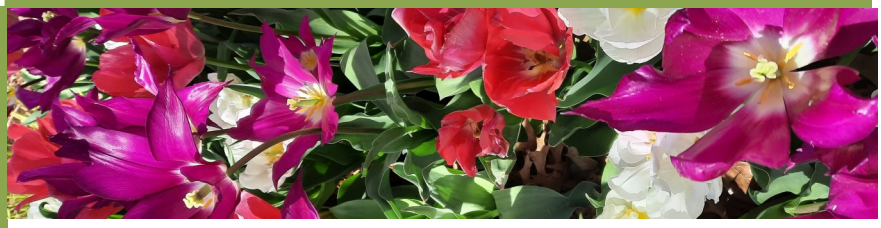
MYRIAD BOTANICAL GARDENS

Plant Problem Solvers

Pre-Program Curriculum Guide 1st, 2nd & 3rd



Thank you for selecting the Myriad Botanical Gardens to enrich the learning of your students. Our school programs supplement achievement towards the Oklahoma Academic Standards. Through the implementation of research-based methods and models, we strive to provide the most enriching experience possible.

Plant Problem Solvers—Using Nature's Example, is intended to empower students to discover more about the natural world by accomplishing the following learning objectives: students will identify human problems that have been solved by mimicking plant and animal solutions, investigate seed dispersal techniques, and explore plant adaptations during a conservatory hike.

Program Overview

Program Overview	Timing (variable)
1. Welcome and Introductions	10 minutes
2. "Plant Problem Solvers" Lesson	20 minutes
3. Book: A Fruit is a Suitcase for Seeds	10 minutes
4. Seed Dispersal Activity	20 minutes
5. "Plant Solutions" as a Conservatory tour	30 minutes
6. Conclusion, Children's Garden play and lunch Free play and lunch is self-guided	30 minutes

Your educational program will last 90-120 minutes. Groups are welcome to explore the garden grounds before and after your program at your leisure.

If your group will be split to accommodate group size, please decide in advance how you would like to divide your group into two groups. For split groups, one group will start with the lesson while the other starts in the conservatory.

Program Objective

Students will explore human problems that have solutions mimicking how plants and animals use their external parts to grow, survive and reproduce. Students will learn seed dispersal techniques and explore how some animals work together in groups to survive. We hope students will leave with an appreciation for plants and animals and a desire to make choices that promote healthy and sustainable lifestyles.

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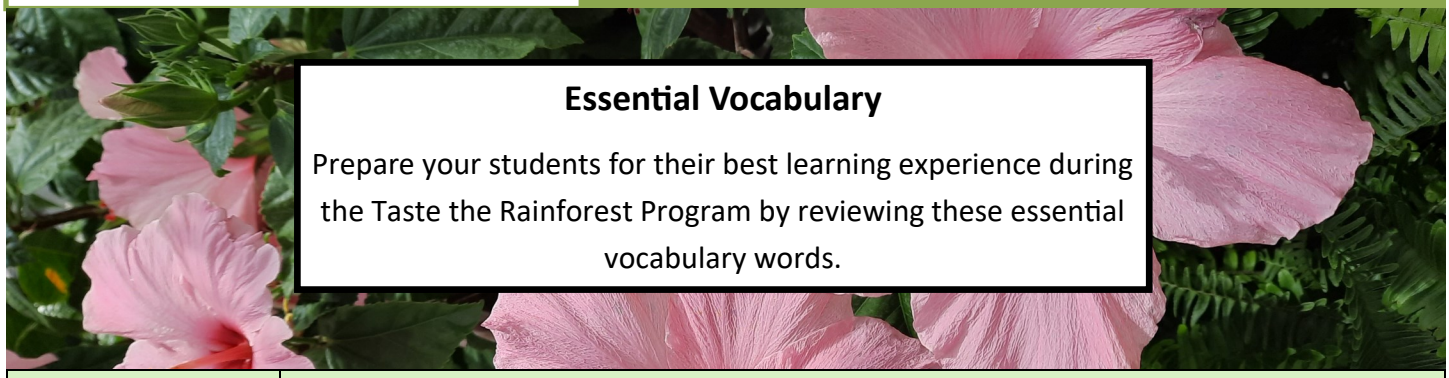

Essential Vocabulary

Prepare your students for their best learning experience during the Taste the Rainforest Program by reviewing these essential vocabulary words.

