Annotation: A teacher development activity

Purpose
Annotation is used to highlight important mathematical thinking shared by students during class discussions. It bolsters discourse by providing a visible representation of mathematical ideas that are shared verbally. This visual residue provides critical supports for English learners, emerging bilinguals, and those who struggle with memory, auditory processing or attention. In addition, it honors student-generated ideas, highlights the thinking behind them, and makes the ideas accessible for others to understand, build on, refine, and apply. Annotation is a high-leverage teaching move that is responsive to students’ evolving mathematical ideas, and therefore, in addition to planning requires in-the-moment practice.

Practicing Annotation within the Contemplate then Calculate Instructional Routine

Materials:
- Copy of task reproduced multiple times large on single page
- List of noticings. These can be captured from students, produced by coach, or created in the moment by teachers.
- Shortcut(s) and rephrase of shortcut(s). These can be captured from students, produced by coach in student voice, or created in the moment by teachers in student voice.
- Colored pens or pencils

Preparation:
- Understand the mathematical goal
- Consider task
- Anticipate student noticings and student shortcuts
Activity:
1. Share shortcut. As shortcut is shared teachers visually highlight the idea by pointing and gesturing to task.
2. Rephrase the shortcut. As shortcut is being rephrased teachers practice annotating the task.
3. Share and discuss annotations with a partner.
4. Share and discuss annotations in the full group. Discussion prompts:
   a. How did the annotation highlight the mathematical goal (e.g. chunking, changing the form, connecting math ideas, etc.).
   b. Does the annotation accurately represent the shortcut and rephrase? Explain.
   c. What are the ways the student idea was re-presented (i.e. words, symbols, calculations, variables, etc.) What are the affordances of each?
   d. How was color used to highlight mathematical thinking?
   e. What words or phrases were captured to support language development and mathematical discourse?
5. Repeat steps 1-4 with a new shortcut or shortcuts.
6. Reflect on learning. Prompts may include:
   a. A new annotation technique I’ll try is... because I can use it to...
   b. The next time I annotate a student idea I will...because...
   c. When annotating student ideas I’ll ask myself...

Annotation Pitfalls:
∞ Reproducing an annotation you prepared versus annotating the thinking actually being shared by the student.
∞ Adding in too much annotation all at once versus layering in annotations as the discussion unfolds.
∞ Focusing on the answer instead of the thinking.