Reflecting on Practice: Worthwhile Tasks

Session 3
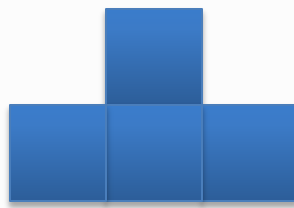
Implementing Tasks: Maintaining Fidelity
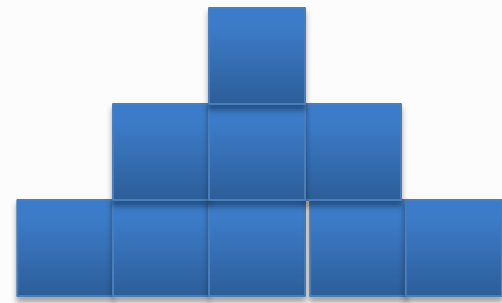
In this figure as the step changes, the _____ also changes

Step 1   Step 2   Step 3

Peterson, 2006

In this figure as the step changes, the _____ also changes

Peter Liljedahl

Peter Liljedahl
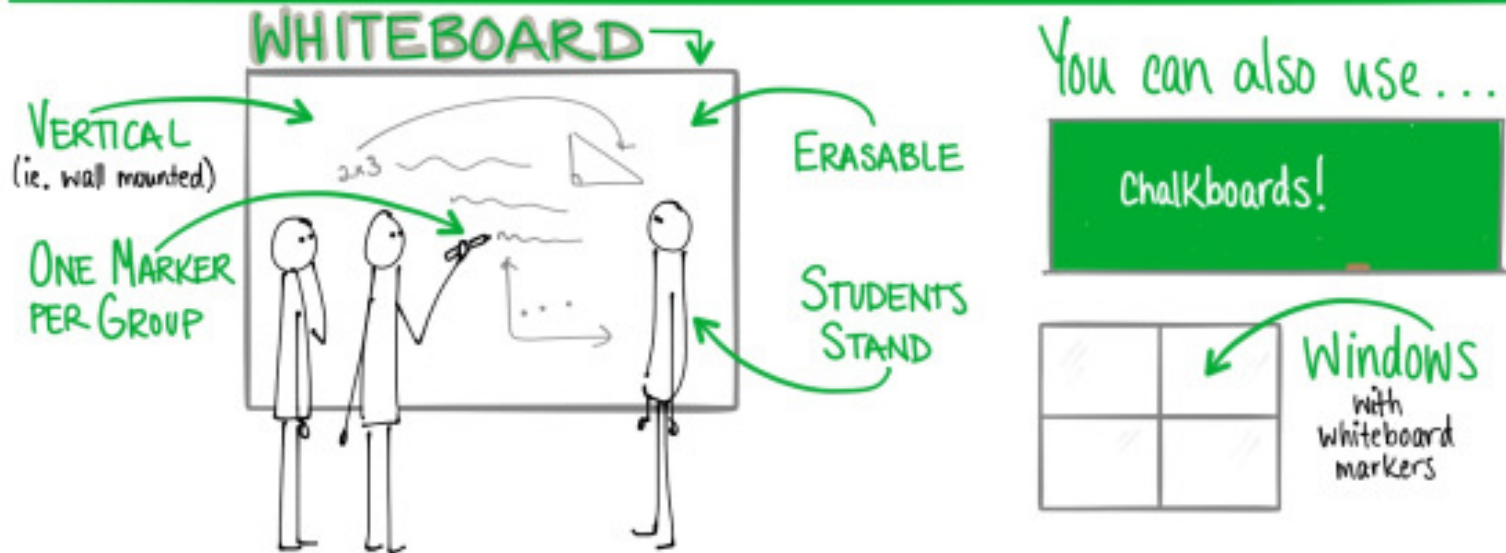
Investigate

With your trio, pick one of the attributes in our list and investigate how it changes. Make a conjecture and try to prove it. How would a graph, a table, and/or an equation support your conclusion?