Term	Definition
Rainforest	Forests with tall trees, warm climates and large amounts of rain. Numerous plants and animals live here. Known as the world's oldest ecosystem.
Desert	Any large region that receives little rain each year. Few plants or animals live here.
Roots	The part of a plant that supports the plant and takes in water and nutrients.
Stem	The part of a plant that supports the leaves, transports water and nutrients.
Leaf	The part of the plant that uses sunlight to produce food for the plant.
Flower	The part of a plant that produces seeds.
Fruit	The part of the plant that protects the seeds and helps with seed dispersal. Many fruits are edible for humans and animals.
Seed	Produces a new plant.
Seed dispersal	The way in which plant seeds are transported to new sites for germination and growth of new plants.
Pollination	Transferring pollen from one flower to another flower.
Solution	Solving a problem or dealing with a difficult situation.
Mimic	Copy a behavior or look.

Study vocabulary online at quizlet.com teachers can share study sets, track student performance and create assessments. Students can access interactive flashcards, learn pronunciations and play match and quiz games.

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Oklahoma Academic Standards

The Taste the Rainforest Program explores the following Oklahoma Academic Standards

From Molecules to Organisms: Structure and Function (LS1)

1.LS1.1 Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.*

Clarification Statement: Examples of human problems that can be solved by mimicking plant or animal solutions could include designing clothing or equipment to protect bicyclists by mimicking turtle shells, acorn shells, and animal scales; stabilizing structures by mimicking animal tails and roots on plants; keeping out intruders by mimicking thorns on branches and animal quills; and detecting intruders by mimicking eyes and ears. **Assessment Boundary:** N/A

Science and Engineering Practice	Disciplinary Core Ideas	Crosscutting Concepts
Designing Solutions: • Use tools and materials provided to design a device that solves a problem.	• All organisms have external parts. • Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air. • Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow. • Animals have body parts that capture and convey different kinds of information needed for growth and survival. • Plants also respond to some external inputs. • Every human-made product is designed by applying some knowledge of the natural world and is built using materials derived from the natural world.	**Structure and Function:** • The shape and stability of structures of natural and designed objects are related to their functions.

Ecosystems: Interactions, Energy and Dynamics (LS2)

2.LS2.2 Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.*

Clarification Statement: Examples include: placing socks on the outside of students' shoes and walking outside allows socks to gather seeds, plant sock(s) to see what grows, use a pipe cleaner to move powder (like flour) from one place to another emulating flowers being pollinated by bees or other insects. **Assessment Boundary:** N/A

Science and Engineering Practice	Disciplinary Core Ideas	Crosscutting Concepts
Developing and Using Models: • Develop a simple model based on evidence to represent a proposed object or tool.	• Plants depend on animals for pollination or to move their seeds around. • Designs can be conveyed through sketches, drawings, or physical models. • These representations are useful in communicating ideas for a problem's solutions to other people.	**Structure and Function:** • The shape and stability of structures of natural and designed objects are related to their function(s).

Ecosystems: Interactions, Energy, and Dynamics (LS2)

3.LS2.1 Construct an argument that some animals form groups that help members survive.

Clarification Statement: Arguments could include examples of group behavior such as division of labor in a bee colony, flocks of birds staying together to confuse or intimidate predators, or wolves hunting in packs to more efficiently catch and kill prey. When animals are no longer part of their group, they may not survive as well. **Assessment Boundary:** N/A

Science and Engineering Practice	Disciplinary Core Ideas	Crosscutting Concepts
Engage in Argument from Evidence: • Construct an argument from evidence, data, and/or a model.	• 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.	**Cause and Effect:** • Cause and effect relationships are routinely used to explain change.

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Thank you for choosing the Myriad Botanical Gardens for your student's field trip experience!

Methods and Models

Through the implementation of research-based methods and models, we strive to provide the most enriching experience possible.

