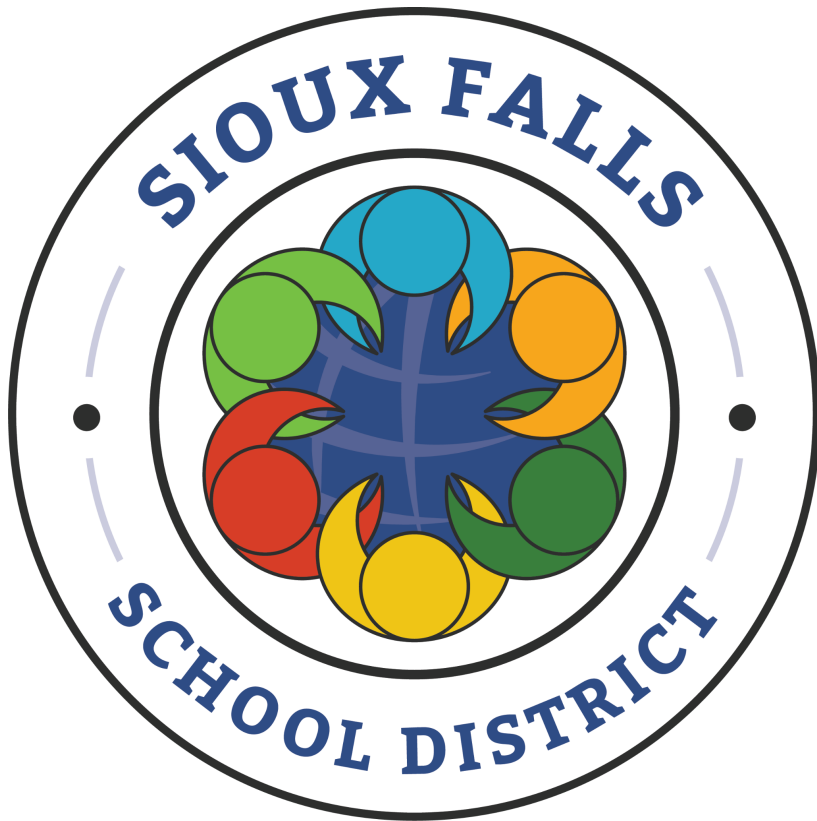




Sioux Falls School District

Curriculum Guide

First Grade Science

August 2023

Vision, Mission & Goals

Course Description:

Amplify Science is a curriculum that blends hands-on investigations, literacy-rich activities, and interactive digital tools to empower students to think, read, write, and argue like real scientists and engineers. Each unit of Amplify Science engages students in a relevant, real-world problem where they investigate scientific phenomena, engage in collaboration and discussion, and develop models or explanations in order to arrive at solutions.

In using this standards-based program, students engage with science and engineering practices, disciplinary core ideas, and utilize and apply crosscutting concepts in multiple modalities across the phenomena anchored lessons.



COURSE AT A GLANCE - First Grade Science

Unit 1: Animal and Plant Defenses

Earth is inhabited by a staggering variety of animals and plants, with incredible variation in size, shape, color and parts. How does each of these living things continue to survive? How do their offspring survive? How is their survival connected to the nearly endless variation we observe among living things? All living things must meet their basic survival needs, including getting food, water, and oxygen, and avoiding being eaten by other animals. The body parts (structures) of animals and plants function in ways that enable living things to meet their survival needs. Understanding how structures help organisms and their offspring meet survival needs serves as a foundation for future learning about adaptations, inheritance, genetics, natural selection, and evolution.

Students take on the role of aquarium scientists advising an aquarium director by helping answer young visitors' questions about Spruce the Sea Turtle, who will soon be released back into the ocean. They investigate how Spruce can survive in the ocean, especially since sharks live in the area. They then investigate a question about Spruce's offspring: How can Spruce the Sea Turtle's offspring survive where there are sharks? This context, which serves as the anchor phenomenon for the unit, provides concrete examples and motivation for students to discover the core ideas of the unit about how organisms and their offspring survive, particularly how they avoid being eaten. Students gather evidence through careful observations of photographs and videos of real organisms and by reading science texts. Students create multiple models throughout the unit to explain their ideas about how defenses function. They apply their knowledge to two other challenges along the way—first, by making a model that shows a way to defend the aquarium's animal food supply from being eaten by wildlife, and then, by making a model of a sea creature's defense against being eaten. By the end of the unit, students will be able to use ideas of structure and function to explain how a wide variety of animals and plants and their offspring defend themselves from being eaten.

Unit 2: Light and Sound

The creation of special effects in theater productions relies on clever and intentional use of light and sound. Light is used to create the illusion of buildings, trees, the ocean, or other aspects of the scene for a puppet show, including time of day or type of weather. Sound is also used to make a scene feel more realistic—for instance, by creating the sound of traffic in a city scene or the sound of crickets singing to indicate a warm summer evening. Just as any theater group has a costume designer, theater groups also have light engineers and sound engineers who design the way light and sound is used in a production.

In this unit, students take on the role of light and sound engineers as they are challenged with a design problem to design, build, and then project a scene for a puppet show. As light engineers, they investigate cause-and-effect relationships by tackling the question: How do we make different parts of a surface brighter or darker?. Students apply their new knowledge to create a background scene for a puppet theater, using patterns of light to create the effects they want. After using light to create a scene, students learn that sound also travels from a source and that vibrations cause sound. Finally, students take on the role of sound engineers to create sound sources for their puppet-show scene. By the end of the unit,

students will have engaged in several engineering design cycles in which they learn, plan, make, and test different solutions to a problem.

Unit 3: Spinning Earth

Humans live their daily routines according to patterns. Mealtimes, school and work hours, and bedtime and wake-up times are all daily cycles that are tied to the pattern of the sun's position in the sky. As the Earth spins, people across the world experience different times of day, but not all at the same time. A child in India will be asleep when a child in California is having lunch. In this unit, students embark on a study of the patterns that they observe in the sky. Students assume the role of sky scientists helping a young boy named Sai who lives in a place near them in order to understand the anchor phenomenon of the unit: What does the sky look like to people in different places on Earth right now?. Students explore what the sky looks like during the daytime and the nighttime. They examine Earth as a round, ball-shaped planet and develop an understanding of the orientation of Earth and the sun in space, allowing them to figure out that daytime and nighttime are the result of Earth facing or not facing the sun. Students explore the position of the sun in the sky throughout the day and notice the arc-like pattern that the sun makes in the sky during the daytime. They explore what they see in the sky at sunset, closely examining the change from daytime to nighttime. They gather data that shows that these patterns repeat from one day to the next in an ongoing cycle. Students develop an understanding that Earth is always spinning to explain these patterns. Finally, students investigate the phenomenon of why the lengths of daytime and nighttime change throughout the year, drawing conclusions about seasonal differences of daytime and nighttime.

[South Dakota State Science Standards](#)