

Nature Walk (K-2nd) – Energy & Matter

Cross Cutting Concept (CCC): Tracking fluxes of energy and matter into, out of, and within systems helps one understand the systems' possibilities and limitations.

The material below encompasses the Next Generation Science Standard components that may be covered in your students' tour. **Subsequent grade levels build off of the DCI's that they learned the previous year.**

Disciplinary Core Idea (DCI)

Relation to Program

Kindergarten

LS1.C Organization of Matter and Energy Flow in

Organisms: All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow.

During the walk, students are reminded that plants and animals need food – or energy – for their survival. This energy is obtained from their environment whether from the sun, plants, or other animals. As students explore this concept, they will discover that there are interdependent relationships between plant and animals.

LS2.B Cycles of Matter and Energy Transfer in

Ecosystems: Organisms obtain the materials they need to grow and survive from the environment. Many of these materials come from organisms and are used again by other organisms.

Docents will engage students in an exploration of the Garden. They will observe the many diverse animal and plant species that live here and the role native plants serve in their survival.

LS4.D Biodiversity and Humans: There are many different kinds of living things in any area, and they exist in different places on land and in water.

1st Grade

LS2.A Interdependent Relationships in Ecosystems:

Animals depend on their surroundings to get what they need, including food, water, shelter, and a favorable temperature. Animals depend on plants or other animals for food. They use their senses to find food and water, and they use their body parts to gather, catch, eat, and chew food. Plants depend on air, water, minerals, and light to grow. Different plants survive better in different settings because they have varied needs for water, minerals, and sunlight.

During the walk, students are encouraged to observe the different living conditions (e.g. shade, proximity to water, food availability) and reflect on what traits plant and animal species may need in order to survive. Students will observe the behaviors that animal and plant species engage in to obtain the food (energy) they need for their survival. Students are prompted to visualize the flow of this energy from plants to animals. This cycle of energy is also known as a food web.

2nd Grade

LS2.D Social Interactions and Group Behavior: Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size.

During the walk, students will observe various animal species throughout the Garden. Some live in groups while others are solitary. Docents will prompt students to reflect on and discuss the advantages and disadvantages of each social dynamic especially as it relates to food.

Science & Engineering Practices (SEP)

Asking Questions and Defining Problems: Asking questions and defining problems in K-2 builds on prior experiences and progresses to simple descriptive questions.

Planning and Carrying Out Investigations: Planning and carrying out investigations to answer questions or test solutions to problems in K-2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.

Analyzing and Interpreting Data: Analyzing data in K-2 builds on prior experiences and progresses to collecting, recording, and sharing observations.

During the walk, students are encouraged to ask questions about their surroundings and why things are occurring in nature. Docents will lead several inquiry-based activities that will engage students in nature and inspire curiosity. These inquiries will lead to observations and investigations in the pursuit of answering these questions. Docents will aid students in their investigations to help them analyze their own findings.

Performance Expectations (PE)

K-LS1-1: Use observations to describe patterns of what plants and animals (including humans) need to survive.

2-LS2-1: Plan and conduct an investigation to determine if plants need sunlight and water to grow.

On the walk, students observe plants and animals in their natural environment and form connections that all living things – including humans – need food, water, and shelter for survival.

After the walk, they will have the knowledge and experience to support their investigation of plants needing sunlight and water to grow.

California's Environmental Principle(s) & Concept(s)

Principle I: The continuation and health of individual human lives and of human communities and societies depend on the health of the natural systems that provide essential goods and ecosystem services.

Principle II: The long-term functioning and health of terrestrial, freshwater, coastal and marine ecosystems are influenced by their relationships with human societies.

Principle IV: The exchange of matter between natural systems and human societies affects the long-term functioning of both.

Throughout the walk, students are prompted to describe how humans rely on plants to survive. By the end of the tour, they will not only have an understanding on what plants provide humans but that our survival and way of life could not continue without them. In this discussion, students learn that human actions influence the natural environment with both immediate and long-term effects.

Through continual inquiry and observation, students will draw connections that humans, plants, and animals rely on natural systems to continue to exist.