Marzano's Art and Science of Teaching
Explicit Instruction: Effective and Efficient Teaching
Instructional Theory Into Practice
Madeline Hunter Lesson Design
Bloom's Revised Taxonomy Model
Maslow's Hierarchy of Needs
Gardner's Theory of Multiple Intelligences
STEM/STEAM
The Science of Classroom Design
Gradual Release of Responsibility

Youth Group Visit Request Form

Please review our Group Programs Frequently Asked Questions and rules before filling out this form. **Please note, this form is only a request form and does not formally schedule the program. Education staff will contact you to formally schedule your program or tour.**

Email your completed form to education@myriadgardens.org

1. Group or School Name:

2. Group Billing Address:

3. Tax Exempt Yes or No (if yes, attached proof with your form):

4. Groups are 10 or more participating students. How many students will be attending?

5. Student Age Range:

6. How many accompanying adults (1 chaperone per every 5 students is free)?

7. Group Leader Name:

8. Group Leader Phone Number:

9. Group Leader Email:

10. Are you wanting to book a School Program, Guided Tour or Self-Guided tour (please check one)

- ☐ **Taste the Rainforest School Program K-2nd $7 per student, $9.50 adult**
- ☐ **Plant Problem Solvers School Program 1st-3rd $7 per student, $9.50 adult (NEW this year)**
- ☐ **Kaleidoscope Ecosystems School Program 3rd-6th $7 per student, $9.50 adult**
- ☐ **Looking at Leaves School Program 3rd-5th $7 per student, $9.50 adult (NEW this year 30 student max*)**
- ☐ **Guided Tour $6 per student, $9.50 adult**
- ☐ **Self-Guided Tour (Group Admission) $4 per student, $9.50 adult (tax is added unless tax exempt)**

School programs adhere to Oklahoma Academic Standards and feature an interactive lesson, guided conservatory tour and a scavenger hunt. The program runs from 10:00am to noon and is offered on Monday, Tuesday, Thursday and Friday. Our school programs are designed for grades K-6. A school program is a great choice for a school field trip for grades K-6. School Programs have a 10 student minimum and an 80 student maximum. Looking at leaves has a 30 student maximum.

A **Guided Tour** offers your group the opportunity to explore the conservatory with a knowledgeable guide. Tours last 30 minutes to an hour. We offer guided tours on Monday, Tuesday, Thursday and Friday. A guided tour is a great choice for middle school and high school students; however, it can be booked for any grade level. If your group includes students prek-6th grade, consider adding **scavenger hunts** to your group's experience. Guided tours have a 10 student minimum and a 40 student maximum.

Self-guided tours offer your group the opportunity to explore the conservatory at your own pace and time. You will not have a guide but booking in advance will allow you our group rate if you have 10 or more students (no max). This is a great choice for groups with numbers over our school group max or groups just wanting a self-guided experience. If your group includes students prek-6th grade, consider adding **scavenger hunts** to your group's experience.

11. If you are booking a tour, would you like to add scavenger hunt booklets 50 cents each, how many:

Please add three dates below. Please keep in mind School Programs run on a standard time schedule of 10:00 to noon**. If you are booking a tour, please include a preferred time next to your date.** We do not offer School Programs or Guided Tours on Wednesdays or Weekends. We cannot guarantee there will be an opening but offering us three preferred dates will streamline your booking process. We will follow up with you with-in three business days of receiving your request form to confirm a date.

School Programs and Guided Tours are on a first come first serve basis by turning in this booking sheet, and also depend on staff availability. You are always welcome to do a self-guided visit of the Crystal Bridge if our dates do not match.

12. Preferred Date (dates must be two weeks in advance**):**

13. Your second choice date:

14. Your third choice date:

15. Do you have any questions or special accommodations you would like to discuss?

16. By returning this form and scheduling a visit you agree to our policies:

I have read and agree to the attached rules document.

I understand payment is due upon arrival and must be paid in **one group total**, physical copies of a school's purchase order is also accepted, you must turn in the actual document.

If you have a large parent presence attending, please inquire about creating a parent group payment (if they will not be included in your school's payment). This will ensure your parents do not have to wait in line to pay individually at the normal rate.

We encourage assigning groups of students to a chaperone before arriving; we suggest a 1 to 5 adult to child ratio as we offer one free adult per every five students in your group. Children should be accompanied and safeguarded by their assigned adult at all times during your group's visit. Myriad Garden's staff will guide the lessons and activities associated with your field trip however we are not supervising or in the care of students during the field trip.

Please note, this form is only a request form and does not formally schedule the program. Education staff will contact you to formally schedule your program or tour.

Thank you for your interest in our educational experiences at the Myriad Botanical Gardens! Email your completed form to education@myriadgardens.org.