



Ready!



Implementing the NM STEM Ready! Science Standards

Did You Know?

[Appendix F](#) of the NGSS identifies ways to incorporate this practice into classrooms.

Science and Engineering Practices - Analyzing & Interpreting Data

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). 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. Analyzing and interpreting data, one of the eight practices, equip students with tools to derive meaning from data.

Analyzing & Interpreting Data

Data comes in a variety of forms including, but not limited to pictures, measurements, or calculations. Both Schwarz et al. (2017) and Osborne (2014) states the practice highlights determining the relationship of the data [i.e. analysis] and its significance or implications to the questions investigated [i.e. interpretation] supported by a wide range of tools and processes. For example, students using numerical data to create a bar graph between the height of a ramp and speed of a car should explain and understand the relationship shown between the variables. Examining the variables' relationship to their understanding of energy helps address the question students investigate.

Students' interpretation of data includes explaining the relationship of the evidence to the investigation, leads to refining models or supporting explanations. Their analysis and interpretation of data may lead to new questions, catalyzing new investigations.

Classroom Practice - Using Tools Appropriately

Students should be aware of all analysis the tools available when working with data. Students may choose a tool they are most familiar with, which may not be the most efficient or appropriate analysis tool. During the school year, provide students with experiences where they have to analyze their collected data using a variety of data analysis tools. Reflecting on the benefits and limitations of tools allow for better selection of tools in the future.

References:

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.

Osborne, J. (2014). Teaching Scientific Practices: Meeting the Challenge of Change. *Journal of Science Teacher Education*, 25(2), 177-196. [doi:10.1007/s10972-014-9384-1](https://doi.org/10.1007/s10972-014-9384-1)



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