**Science Standards for Alaska: What are Science and Engineering Practices (SEPs)?**

SEPs describe behaviors that scientists engage in as they investigate and build models and theories about the natural world and the key set of engineering practices that engineers use as they design and build models and systems. The NRC uses the term practices instead of a term like “skills” to emphasize that engaging in scientific investigation requires not only skill but also knowledge that is specific to each practice. Part of the NRC’s intent is to better explain and extend what is meant by “inquiry” in science and the range of cognitive, social, and physical practices that it requires. Although engineering design is similar to scientific inquiry, there are significant differences. For example, scientific inquiry involves the formulation of a question that can be answered through investigation, while engineering design involves the formulation of a problem that can be solved through design. Strengthening the engineering aspects of the Next Generation Science Standards will clarify for students the relevance of science, technology, engineering, and mathematics (the four STEM fields) to everyday life.[[1]](#footnote-1)

The following practices are considered essential for learning science and engineering in grades K-12:

* Asking questions (for science) and defining problems (for engineering)
* Developing and using models
* Planning and carrying out investigations
* Analyzing and interpreting data
* Using mathematics and computational thinking
* Constructing explanations (for science) and designing solutions (for engineering)
* Engaging in argument from evidence
* Obtaining, evaluating, and communicating information

In many cases, the practices in the science and engineering fields are similar enough that they can be discussed together. In other cases, however, they are considered separately.[[2]](#footnote-2)

1. National Science Teachers’ Association. Please visit website: [National Science Teaching Association Practices - Science and Engineering Full Version](https://ngss.nsta.org/PracticesFull.aspx) [↑](#footnote-ref-1)
2. National Research Council. A Framework for K-12 Science Education. 2012. [↑](#footnote-ref-2)