

DragonflyTV Nano

Scope and Sequence | Correlation with National Science Education Standards

Each *DragonflyTV Nano* show addresses a “Big Idea” in nanoscience education and is based on the research and recommendations of leaders in the nano-education community.*

DFTV Segment NSES Correlation

Show 701: Size and Scale

In this episode, viewers are introduced to the nanoscale and how it relates to the macro- and micro-scale worlds, including examples of nanoscale objects, nanoscience, and nanotechnology in our everyday lives. And they see some tools that scientists use to investigate and manipulate nanomaterials.

What’s Nano?

National Council of Teachers of Mathematics Standard
 Number and operation standard Grades 3–5:
 Understand numbers, ways of representing numbers, relationships among numbers, and number systems
 Measurement Standard Grades 6–8:
 Understand measurable attributes of objects and the units, systems, and processes of measurement

Where’s Nano?

National Science Education Standard
 Science and Technology Grades K–4:
 Abilities to distinguish between natural objects and objects made by humans
 Science in Personal and Social Perspectives Grades 5–8:
 Science and Technology in Society

Show 702: Structure of Matter

In this episode, viewers see that all matter is made of atoms. Atoms interact with other atoms to form molecules. At the nanoscale, atoms and molecules assemble to give matter unique properties.

Hockey Sticks

National Science Education Standard
 Physical Science Grades K–4:
 Properties of objects and materials
 Physical Science Grades 5–8:
 Properties of objects and materials

Butterfly Wings

National Science Education Standard
 Life Science Grades K–4:
 The characteristics of organisms
 Life Science Grades 5–8:
 Structure and function in living systems

Show 703: Small is Different

In this episode, viewers see that properties of matter at the nanoscale can be different than properties at the macroscale.

Surface Area

National Science Education Standard
 Physical Science Grades K–4:
 Properties of objects and materials
 Physical Science Grades 5–8:
 Properties of objects and materials

Stained Glass

National Science Education Standard
 Physical Science Grades K–4:
 Properties of objects and materials
 Physical Science Grades 5–8:
 Properties of objects and materials



DFTV Segment

NSES Correlation

Show 704: Forces at the Nanoscale

In this episode, viewers see that forces other than gravity dominate at the nanoscale.

Gecko Feet	National Science Education Standard Life Science Grades K–4: The characteristics of organisms Life Science Grades 5–8: Structure and function in living systems
Nasturtium Leaves	National Science Education Standard Life Science Grades K–4: The characteristics of organisms Life Science Grades 5–8: Structure and function in living systems

Show 705: Applications

In this episode, viewers see that scientists can manipulate matter at the nanoscale to create new materials and applications.

Self-Assembly	National Science Education Standard Science and Technology Grades K–4: Understandings about science and technology Science and Technology Grades 5–8: Understandings about science and technology
Bone Regrowth	National Science Education Standard Science and Technology Grades K–4: Understandings about science and technology Science and Technology Grades 5–8: Understandings about science and technology

Show 706: Nanotechnology and Society

In this episode, viewers see that nanotechnology will change the way we live. As with all scientific advances, it will affect society in both good and bad ways and in ways we cannot yet predict.

Water Clean-up	National Science Education Standard Science in Personal and Social Perspectives Grades K–4: Science and technology in local challenges Science in Personal and Social Perspectives Grades 5–8: Science and Technology in Society
Nanosilver	National Science Education Standard Science in Personal and Social Perspectives Grades K–4: Changes in environments Science in Personal and Social Perspectives Grades 5–8: Risks and benefits

*DragonflyTV wishes to acknowledge the following projects for laying the groundwork in nanoscience education.

- The Big Ideas of NanoScience (grades 7-12) by Shawn Stevens et al
- Nanoscale Science (grades 6-12) NSTA book by Gail Jones et al
- Nano Learning Goals Workshop NCLT and SRI International
- NanoSense NSF funded curriculum for HS students by SRI International
- NISE Network (Nanoscale Informal Science Education Network)

