Next Generation Science Standards
Appendix H: Understanding the Scientific Enterprise: The Nature of Science in NGSS

Grades 6, 7, 8

Adopted 2013

Understandings about the Nature of Science

1. **Scientific Investigations Use a Variety of Methods** AH.1
    1. Science investigations use a variety of methods and tools to make measurements and observations. 6-8.AH.1.1
    2. Science investigations are guided by a set of values to ensure accuracy of measurements, observations, and objectivity of findings. 6-8.AH.1.2
    3. Science depends on evaluating proposed explanations. 6-8.AH.1.3
    4. Scientific values function as criteria in distinguishing between science and non-science. 6-8.AH.1.4

2. **Scientific Knowledge is Based on Empirical Evidence** AH.2
    1. Science knowledge is based upon logical and conceptual connections between evidence and explanations. 6-8.AH.2.1
    2. Science disciplines share common rules of obtaining and evaluating empirical evidence. 6-8.AH.2.2

3. **Scientific Knowledge is Open to Revision in Light of New Evidence** AH.3
    1. Scientific explanations are subject to revision and improvement in light of new evidence. 6-8.AH.3.1
    2. The certainty and durability of science findings varies. 6-8.AH.3.2
    3. Science findings are frequently revised and/or reinterpreted based on new evidence. 6-8.AH.3.3

4. **Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena** AH.4
    1. Theories are explanations for observable phenomena. 6-8.AH.4.1
    2. Science theories are based on a body of evidence developed over time. 6-8.AH.4.2
    3. Laws are regularities or mathematical descriptions of natural phenomena. 6-8.AH.4.3
    4. A hypothesis is used by scientists as an idea that may contribute important new knowledge for the evaluation of a scientific theory. 6-8.AH.4.4
    5. The term "theory" as used in science is very different from the common use outside of science. 6-8.AH.4.5

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5. **Science is a Way of Knowing** AH.5
    1. Science is both a body of knowledge and the processes and practices used to add to that body of knowledge. 6-8.AH.5.1
    2. Science knowledge is cumulative and many people, from many generations and nations, have contributed to science knowledge. 6-8.AH.5.2
    3. Science is a way of knowing used by many people, not just scientists. 6-8.AH.5.3

6. **Scientific Knowledge Assumes an Order and Consistency in Natural Systems** AH.6
    1. Science assumes that objects and events in natural systems occur in consistent patterns that are understandable through measurement and observation. 6-8.AH.6.1
    2. Science carefully considers and evaluates anomalies in data and evidence. 6-8.AH.6.2

7. **Science is a Human Endeavor** AH.7
    1. Men and women from different social, cultural, and ethnic backgrounds work as scientists and engineers. 6-8.AH.7.1
    2. Scientists and engineers rely on human qualities such as persistence, precision, reasoning, logic, imagination and creativity. 6-8.AH.7.2
    3. Scientists and engineers are guided by habits of mind such as intellectual honesty, tolerance of ambiguity, skepticism and openness to new ideas. 6-8.AH.7.3
    4. Advances in technology influence the progress of science and science has influenced advances in technology. 6-8.AH.7.4

8. **Science Addresses Questions About the Natural and Material World.** AH.8
    1. Scientific knowledge is constrained by human capacity, technology, and materials. 6-8.AH.8.1
    2. Science limits its explanations to systems that lend themselves to observation and empirical evidence. 6-8.AH.8.2
    3. Science knowledge can describe consequences of actions but is not responsible for society's decisions. 6-8.AH.8.3