



NGSS Phenomena: A Heuristic for Coming up with Academically Productive Phenomena

The new vision for science education features a three dimensional view of learning that involves: science and engineering practices, crosscutting concepts, and disciplinary core ideas. To engage students in authentic scientific experiences in these 3-dimensions, phenomena plays a key role in having students work to figure out core ideas in science. The phenomena that students should be working to explain will allow them to use these core ideas to help explain things in the natural world.

While there have been resources created to help educators evaluate a phenomenon that they have found, many educators find it challenging to brainstorm phenomena to help lead units or lessons. This tool is to help educators with a process to help come up with phenomena that might be useful in a Next-Gen unit.

Let's say that we were designing a unit on **chemical reactions (5-PS1-4)**. Here we want students to figure out that when **two or more different substances are mixed**, sometimes a **new substance with different properties can be formed**. How do we find a great phenomenon for that unit?

The graphic below is designed to help you to brainstorm ideas that may lead you to finding or creating an anchoring phenomenon that can guide students thinking in this (and any) unit.

Taking the topic of chemical reactions - what are your answers to the questions below? Do any help lead you down a path of brainstorming academically productive phenomena? What about other topics you are teaching?

