



# Curriculum overview of Guided Projects organized by NGSS disciplinary core ideas

	1 Pulling	2 Speed	3 Robust Structures	4 Frog's Metamorphosis	5 Plants and Pollinators	6 Prevent Flooding	7 Drop and Rescue	8 Sort to Recycle
<b>Life Sciences</b>				3-LS1-1 3-LS3-1 3-LS3-2	2-LS2-2 4-LS1-1			
<b>Earth and Space Sciences</b>			4-ESS3-2			2-ESS2-1 3-ESS3-1 3-ESS2-1 4-ESS2-2	3-ESS3-1	2-PS1-1
<b>Physical Sciences</b>	3-PS2-1	3-PS2-2 4-PS3-1						
<b>Engineering, Technology, and Applications of Science</b>	3-5-ETS-1-2		3-5-ETS-4-3			3-5-ETS-1-2	3-5-ETS-1-2	K-2-ETS-1-2



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<b>Life Sciences</b>	3-LS4-3	3-LS4-2 4-PS4-3 4-LS1-2	2-LS4-1 3-LS3-2 3-LS4-1				2-LS4-1 3-LS4-4	
<b>Earth and Space Sciences</b>					3-ESS3-1			
<b>Physical Sciences</b>								2-PS1-3
<b>Engineering, Technology, and Applications of Science</b>				3-5-ETS1-2 3-5-ETS1-3	3-5-ETS1-2	3-5-ETS1-1 3-5-ETS1-2	K-2-ETS1-1 K-2-ETS1-3	K-2-ETS1-2



## NGSS performance expectations: Grade 2

### Life science

- 2-LS2-1.** Plan and conduct an investigation to determine if plants need sunlight and water to grow.
- 2-LS2-2.** Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.
- 2-LS4-1.** Make observations of plants and animals to compare the diversity of life in different habitats.

### Physical science

- 2-PS1-1.** Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.
- 2-PS1-2.** Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.
- 2-PS1-3.** Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a wholly new object.
- 2-PS1-4.** Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.

### Earth and space science

- 2-ESS1-1.** Use information from several sources to provide evidence that earth events can occur quickly or slowly.
- 2-ESS2-1.** Compare multiple solutions designed to slow or prevent wind or water from changing the physical shape of the land.
- 2-ESS2-2.** Develop a model to represent the shapes and kinds of land and bodies of water in an area.
- 2-ESS2-3.** Obtain information to identify where water is found on earth and understand that it can be solid or liquid.

### Engineering

- K-2-ETS1-1.** Ask questions, make observations, and gather information about a situation people want to change in order to define a simple problem that can be solved through the development of a new or improved object or tool.
- K-2-ETS1-2.** Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a problem.
- K-2-ETS1-3.** Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.





## NGSS performance expectations: Grade 3

### Physical science

- 3-PS2-1.** Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.
- 3-PS2-2.** Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.
- 3-PS2-3.** Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.
- 3-PS2-4.** Define a simple design problem that can be solved by applying scientific ideas about magnets.

### Earth and space science

- 3-ESS2-1.** Represent data in tables and graphic displays to describe typical weather conditions expected during a particular season.
- 3-ESS2-2.** Obtain and combine information to describe climates in different regions of the world.
- 3-ESS3-1.** Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.

### Engineering

- 3-5-ETS1-1.** Define a simple design problem reflecting a need that includes specified criteria for success and constraints on materials, time, or cost.
- 3-5-ETS1-2.** Generate and compare multiple, possible solutions to a problem based on how well each meets the criteria and constraints of the problem.
- 3-5-ETS1-3.** Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

### Life science

- 3-LS2-1.** Construct an argument that some animals from groups that help members survive.
- 3-LS4-1.** Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.
- 3-LS4-3.** Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.
- 3-LS4-4.** Make a claim about the merit of a solution to a problem that is caused when the environment changes and the types of plants and animals that live there may also change.
- 3-LS1-1.** Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.
- 3-LS3-1.** Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variations of these traits exist in a group of similar organisms.
- 3-LS3-2.** Use evidence to support the explanation that traits can be influenced by the environment.
- 3-LS4-2.** Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.



## NGSS performance expectations: Grade 4

### Energy

**4-PS3-1.** Use evidence to construct an explanation relating the speed of an object to the energy of that object.

**4-PS3-2.** Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.

**4-PS3-3.** Ask questions and predict outcomes about the changes in energy that occur when objects collide.

**4-PS3-4.** Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.

**4-ESS3-1.** Obtain and combine information to describe the fact that energy and fuels are derived from natural resources and that their use will affect the environment.

### Structure, function, and information processing

**4-PS4-2.** Develop a model to describe how light reflecting from objects and entering the eye of a sighted person allows objects to be seen.

**4-LS1-1.** Construct an argument that plants and animals have internal and external structures that function to support their survival, growth, behavior, and reproduction.

**4-LS1-2.** Use a model to describe how animals receive different types of information through their senses, then process the information in their brain, and respond to the information in a range of different ways.

### Waves: Waves and information

**4-PS4-1.** Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.

**4-PS4-3.** Generate and compare multiple solutions that use patterns for the transfer of information.

### Earth's systems: Processes that shape the earth

**4-ESS1-1.** Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.

**4-ESS2-1.** Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.

**4-ESS2-2.** Analyze and interpret data from maps to describe patterns of earth's features.

**4-ESS3-2.** Generate and compare multiple solutions to reduce the impacts of natural earth processes on humans.

### Engineering

**3-5-ETS1-1.** Define a simple design problem reflecting a need or a want that includes criteria for success and constraints on materials, time, or cost.

**3-5-ETS1-2.** Generate and compare possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

**3-5-ETS1-3.** Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.





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	1 Pulling	2 Speed	3 Robust Structures	4 Frog's Metamorphosis	5 Plants and Pollinators	6 Prevent Flooding	7 Drop and Rescue	8 Sort to Recycle
<b>Practice 1:</b> Ask questions and define problems	●	●	●	●	●	●	●	●
<b>Practice 2:</b> Develop and use models				●	●			
<b>Practice 3:</b> Plan and carry out investigations	●	●	●					
<b>Practice 4:</b> Analyze and interpret data	●	●	●					
<b>Practice 5:</b> Use mathematics and computational thinking	●	●	●	●	●	●	●	●
<b>Practice 6:</b> Construct explanations and design solutions						●	●	●
<b>Practice 7:</b> Engage in argument from evidence	●	●	●	●	●	●	●	●
<b>Practice 8:</b> Obtain, evaluate, and communicate information	●	●	●	●	●	●	●	●



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<b>Practice 2:</b> Develop and use models	•	•			•			
<b>Practice 3:</b> Plan and carry out investigations								•
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<b>Practice 5:</b> Use mathematics and computational thinking	•	•	•	•	•	•	•	•
<b>Practice 6:</b> Construct explanations and design solutions			•	•		•	•	•
<b>Practice 7:</b> Engage in argument from evidence	•	•	•	•	•	•	•	•
<b>Practice 8:</b> Obtain, evaluate, and communicate information	•	•	•	•	•	•	•	•



# Assess with WeDo 2.0

There are many ways you can monitor and assess your students' progress through a WeDo 2.0 project. Here are explicit assessment tools you could use, including:

- Anecdotal record grid
- Observation rubrics grid
- Documentation pages
- Self-assessment statements