(If time, explore a 2nd or 3rd property)

Putting on your Teacher Hat

With your trio, decide what your lesson goal(s) will be

Possible goals:

- Distinguish between linear and quadratic relationships
- Distinguish between closed form and recursive rules for sequences
- Interpret numerical, algebraic and geometric representations of a mathematical concept
- Describe a geometric pattern by an algebraic expression
- Recognize a quadratic relationship and be able to find a closed form rule for the relationship
- Recognize and be able to describe the components of an arithmetic sequence
- Explain what rate of change means in different situations
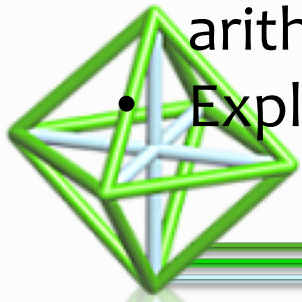
Select and Sequence

As a trio, keeping your learning goal in mind, **walk around** and **select a few examples** of work that you would want to have your class discuss.

Sequence the work in the order in which you want the discussion to take place and be ready to defend your choice of sequence for the discussion.

Once you are finished, sit at any table with your trio (move chairs if you need ☺)

Connections

- It is important to bring ideas together for students.

- What connections would you want students to discuss? How would you help them see those connections?

Possible mathematical connections

1. Which changes led to linear equations and which lead to quadratic? Is there an explanation?

2. What were the advantages and disadvantages of different approaches (symbolic vs. tables vs. graphs vs diagrams)?

3. What is the distinction between patterns and proof? Is this important? Why or why not?

4. Identify where it was important to "attend to precision".
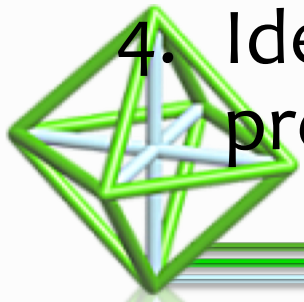
The 5 Practices

- Anticipate
- Monitor
- Select
- Sequence
- Connect
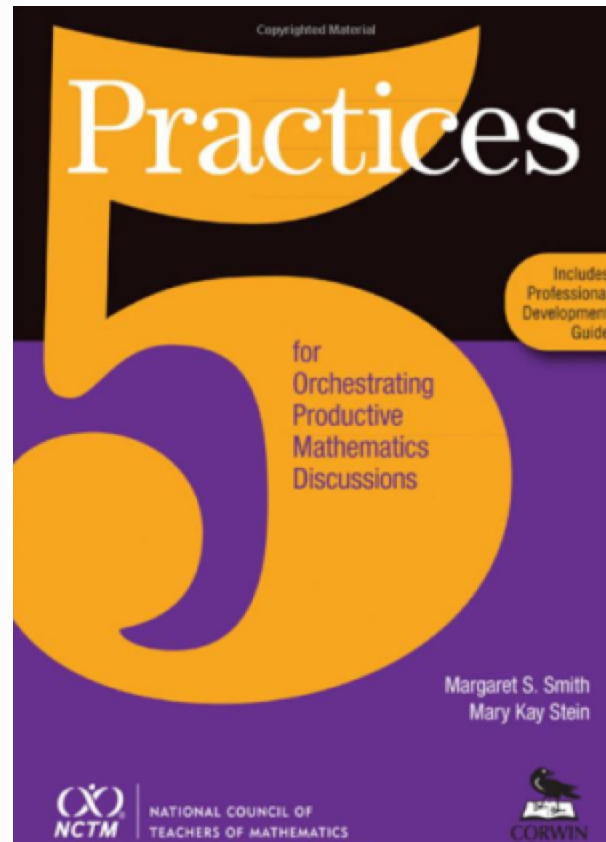
Smith & Stein, 2011

Consider the task we just looked at and it's implementation.

As a student, what was useful about this task? What did you like? What didn't you like?

Consider the task we just looked at and it's implementation.

As a teacher, what was useful to you? What did you like? What didn't you like? What would you change? How would you change it?

Reflecting on Practice: Worthwhile Tasks

Session 1 – What Makes a Worthwhile Task

Session 2 – Adapting Tasks to make them Worthwhile

Session 3 – Implementing Tasks: Maintaining Fidelity

References

- Horn, I. (2012). Strength in numbers: Collaborative learning in secondary mathematics. Reston VA: National Council of Teachers of Mathematics

- Peterson, B. (2006). Linear and quadratic change: A problem from Japan. *The Mathematics Teacher*, 100(3). Reston VA: National Council of Teachers of Mathematics.

- Smith, M., & Stein, M.(2011). *5 practices for orchestrating productive mathematics discussions.* Reston VA: National Council of Teachers of Mathematics

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