Argumentation

Tuesday, October 7, 2014

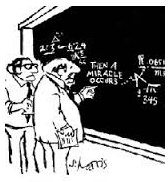
"Argument is the soul of an education"

"Argument, in short, is the essence of thought."

Schmoker & Graff (2011)

Our focus today

- Developing language and criteria for discussing argumentation and arguments
  - In ways that clarify our thinking
  - In ways that help us provide feedback (and feedforward) to students

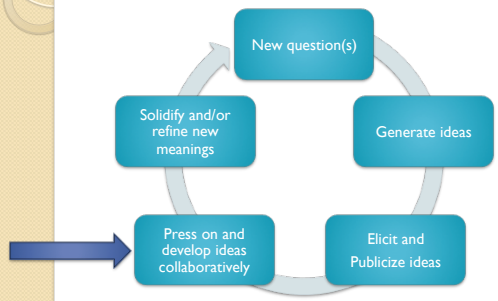


I think you should be more explicit here in step two…

Guiding Questions

- What are characteristics of **written** (communicated) mathematical arguments?
- What counts as quality?
- What can we do to promote high quality arguments? To use argumentation to promote conceptual understanding?
  - What are we already doing?
  - What can we tweak?
  - What else can we do?

One model: A pedagogy of mathematical reasoning



A Mathematical Argument

- It is…
  - A sequence of statements and reasons given with the aim of demonstrating that a claim is true or false
  - "an argument is a collective series of statements to establish a definite proposition" (Monte Python)
- It is not…
  - (Solely) an explanation of what you did (steps)
  - A recounting of your problem solving process
  - Explaining why you personally think it's true for reasons that are not necessarily mathematical (e.g., popular consensus; external authority, etc. *It's true because Adrianne said it, and she's always, always right.*)

Opportunity to use our language of claims, warrants and evidence to analyze student work

Example of a task targeting the develop-ment of a core conceptual understanding

A NUMBER TRICK!

Think of a number between 0 and 10 (inclusive)….

Your task…

- What is the claim?
- Identify the argument
  - What's the evidence the student offers?
  - What's the warrant(s) that links the evidence to the claim?
- Critique the argument
  - Is the approach (chain of reasoning) mathematically sound?
  - Are there logical gaps? Must the reader fill in connections or pieces of evidence?
- Conceptual understanding
  - What can you infer about the student's (developing) understanding of the distributive property?

Stars and Stairs

Stars: comments that highlight aspects of the response that are part of a competent performance

Stairs: comments that indicate "next steps" that would help improve the quality of the work

Goal – make progress on these questions

- *How does argumentation help us promote conceptual understanding of important ideas (e.g., the distributive property)?*
- *How does argumentation reveal students' understanding of important ideas (here, the distributive property)?*
- *How does our work getting better at identifying the claim, evidence and warrant help us give feedback and feedforward to students' arguments?*

Argumentation – solidifying

- What will count in your classroom for a valid argument? (What qualities or criteria are important to you?)
- How are these criteria communicated to students?
- What do you expect at the beginning of the year? Where will growth be?