SOUTH CAROLINA
DEPARTMENT OF EDUCATION

Graphic Organizers for the Science and Engineering Practices

Graphic organizers are useful scaffolds for any content area and can be used to help students organize their ideas for a variety of classroom tasks. The graphic organizers linked in this document are specifically aligned to the eight Science and Engineering Practices (SEPs) of the Science Standards. These resources were developed for use with early elementary (K-2), upper elementary (3-5), and secondary students (6-12). These tools are not the only ways that students can organize their understanding of science concepts but may provide a useful scaffold for student learning.

To achieve the Performance Expectations (PEs) as described in the Science Standards, students need rich experience with a variety of SEPs across their K-12 experience. The SEPs are valuable tools to help students with developing, understanding, and connecting Disciplinary Core Ideas and Crosscutting Concepts across learning experiences, but students need support in making these connections. Additionally, there is overlap across the graphic organizers. This reinforces student understanding that the SEPs are connected practices that scientists and engineers use in their work, not isolated or independent "steps" of science and engineering.

For each graphic organizer, a teacher version has also been developed. This version mirrors the student version in format but adds additional support for teachers; including supporting language and the vertical articulation statements for the appropriate grade band. The * on the vertical articulation statements denotes ideas that are not included in the end of instruction PEs. However, these statements can be used to progress student learning.

Each graphic organizer is available as a PDF format for printing. These graphic organizers have been adapted from the work of Andersen (n.d.), the Georgia Department of Education (2013), and Peacock (n.d.)

- Asking Questions and Defining Problems
  - Teacher K-2
  - Print K-2
  - Teacher 3-5
  - Print 3-5
  - Teacher 6-12
  - Print 6-12
- Developing and Using Models
  - Teacher K-2
  - Print K-2
  - Teacher 3-5
  - Print 3-5
  - Teacher 6-12
  - Print 6-12
- Planning and Carrying Out Investigations
  - Teacher K-2
  - Print K-2
  - Teacher 3-5
  - Print 3-5
  - Teacher 6-12
  - Print 6-12
- Analyzing and Interpreting Data
  - Teacher K-2
  - Print K-2
  - Teacher 3-5
  - Print 3-5
  - Teacher 6-12
  - Print 6-12
- Using Mathematical and Computational Thinking
  - Teacher K-2
  - Print K-2
  - Teacher 3-5
  - Print 3-5
  - Teacher 6-12
  - Print 6-12
- Constructing Explanations and Designing Solutions
  - Teacher K-2
  - Print K-2
  - Teacher 3-5
  - Print 3-5
  - Teacher 6-12
  - Print 6-12
- Engaging in Argument from Evidence
  - Teacher K-2
  - Print K-2
  - Teacher 3-5
  - Print 3-5
  - Teacher 6-12
  - Print 6-12
- Obtaining, Evaluating, and Communicating Information
  - Teacher K-2
  - Print K-2
  - Teacher 3-5
  - Print 3-5
  - Teacher 6-12
  - Print 6-12

References

Andersen, P. (n.d.). Graphics and Tools. The Wonder of Science. https://thewonderofscience.com/graphics

Georgia Department of Education (2023). 3-5 Science and Engineering Practices Graphic Organizer. Science_3-5_Graphic_Organizers_Science_and_Engineering_Practices.pdf

Georgia Department of Education (2023). K-2 Science and Engineering Practices Graphic Organizers. Science_K-2_Graphic_Organizers_Science_and_Engineering_Practices.pdf

Peacock, J. (n.d.). Graphic Organizer Tools to Support the Crosscutting Concepts. bit.ly/CCCGOs

South Carolina Department of Education. (n.d.). Science and Engineering Practices Vertical Articulation. Retrieved July 7, 2025, from Science and Engineering Practices Vertical Articulation Landing Page