



5.8.19  
Vol. 1  
Issue 15

# Implementing the NM STEM Ready! Science Standards

## Did You Know?

NSTA recorded a 90 minute  
[webinar on constructing  
explanations](#)

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### Science and Engineering Practices - Constructing Explanations

Sense making requires students to be engaged in understanding the world by generating, using, and extending scientific knowledge around a phenomenon (Schwarz et al., 2017) through explanations. When classrooms focus science education on application [phenomenon] then students are motivated to explain and the focus of learning shifts from *learning about* a topic to *figuring out* why or how something happens. *A Framework for K–12 Science Education* emphasizes eight practices that scientists and engineers use in their profession and that students utilize in their K–12 science education. Constructing explanations, one of the eight practices, provides explanatory accounts of the physical world.

### Constructing Explanations

*A Framework for K–12 Science Education* states explanations are accounts that link scientific theory with specific observations or phenomenon; they explain observed relationships between variables and describe the mechanisms that support cause and effect inferences around them (NRC, 2012). Students construct explanations to explain *how* or *why* the phenomenon occurs based on data gathered by student investigations. Key elements of an explanation include addressing the phenomenon, an account of how and why the phenomenon happened, and is evidence-based. Explanations that draw from a scientific model or core ideas (i.e. evidence-based) support students having a deeper understanding of the phenomenon. Constructing explanations help students see science as a process to understand the world around us, rather than the memorization of discrete facts.

Constructing explanations, engaging in argumentation, and developing models may coincide in classrooms. As students refine their models, they are simultaneously revising their explanations. The explanation is the “playing out” of the model to answer the investigative question.

### Classroom Practice

Identify places in the curriculum to provide opportunities for students to answer a question related to the phenomenon, develop an account of how or why the phenomenon occurs, and use gathered evidence to support the explanation. Having a collaborative classroom environment supports students in developing their ideas about the phenomenon and incorporating them into their writing and discussions. Instructional strategies that foster this environment are [modeling talk moves](#) and [sentence stems](#) along with norms for collaboration.

#### References:

National Research Council. (2012). *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas*. Washington, DC: The National Academies Press.  
<https://doi.org/10.17226/13165>.  
Schwarz, C.V., Passmore, C., & Reiser, B.J. (2017). *Helping students make sense of the world using next generation science and engineering practices*. Arlington, VA: NSTA Press, National Science Teachers Association.



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