

# Reflection in Grades 2 and 3 Lesson Study

December 2, 2020

## Research Question:

*Supporting students to reflect on and communicate their own thinking to advance in learning*



The lesson study team hypothesized that the following actions would be important elements in supporting students to reflect on their learning. Each hypothesis is listed below followed by the team's reflection.

## Hypothesis 1 – Horizontal and vertical mathematizing

*“Horizontal mathematization involves going from the world of life into the world of symbols, while vertical mathematization means moving within the world of symbols.” These two forms of mathematization are of equal value.*

- Most of this task students were horizontally mathematizing and connecting to the context.
- Once the double number line was co-constructed during the congress the teacher was able to ask students for any patterns they notice to begin a discussion towards proportional reasoning.
- Asking students to share out one thing they learned after the congress prompted several generalized statements.

- It may be useful to record students' "reflections" of what they learned during the congress on a learning scroll.

## Hypothesis 2 – Use of talk moves

*Use of the talk moves (how many understand what \_\_\_ just said, explain again, now how many, check in with your partner*

- The teacher pressed students for reasoning in many circumstances, using turn and talks to allow students to articulate reasoning. The following up for students to explain why they are using a strategy, bringing more kids along in development.
- The students were clearly more habituated to explaining their strategy than just getting an answer.
- The teacher consistently asked students to explain what they think another student is thinking was helpful in digging deep into the strategies they were using.
- Pushing students' ideas back to the kids allowed development to occur throughout the string.
- During conferrals, pressing for reasoning about why students were doing what they were also provides an opportunity for the teacher to model students' thinking.
- Pressing students for reasoning about the thinking coming from the students was causing students to reflect.

## Hypothesis 3 – Mathematics as a social activity

*By listening to what others find out and discussing these findings, the students can get ideas for improving their strategies. Moreover, the interaction can evoke reflection, which is necessary to reach a higher level of understanding. (Congress)*

- During the investigation, students were working in pairs without being told how to solve the problem. Because of this structure, students would pose ideas to each other, challenging each other's ideas.
- The string of related problems allowed students to add on to each other's thinking.
- It's important for students to have the time and space to discuss their ideas in the investigation.
- The gallery walk is a supportive structure in allowing students to improve their own strategies and reflect on their own.

## Hypothesis 4 – Contexts in tandem with models

*Contexts that have model potential serve as an important device for bridging this gap between informal and more formal mathematics. First, the students develop strategies closely connected to the context. Later on, certain aspects of the context situation can become more general, which means that the context more or less acquires the character of a model and as such can give support for solving other, but related, problems. Eventually, the models give the students access to more formal mathematical knowledge.*

- There are opportunities in this task to connect the ruler to the double number line, to help understand some of the big ideas on the landscape for measurement.
- The teacher can model students' thinking on the double number line because the context refers to linear measurement and the students can connect the context to that model.
- Teachers can use the context to model students' thinking, quoting what students' said to further the discussion.