)
- B. \( \frac{5}{5} - \frac{3}{10} \)
- C. \( \frac{4}{5} + \frac{3}{5} \)
- D. \( \frac{4}{5} - \frac{3}{5} = \)
Error Detective

Cross off the right answer and play detective to find out why the other answers might have been chosen.

A. They subtracted the numerators and the denominator.
B. They probably thought they needed to subtract the denominator.
C. They changed the adding sin to the subtraction sin.
D. [Marked as incorrect]

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Tricky, Tricky!!!

Create another wrong answer choice E to trick students and say why they might choose that one.

\[ E \frac{5}{2} + \frac{1}{4} = \frac{23}{5} \]

This choice would trick students because some kids will see that it is adding and some kids might...
Follow up

• Use well developed item to create short tests after re-teaching
• Choose items based on specific cognitive disconnects in learning that were revealed from the assessment results
  – What does our formative assessment tell us?
• Follow-up assessments should be as short as possible to get the information you need
  – Should be student specific and data driven
Sara@YourInspect.com

QUESTIONS?