TOWER HILL
BOTANIC GARDEN

SCHOOL AND EDUCATION PROGRAM CATALOGUE

All programs below are 90 minutes in length and are divided by grade to align with state and school curricula.

PROGRAMS FOR GRADE 1, 2

What is a Plant?

What is a plant and are all plants the same?
What does a plant need to live, and how do plants work?

Overview:
On this field trip students learn about the parts of a plant by dissecting and observing live plants to understand how they function and what they need to survive. Students illustrate what they see in the garden and make comparisons between different plants on a garden scavenger hunt.

1-LS1-1. Use evidence to explain that plants have roots, stems, leaves, flowers, and fruits that are used to take in water, air, and other nutrients, and produce food for the plant.
1-LS3-1. Use information from observations (first-hand and from media) to identify similarities and differences among individual plants or animals of the same kind.
2-LS2-3(MA). Develop and use models to compare how plants depend on their surroundings and other living things to meet their needs in the places they live.

Students will know:

- That all plants have roots, stems and leaves, and that plants need water air and nutrients to survive.
- That plants of the same kind have similar characteristics in their leaves, size, shape and color.
- That plants and animals depend on their surroundings as well as other living things to meet their needs.

Students will be skilled at:

- Identifying the parts of a plant.
- Understanding and listing what plants need to survive
- Comparing similarities and differences between plants of the same and different kind.
- Identifying and giving examples of how plants depend on their surroundings to meet their needs for survival.

What is an Ecosystem?

What is an ecosystem?

Overview:
To understand and explore ecosystems students will participate in a nature walk along on of the trails

at Tower Hill to identify ways in which the environment supports plant life. Students will also get their hands dirty in the youth garden planting or transplanting in the garden beds.

2-LS2-3(MA). Develop and use models to compare how plants and animals depend on their surroundings and other living things to meet their needs in the places they live.
2-LS4-1. Use texts and local environments to observe and compare (a) different kinds of living things in an area, and (b) differences in the kinds of living things living in different types of areas.

Students will know:
- That an ecosystem is an interconnected community of living things and their physical environment.
- That plants and animals depend on their surroundings and other living things to meet their needs for survival.
- That different plants and animals live in different ecosystems that meet their needs.

Students will be skilled at:
- Identifying and describing ways in which a local environment supports plant and animal life.
- Understanding and illustrating examples of interactions within a local ecosystem.
- Comparing different environments and identifying differences in the kinds of living things in different types of areas.

PROGRAMS FOR GRADE 3

Life Cycle of a Plant

How do plants grow and change?
What are some examples of different plant life cycles?

Overview:
Students will learn how plants grow and change during their lifecycles through observations of plants in the gardens. Students will learn about and compare the life of a tree with a plant and will plant their own seed to take home.

3-LS1-1. Different organisms have unique and diverse life cycles. All organisms have birth, growth, reproduction, and death in common but there are a variety of ways in which these happen.

Students will know:
- That various plants have unique and diverse life cycles.
- That all plants give birth, grow, reproduce, and die.

Students will be skilled at:
- Drawing the life cycle of various organisms.
- Labeling the stages of a plant's life cycle.
- Articulating verbally and expressing in writing what is happening during a particular stage.
- Identifying the commonalities in life cycles such as birth, death and the differences such as metamorphosis, etc.

PROGRAMS FOR GRADES 4, 5

Parts of a Plant

What are the parts of a plant?
How do plant structures support plant survival, growth, behavior and reproduction?

Overview:
On this field trip students will explore the function of the different parts of a plant and will make comparisons between different plant structures. Through botanical drawing students label and understand the function of different plant structures. Students will compare similarities and differences in structures between different plants and on a scavenger hunt to Tower Hill Summit.

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

Students will know:
- That plant structures vary by plant species and habitat.
- That plant structures contribute to the survival and reproduction of the plant.

Students will be skilled at:
- Labeling the parts of a flowering plant.
- Articulating verbally and expressing in writing the purpose of certain plant structures such as leaves, roots, stems and bark.
- Identifying the commonalities and differences between plant structures of various plant species and types.

PROGRAMS FOR GRADES 6, 7, 8

Plant Adaptations for Survival

How do plants and animals increase the probability of successful reproduction of plants?

Overview:
Students explore several examples of ways in which plants adapt to survive in nature: through seed dispersal, pollination and weather. Classes will plant or transplant in the youth garden and explore our gardens and nature trails.

7.MS-LS1-4. Construct an explanation based on evidence for how characteristic specialized plant structures increase the probability of successful reproduction of plants.

Students will know:
- That plants have specialized structures and adaptations that increase the probability of successful reproduction.
- That animal behaviors can increase the probability of successful plant reproduction.
- That the cell wall provides structural support for plants.

Students will be skilled at:

- Identifying and explaining examples of ways in which plants have adapted to increase the probability of reproduction.
- Articulating verbally and in writing what makes plants unique.

Ecosystem Exploration

What are the relationships among organisms in an ecosystem like?

Overview:

Students will observe and define the relationships between organisms in the gardens and landscapes of Tower Hill and explore the plants and animals in one of our gardens. Using information gathered through observation, students will illustrate the transfer of matter and energy in an ecosystem at Tower Hill.

7.MS-LS2-2. Describe how relationships among and between organisms in an ecosystem can be competitive, predatory, parasitic, and mutually beneficial and that these interactions are found across multiple ecosystems.
7.MS-LS2-3. Develop a model to describe that matter and energy are transferred among living and nonliving parts of an ecosystem and that both matter and energy are conserved through these processes.
7.MS-LS2-4. Analyze data to provide evidence that disruptions (natural or human-made) to any physical or biological component of an ecosystem can lead to shifts in all its populations.

Students will know:

- That organisms in an ecosystem share a variety of relationships between each other, including competitive, predatory, parasitic and mutually beneficial relationships.
- That matter and energy are transferred among living and nonliving organisms within an ecosystem.
- That cycling of matter includes the role of photosynthesis, cellular respiration, and decomposition, as well as transfer among producers, consumers (primary, secondary, and tertiary), and decomposers.

Students will be skilled at:

- Illustrating the relationship between living organisms in an ecosystem in a food chain.
- Illustrating transfer of matter and energy between organisms in an ecosystem in a food web.
- Describing verbally and in writing the relationships among organisms in an ecosystem at Tower Hill.