

Example Planning Tool

Make Meaning Discussion

Planning productive talk requires a clear purpose, structure and outcome for the discussion. How important are discussions? Many NGSS Practices require social interaction and discourse as everyday classroom activities.



Curriculum: Investigating Water Transformations

Lesson: Investigation 4

Investigation Question:

What does a drop of water from our classroom dropper weigh?

What is the purpose of the discussion?

For students to jointly construct explanations for how objects such as a bucket of sand or water can have significant weight given that a single drop of water or a grain of sand has no perceptible weight.

What is the focus question that leads off the discussion? Open Closed

If a drop of water weighs just $1/30$ g, how do you explain why a bucket of water is so heavy?

Discussion Type

- Eliciting ideas Constructing Explanations
 Analyzing and Interpreting Data Consolidating Learning
 Other: _____

What responses can I anticipate?

There are millions of drops in a bucket and each one weighs a fraction of a gram. If you have enough drops, $1/30$ of a gram millions of times over will add up to a bucket of water that feels heavy and can be weighed.

How will I bring the discussion to a close?

Repeat the Discussion Focus Question and summarize what I heard students say. If there's disagreement, ask a student to restate various explanations and reasoning. Ask the class to agree or disagree and back up position with evidence or reasoning.

Recap the idea that tiny things may not register weight in our hands or on our scales but if we have enough of them, the combined weights will add up to something we can feel or measure on our scales.

What NGSS Science and Engineering Practices Do the Students Engage in During Discussion?

- 1. Asking questions (for science) and defining problems (for engineering)
- 2. Developing and using models
- 3. Planning and carrying out investigations
- 4. Analyzing and interpreting data
- 5. Using mathematics and computational thinking
- 6. Constructing explanations (for science) and designing solutions (for engineering)
- 7. Engaging in argument from evidence
- 8. Obtaining, evaluating, and communicating information