

Summer Nanoscience Camp

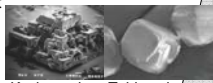
Learning-Goals Driven Design and Evaluation Plan

BACKGROUND

- 2-week summer nanoscience camp
- 30 middle school students

RESEARCH QUESTIONS

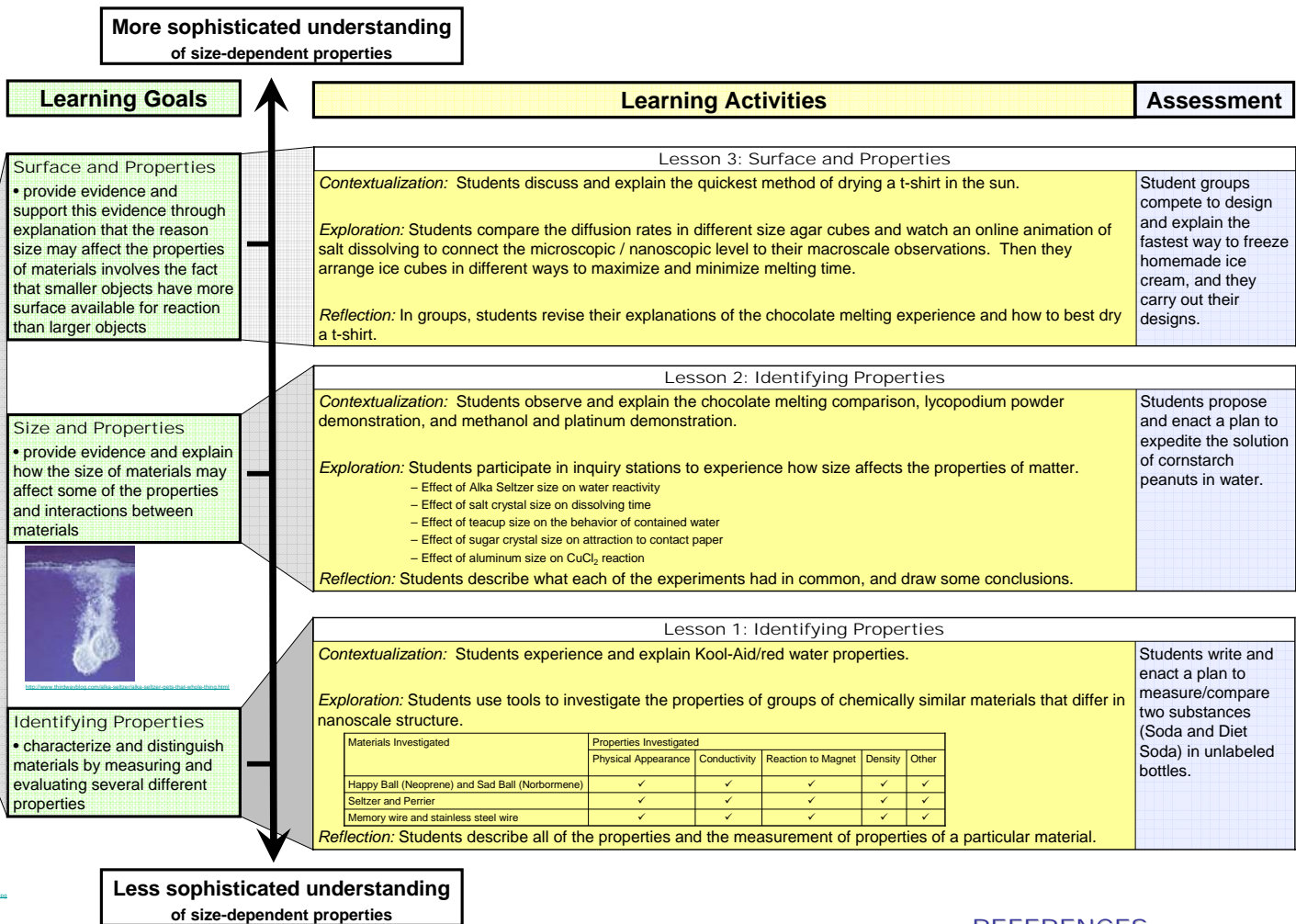
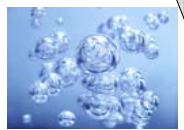
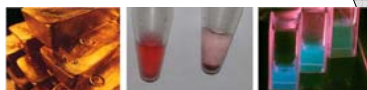
- How emergent science foster students' ability to connect knowledge across topics in traditional disciplines that are important for nanoscience?
- How can interdisciplinary, inquiry-based, out-of-school activities impact student learning about the fundamental concepts of size and scale and size-dependent properties of matter?
- How can we effectively assess student learning in out-of-school settings?



Kosher salt Table salt

Big Idea

Size-Dependent Properties
Some of the characteristic properties of matter change with size, particularly as the size of the sample decreases and approaches the nanoscale.



DESIGN PROCESS

I. Big Ideas

- Selection based on an evaluation of last year's camp, research in middle-school student understanding of topics important to nanoscience, and National Standards

II. Learning Goals

- Unpacking Big Ideas elucidates necessary content
- Ordered to reflect research in conceptual development and evaluation of last year's camp
- Expressed as ways we expect students to be able to use their knowledge

III. Assessments and Learning Activities

- contextualized in terms of prior experience
- inquiry-based to support student idea construction
- Hierarchical and connected to help students build knowledge
- Address common misconceptions
- Assessments embedded maintain learning continuity
- Assessments designed to map the conceptual progress of individual students

REFERENCES

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