

8 Science and Engineering Practices

Asking Questions & Defining Problems

- Are students encouraged to ask questions?
- Are students provided the opportunity to ask questions or identify problems that they can then pursue (answer or solve)?
- Are students encouraged and guided to pursue answers and solve problems on their own?
- Are students given the right to fail, recount that failure, and decide what to do differently next time?

Investigation and Empirical Inquiry

Developing & Using Models

- Are students representing systems and relationships through writing, drawing, building, and other manipulatives?
- Are students encouraged to create models to visualize and understand the concepts they are investigating?

Investigation and Empirical Inquiry

Planning & Carrying Out Investigations

- Are students guided on how to plan and direct investigations that originated from their own ideas?
- Are students encouraged to lead their own learning?

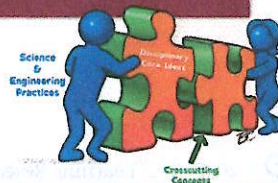
Investigation and Empirical Inquiry

Analyzing & Interpreting Data

- Are students given opportunities to gather and review multiple sources of data and interpret their meaning?
- Are students encouraged to consider more than one explanation and/or interpretation?

Development and Construction of Explanations

Adapted from: <https://ngss.nsta.org/PracticesFull.aspx>



8 Science and Engineering Practices

Using Mathematics & Computational Thinking

- Are students given the opportunity to quantify their data?
- Are students allowed to choose the mathematical tools needed to conduct their investigations?

Development and Construction of Explanations

Constructing Explanations & Designing Solutions

- Are students synthesizing all the information they've gathered to construct their own explanations?
- Are students communicating their ideas to others using a variety of methods?
- Are students encouraged to use their explanations to create a design or to improve on a design they have created?

Development and Construction of Explanations

Engaging in Argument From Evidence

- Are students given the opportunity to defend their explanations using evidence that they have gathered?
- Are students given the opportunity to develop and voice their arguments?

Obtaining, Evaluating, & Communicating Information

- Are students given the opportunity to evaluate and reflect on their designs and investigations with each other?
- Are students engaged in critical interpretations of sources of information (other students' experiments, tables, graphs, articles)?
- Are students given time to provide each other with constructive (positive and critical) feedback?
- Are students able to take the feedback and incorporate it into future designs and investigations?

Analysis, Debate and Evaluation

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