



## 8<sup>th</sup> Grade Science

In 8th grade students engage in Science and Engineering Practices and apply Crosscutting Concepts to deepen their understanding of science. Core ideas included in 8th grade are, *Ecosystems, Heredity, Biological Evolution: Unity and Diversity, Structure and function of living things, and Engineering Design*. Your child will have multiple opportunities to demonstrate science learning. Including, but not limited to, using models, providing evidence to support arguments, obtaining and analyzing data about relationships and interactions among observable components of different systems.

The 8th grade science curriculum highlights specific components of Life and Environmental Sciences to prepare your child for the investigations of high school sciences. Your child's ability to formulate questions and models will require higher order thinking skills. To be successful, your 8th grader will need to:

- Provide an explanation of genetic variation
- Use reasoning skills to explain how characteristic behaviors determine the probability of reproduction.
- Describe why changes in DNA structure may cause beneficial or harmful effects to the function of an organism.
- Conduct research on technical allowing advances in science.
- Gather, read and synthesize information from multiple sources to support a scientific claim.
- Interpret data to forecast future environmental events.
- Identify factors affecting photosynthesis and plant growth
- Ask questions to frame a hypothesis.
- Employ scientific principles to formulate a conclusion
- Provide evidence of how all living things are made up of cells.
- Apply scientific ideas to explain the anatomical similarities and differences of species

The Normandy Schools Collaborative will prepare your child by offering outdoor learning experiences and field trips as well as classroom learning labs. Your child will also navigate through online science simulations to extend learning. The 7th grade science exploration will prepare your child for long term successes in the sciences. Each lesson will provide knowledge needed to form critical evaluations of science systems.

### **Examples of Your Child's Work at School:**

- Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.
- Evaluate competing design solutions for maintaining biodiversity in ecosystems.
- Gather and synthesize information about the technologies that have changed the way humans influence inheritance of desired traits in organisms.
- Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.
- Define the criteria and constraints of a design problem to ensure a successful solution.
- Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.
- Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.
- Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

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## **How to Help Your Child at Home:**

- Encourage finding answers to questions through research and experimentation.
- Join a group or club that offers activities such as robotics and computer programming.
- Encourage and help design, create and maintain a terrarium to observe the interactions among Earth's spheres.
- Help your child plant a garden or grow plants in a pot.
- Encourage the playing of "maker" games and apps such as Minecraft that develop engineering and collaboration skills.
- Help your child to collect data and monitor use of energy and water at home.
- Utilize programs offered by your area nature center or recreation area.

## **21<sup>st</sup> Century Skills Learned by the End of 8th Grade**

- Ability to plan, organize and prioritize work
- Ability to communicate verbally with people inside and outside an organization
- Ability to obtain and process information
- Ability to analyze quantitative data
- Technical knowledge related to the job
- Proficiency with computer software programs
- Ability to create and/or edit written reports

Ability to produce a claim and justify it with evidence