Background

This is our first lesson of our six-week science unit on matter. In order to foster continuity between our science units, this first lesson will build upon our work on extreme weather from last quarter. To achieve this, our scientists will be activating their prior knowledge about the water cycle. Already in their arsenals are vocabulary terms such as “water vapor” and “evaporation” and concepts such as heat (or lack thereof) being the source of state change. I will draw out this existing understanding and build upon it the language of our current science unit (solid, liquid, gas, states, and matter). Previously, students struggled with the concept of water becoming a gas, so hopefully the vocabulary support will help to solidify this understanding. Students also found the concept of clouds being composed of either liquid water or solid water (snow/ice) to be rather puzzling. This introductory lesson does not directly address the concepts of clouds, but the emphasis on heat transfer should strengthen their schema of why clouds are composed of a certain substance.

This work on matter is related to the following MA State Curriculum Frameworks in Science: 3) Describe how water can be changed from one state to another by adding or taking away heat. Scientists will also achieve a Common Core ELA standard for informational text by beginning to organize their ideas and writing with the scientific method: 3) Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.

To support their developing proficiency with the concept of matter, I have scaffolded their learning in several ways:

1. Our matter unit begins with activating and employing prior knowledge.
2. Scientists will be participating in a discovery experiment that will (hopefully) pique their curiosity for the entire lesson and unit.

My rationale for this lesson is also informed by my specific group of science learners. To best serve these scientists, we will work in homogeneous pairs that allow students of the same ability to support and push one another.

Round Focus

In this round, I am focused on the practices or habits of minds of scientists. My main goal is for students to discover something meaningful about the world in which they live. Scientists will be provided with the vocabulary support for the lesson, but it is not imperative that they use it. Instead, I want them to bring to the table whatever conceptual understanding they bring with them and grow that through a genuine process of scientific exploration. To further emphasize the discipline specific goals of this lesson, I have provided students with a basic version of the scientific method that will guide us through the experiment. This round is grounded by learning goals closely tied to the MA frameworks (mentioned above). Our content objective is as follows: SWBAT explore what makes matter change state. This is complemented by this language objective: SWBAT explain orally and in writing that adding heat to snow will melt it. My professional focus for this round is on building more sharing/discussion time into the lesson.