

Parent's Backpack Guide to the Next Generation Science Standards

NEXT GENERATION SCIENCE STANDARDS

In September of 2013, the Delaware State Board of Education adopted the Next Generation Science Standards (NGSS) making Delaware the seventh state in the nation to adopt the rigorous, internationally benchmarked standards. This guide is designed to help you understand how the standards will affect your child, what changes you will see and what you can do at home to help your child in the classroom.

Why Are the Next Generation Science Standards?

The Next Generation Science Standards are rigorous, innovative standards that will prepare a generation of students to be successful in a world with an ever-increasing emphasis on science and technology. The standards are built upon a vision for science education established by A Framework for K-12 Science Education published by the National Academies' National Research Council in 2011.

If you know what these expectations are, then you can work with the teacher and help your child prepare.

WHAT IS "A FRAMEWORK FOR K-12 SCIENCE EDUCATION"?

A Framework for K-12 Science Education consists of a limited number of elements in three dimensions: (1) scientific and engineering practices, (2) crosscutting concepts, and (3) disciplinary core ideas in science. The framework describes how science elements should be developed across grades K-12. The framework is also designed so that students continually build on and revise their knowledge and abilities throughout their school years. To support learning, all three dimensions need to be integrated into standards, curricula, instruction, and assessment.

DIMENSION 1: SCIENTIFIC AND ENGINEERING PRACTICES

Engaging in the full range of scientific practices helps students understand how scientific knowledge develops and gives them an appreciation of the wide range of approaches that are used to investigate, model, and explain the world. It gives them a true feel of what a career in a science-related field might be like.

- 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

DIMENSION 2: CROSS CUTTING CONCEPTS

The seven crosscutting concepts encompass big ideas in science and engineering that cut across disciplines and connect knowledge from the various disciplines into a coherent and scientific view of the world.

1. Patterns
2. Cause and effect: mechanism and explanation
3. Scale, proportion, and quantity
4. Systems and system models
5. Energy and matter: flows, cycles, and conservation
6. Structure and function
7. Stability and change

DIMENSION 3: DISCIPLINARY CORE IDEAS

The Disciplinary Core Ideas described in the *Framework* include core ideas for the physical sciences, life sciences, earth and space sciences, and engineering. The focus is on a limited number of core ideas in science and engineering.

TALKING TO YOUR CHILD'S TEACHER

All children have different interests and will be drawn to different types of science activities. Listed are a few activities designed for you to do with your child at home or in the community. These activities can show your child that science plays a part in many everyday activities and that it is used in many places and environments.

- Observe the moon each night and draw its shape to see how it changes over the course of a month.
- Cook together. Cooking is a great example of science in action. Identify solids, liquids and gases. Watch what happens when heat is added to a mixture or when vinegar is added to milk.
- Go for a walk and talk about things you observe in nature. Observe similarities and differences in various animals or plants, habitats for different animals, running water after it rains, and more.
- Recycle waste products from your household. As a family, discuss what types of things can be recycled and organize your method to do so.
- Watch the weather forecast on the news or a weather channel and discuss weather patterns happening across the country.

For more information, please visit www.nextgenscience.org