FIGURE 1: Key features of the *NGSS*.

Phenomenon based	Student learning is driven by figuring out a natural or constructed phenomenon.
Three dimensional	Students come to an understanding of a core idea through the use of a practice that informs or is informed by a crosscutting concept.
Student centered	Students are the primary ones doing and talking about science ideas. Students actively co-construct understanding with the support of the teacher.
Coherent from the student perspective	Students connect learning activities with each other over time to understand why they are doing each activity to figure out a phenomenon.

FIGURE 2: Rubric for evaluating the key features of the *NGSS*.

Feature	Not designed for *NGSS*	Somewhat designed for *NGSS*	More designed for *NGSS*
Phenomenon based	Teacher focuses on skills or content without a connected, relevant phenomenon OR students do not engage with phenomenon introduced in class.	Phenomenon used as hook or example for students to work with but not as a driver of goals or activities.	The goals and activities of the lessons are focused on figuring out a conceptually rich phenomenon.
Three dimensional	Students learn about a DCI without engaging in practices or CCCs OR students develop components of a practice or CCC without learning about an idea.	Students develop components of a SEP or CCC and learn about a DCI. These may or may not be integrated.	Practices and/or CCCs are used to figure out DCIs and/or CCCs.
Student centered	Lessons are mostly students receiving information (via teacher talk, reading and/or videos) rather than constructing or making sense of ideas.	Students engage in hands-on activities, but almost all cognitive work has already been done by teacher OR students discuss ideas but teacher maintains primary control over discussion flow and connections.	Students are actively constructing their understanding during lessons OR students discuss ideas as a group with little direct control by the teacher.
Coherent from the student perspective	There is no attempt to connect lessons to past or future lessons.	The teacher plays the main role in connecting lessons to past and future lessons.	Students are the primary ones making sense of how lessons are connected to past or future lessons.

Note: DCIs = disciplinary core ideas; CCCs = crosscutting concepts; SEPs = science and engineering practices.

FIGURE 3: Example of a traditional versus an NGSS-designed approach.

Feature	A more traditional approach	A more *NGSS*-designed approach
Phenomenon based	Real-world examples are used to illustrate concepts but not to anchor the lesson. Students are not "figuring out" the phenomena throughout the lesson.	An anchoring phenomenon such as the insulated cup motivates students' sensemaking throughout the unit as they try to figure out how the phenomenon works or happens.
Three dimensional	Students are mostly learning vocabulary words or seeing examples of the SEPs or CCCs without actually doing that work themselves.	Students use SEPs such as asking questions, modeling, or carrying out investigations and CCCs such as systems thinking to figure out core ideas as they make sense of the anchoring phenomenon.
Student centered	Student talk is limited to closed questions that require students to repeat back information they learned in the lesson. Students complete hands-on activities but do not make decisions about what they should do to get a desired outcome.	Students engage in hands-on investigations to help them explore and make sense of ideas rather than confirm ideas already told to them. Students co-construct ideas from these investigations with each other and the teacher, using SEPs and CCCs to help them.
Coherent from the student perspective	Lessons are mostly independent of each other or the teacher explains how students' previous work might be helpful in the next lesson.	Students use models and questions from one lesson to guide their thinking throughout the unit. Students ask questions at the end of a lesson to help them understand why they would need to do future investigations in the following lessons.

Note: CCCs = crosscutting concepts, SEPs = science and engineering practices.