Example Planning Tool

Story Line

Planning a sequence of learning experiences that allows students to figure out the answer to an investigation question requires developing a story line. Students use their findings in each investigation to progressively create a richer explanation for their answer to the investigation question.

Curriculum: Transformations of Matter

Learning Experience: 3. Water to Ice, Investigations 10-12

What are the Learning Goals? (See PLC1):

- Weight is conserved during melting and freezing so the amount of matter stays the same. Volume may not be conserved.
- Water is composed of particles that have weight, occupy space and are too small to see. During freezing and melting the number and kind of particles remains the same.
- Melting and freezing change the form of water, but not the material.

What is the Driving Question? (What do students have to figure out?) If you cannot find one, can you craft one yourself?

Can Ice and Water be the same material when so many properties differ?

How does the answer to the investigation question develop over a sequence of learning experiences?

What is the Investigation Question?	Findings – What evidence will students find to help figure out the answer to the question?	What learning experiences will help students find the evidence?
10. How are ice and water the same and different?	Ice and water are both matter but, at the observable level, have some different properties	Compare observable properties of ice and water.
11. What happens to weight and volume when	The volume of a sample of water in a closed container increases when it freezes. The weight stays the same.	Collect and analyze weight and volume data from sealed bottle of

water freezes?	Since the weight does not change, there's the same amount of matter.	water before and after freezing.
12. What changes and stays the same when ice melts?	The volume of a sample of water in a closed container decreases when it melts. The weight stays the same; There's the same amount of matter. Water is composed of particles that have weight, occupy spacy and are too small to see. When water freezes, it is composed of the same particles.	Collect and analyze weight and volume data from sealed bottle of water before and after melting. Use particle model to explore what changes and what stays the same when water melts and freezes.
What claim can you make that answers the investigation question?	When water freezes and melts, the form of water changes (from liquid to solid to liquid) but the weight stays the same and there is no change in the number and kind of particles so ice is the same material as water.	

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