



Ready!



Implementing the NM STEM Ready! Science Standards

Student Engagement

An instructional shift with the NM STEM Ready! Science Standards centers on students experiencing a coherent set of activities to explain big science ideas. Big science ideas are weaved together for students to explain phenomena. The 5E instructional model can help in planning coherent experiences for students. The model follows the constructivist approach to learning where learners build new ideas on top of prior knowledge and understanding. Student questioning, experiences, and discussions to build new understanding are essential in the 5E model (Tyler and DiRanna, 2018).

Phenomena-Based Learning

Phenomena-based learning requires the belief that students are active knowledge builders and problem solvers (Daehler and Folsom, 2016). Designing a learning sequence that makes sense from students' perspective calls for an engaging anchoring phenomenon. Students should not easily explain an anchoring phenomenon; it should be complex for students to anchor learning to a unit. Other phenomenon, investigative phenomenon, are the focus of shorter learning sequences and build upon one another to support students in developing understanding of scientific concepts related to the anchoring phenomenon.

Anchoring phenomenon should not only be scientifically complex and sound but also should be relevant to students' lives. This would ensure students be engaged in figuring out the phenomenon and have an entry point [prior knowledge] to begin making sense of the phenomenon. Contexts for identifying anchoring phenomenon include students' everyday lives, their local communities, or would be important beyond a students' life at school.

Resources

[Resources currently exist](#) to help teachers begin to design learning sequences centering on students' exploring and explaining phenomenon. Start by using [the checklist](#) on selecting quality phenomena. Search for phenomena related to the unit you are addressing and see if it matches your criteria of quality phenomena. The California NGSS Early Implementers Initiative produced [a list](#) of possible phenomena by grade level as part of a released report summarizing teachers and administrators experiences using the 5E instructional model and phenomena-based learning.

References

Daehler, K., and Folsom, J. (2016). Making Sense of SCIENCE: Phenomena-Based Learning. Retrieved from: <http://www.WestEd.org/mss>

Tyler, B., & DiRanna, K. (2018). Next Generation Science Standards in practice: Tools and processes used by the California NGSS Early Implementers. San Francisco, CA: WestEd. Retrieved from <https://www.wested.org/resources/next-generation-science-standards-in-practice/>



Reach out to the [Math and Science Bureau staff](#) with questions or for more information.

Did You Know?

Achieve has awarded the NGSS Design Badge to [5 science units designed for the NGSS](#) that have earned the highest rating on the Educators Evaluating the Quality of Instructional Products (EQuIP) Rubric for Science. These units utilize student sense-making around phenomena.



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