It All Stacks Up: Analyzing Aspects of Learning in Mathematics and Science

Le’Vada Gray
Friday, October 19, 2019
Illinois Council of Math Teachers and Illinois Science Teachers Association Conference
North Pavilion 4
Inspire A CULTURE OF MATH ACHIEVEMENT
We believe all students can succeed in math.

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Founded by Marilyn Burns.
How do we balance conceptual understanding and procedural fluency in mathematical and scientific concepts?
How do we use measurement in our everyday life?
NAEP Assessment--4th Grade

What is the length of the toothpick in the figure above?

Performance Data
• Correct 20%
• Incorrect 78%
• Omitted 2%

More Data
2 1/2 inches 20%
10 1/2 inches 14%
3 1/2 inches 23%
8 inches 42%
NAEP Assessment--4th Grade

In this figure, how many small cubes were put together to form the large cube?

A) 7
B) 8
C) 12
D) 24

Performance Data
Correct 33%

More Data
A) 4%
B) 33%
C) 32%
D) 29%
Measurement Decisions

• What is being measured?
• What is an appropriate unit?
• What is an appropriate procedure?
• Which instrument is needed to count the units?
## Two Aspects of Learning Mathematics

<table>
<thead>
<tr>
<th>Making Sense</th>
<th>Learning Social Conventions</th>
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<tbody>
<tr>
<td>The source of learning is internal.</td>
<td>The source of learning is external.</td>
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</table>
Identifying Essential Content

• What *understandings* do students need to develop for themselves?

• What *aspects* or *social conventions* do you need to tell students?
Small-Group Task

- How tall is Lady Liberty without her crown?
- How long is her head from her chin to the top of her forehead?
- What is the length of her right arm?

Lady Liberty’s hand is 16 feet 5 inches long.

Public domain photo by Derek Jensen on Wikipedia
Reflecting on the Essential Content

• What *understandings* did you need to develop yourselves?

• What *aspects* did you need to be told?
Two Aspects of Learning Mathematics

Making Sense

The source of learning is internal.

Learning Social Conventions

The source of learning is external.
Final Processing

• How would measurement experiences support your student learning in STEM curriculum/program?

• What is your role in implementing or supporting these experiences?

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Thank You!

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- Website: [www.mathsolutions.com](http://www.mathsolutions.com)
- E-mail: lgray@mathsolutions.com

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