Students Held Accountable Through Discourse and Performance: Listen and Learn

NCSM
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A. The Ever-Changing World (8)
B. 200 Bell-to-Bell Observations
   • Process (7)
   • Patterns (15)
   • Examining Instructional Delivery: Simulation (20)
C. How YOU Can Do This (10)
1. “There is an increasing premium for pattern recognition and complex problem solving. Education has to be about more than cognitive skills.”
2. “Future employment will focus not on lifetime employment -- guaranteed employment, but on lifetime employability -- guaranteed opportunities to remain current enough to stay employed.”
3. “Knowing how to ‘learn how to learn’ will be one of the most important assets any worker can have, because job churn will come faster, because innovation will happen faster.”
To be successful, students need to approach and solve problems in a variety of ways. This shift in learning can be accomplished only if we make a corresponding shift in instruction.
The Common Core State Standards

http://corestandards.org
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“Soundful”

- Students are engaged in rich discourse.
- Manipulatives, diagrams, and/or drawings may be used to more deeply understand “processes and proficiencies.”
Student-Centered Classrooms

Physically fluid

- Furniture is arranged to maximize interaction and collegiality.
- Students work in a variety of groupings, strategically arranged to minimize effects of classroom “hogs” and “logs.”
Student-Centered Classrooms

Data-Driven

Ongoing, informal assessments are used to drive instruction and create appropriate questions.
Observations are used to:

- identify teachers’ content and pedagogical knowledge, and instructional techniques.
- analyze student conceptual understanding, engagement, and behavior.
Bell-to-Bell Observations

Observations are also used to identify department- or school-wide patterns and use them to drive professional development for the group as a whole.
Bell-to Bell Observations: Professional Development Intervention

1. A pre-visit email is sent to teachers clearly outlining expectations.
2. The entire content block is observed and recorded.
3. The coach and teacher review the observation. Commendations and thought-provoking questions are discussed.
4. The cycle repeats.
PATTERNS

- Parts of the lesson cycle
- Instructional delivery
Open/Warm-Up

1. Is student centered.
2. Involves every student in the class.
3. Assesses students’ understanding of previous learning and readiness for new learning.
4. Utilizes partner or small group discussions.
5. Relates closely to lesson goals.
6. Bridges prior knowledge to the day’s goal.
7. Used to inform the day’s instruction.
Close/Reflection

1. Is student centered.
2. Assesses students’ understanding of the day’s learning.
3. Involves every student in the class.
4. Utilizes partner or small group discussions.
5. Students reflect on their learning and make connections.
6. Aligns with and assesses the lesson goals.
Open/Warm Up

Goal Setting Introduction
What will students learn and be able to do?

Body

Close
“Deciding what to teach is only part of the planning. Teachers must contemplate how the material can best be internalized for deep understanding. Students must be actively involved in the learning. Each part of the lesson learns is affected by the what, the why, and the how of teaching.”
Simulation
Open

1. What is perimeter?
2. What is the formula for the perimeter of a polygon?
3. How are polygons and circles similar? How are they different?
Direct Instruction

MINI Lab Derive, define, and make sense of the formula for the circumference of a circle.

- Materials (in a perfect world)
  - Circles of various sizes
  - Yarn
Measure the yarn around the *circumference* of the circle.
Circumference of a Circle

How many times does the yarn go across the circle’s *diameter*?

Chart the results!
<table>
<thead>
<tr>
<th>Object</th>
<th>Number of times yarn goes across the diameter</th>
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<td>A. Paper cup</td>
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<td>B. Die-cut</td>
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<tr>
<td>C. CD/DVD</td>
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<tr>
<td>D. Small pot lid</td>
<td></td>
</tr>
<tr>
<td>E. Medium pot lid</td>
<td></td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td>G.</td>
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</table>
Circumference of a Circle

You found that

\[
\frac{\text{circumference}}{\text{diameter}} = \text{about 3}.
\]
Circumference of a Circle

You found that

\[
\frac{\text{circumference}}{\text{diameter}} = \pi.
\]
The circumference of a circle can be found using the formula:

\[
\frac{\text{circumference}}{\text{diameter}} = \pi,
\]

What is the formula for circumference, or \( c \)?
Circumference of a Circle

Guidance

\[
\frac{\text{circumference}}{\text{diameter}} = \pi,
\]

Think:

\[
\frac{6}{2} = 3, \text{ so } 6 = \underline{3}
\]

Accentuate the relationship between multiplication and division.
Circumference of a Circle

\[
\text{Circumference} = \pi d \\
\text{OR} \\
\pi 2r \\
\text{OR} \\
2\pi r
\]
Guided Practice

Use the formula to find the circumference of a circle you measured.

• What are some ways you can assess the reasonableness of your results?
Big Ben
London, England

Diameter: 23 ft

http://www.visitlondon.com/attractions/culture/big-ben
Guided Practice

1. What are some ways you could find the difference in the circumference of the two circles?
Guided Practice

2. Would you predict the perimeter or the circumference of these figures is greater? Explain your reasoning.

3. Calculate and find the difference.
Independent Practice

1. Find a square whose perimeter is about the same as the circumference of this circle. What is its side length?
2. Sketch the circle and the square, one within (or on top of) the other.

Continuation of idea in Guided Practice.
Differentiated Instruction

$r \approx 650$ ft

http://www.trekearth.com/gallery/North_America/United_States/South/Texas/Lubbock/photo460461.htm; http://ga.water.usgs.gov/edu/irsprayhigh.html
Close

1. You are asked to draw two **concentric** circles whose difference in circumference is about 6. How would you go about solving the problem?

2. How can you find a circle’s circumference if you only know the radius? Why does this make sense?
How YOU Can Do This!

Engagement: I *want* to learn!
Accountability: I *cannot* hide!
How YOU Can Do This!

“The people doing the talking are the people doing the learning.”
September 28, 2010

Robyn,
When I explained my vision for your visit I had no doubt that we would create something magical. And indeed we did. Last week was transformative. I appreciate the way we work together. Our whole campus will move forward because of the progress the math department made last week.

Thank you for taking my vision and making it work!!!
Christina Ritter
Principal, Caprock High School
May, 2010

Our TAKS scores are back and our math department improved by 20 points! You rock!

David Vasquez
Principal, Estacado High School