

Vertical Farm and Mobile Food Lab Programs

Grades K-2

½ Day Vertical Farm Program

Introduction to a Vertical Farm—Students will learn about growing plants hydroponically by observing our classroom vertical farm. They will identify the parts of the plants and learn about their requirements for growth.

Herbs and Spices Sensory Activity—Research suggests that our sense of smell influences our memory! In this activity students will learn about different herbs and spices using their sense of smell to identify them.

The Tiny Seed by Eric Carle—Students will be read the Tiny Seed by Eric Carle where they will learn about the requirements for growth for a plant as well as be introduced to a plant's life cycle.

“Garden in a Glove” - After observing the vertical farms and learning about a plant's requirements for growth, students are going to provide their seeds with everything they need to germinate. Germinate is a scientific word for sprout. They will be germinating seeds in a very small garden - a “Garden in a Glove” to take back to school.

½ Day Mobile Lab Program

Science:

Worms and Mush Making—Students will learn about decomposition and composting. They will meet “Lumbry” our 6 foot worm and some live friends. Students will then work together in teams to create food for the worms by mashing apples along with plant scraps.

Art:

Spicy Painting—Children will get to smell Nutmeg, Ground Cinnamon, Rosemary, Thyme, Turmeric; and talk about spices. They will use the spices to create an aromatic “Spice By Number” painting to take home.

Cooking with Herbs and Plants:

Young Chefs Creators—In the mobile teaching kitchen, students will cook, eat and learn. Students will explore and cook with plants while learning to use fresh herbs to flavor a delicious seasonal recipe. By learning about taste and fresh ingredients, students are introduced to becoming young chefs of their own culinary creations. Students will eat what they make.

NGSS & NJSLA-S: K-L-S-1-1, K-E-S S3-1, K-E-SS3-3, 2-LS2-1, 2-LS2-2

Grades 3-5

½ Day Vertical Farm Program

Introduction to a Vertical Farm—Students will learn about growing plants hydroponically by observing our classroom vertical farm. They will identify the parts of the plants and learn about their requirements for growth.

Garden in a Bottle—Can plants grow without soil? Using hydroponics, plants get the nutrients they need from a water solution. Terrestrial plants may be grown with only their roots exposed to the mineral solution! Students will work in teams to construct a simple hydroponic wick system in a plastic bottle; plant different seeds; take them back to school to conduct an experiment to test which plants grow best without soil.

Plant Pigment Separation—Plants produce their own food by using the sun's energy to transform carbon dioxide and water into sugar - this chemical process is called photosynthesis. For photosynthesis to work, pigment molecules must trap light energy from the sun to power the chemical reactions. Students will work in teams and use paper chromatography to observe the different plant pigments.

Herbs and Spices—We often say these words together: “flavored with herbs and spices.” But what's the difference between them? Students will come up with ideas about the similarities and differences between the two. They will then learn to differentiate between herbs and spices, and about the health benefits of certain herbs and spices.

½ Day Mobile Lab Program

Science:

Red Cabbage Indicator—Liquids all around us have either acidic or basic (alkaline) properties (acids taste sour; bases taste bitter and feel slippery). Students will learn about these properties and the pH scale by making a pH indicator from red cabbage. They will work in teams using the red cabbage indicator to measure the pH of different solutions made from plants.

Art:

Make Your Own Tea Bag—Herbal teas are popular with all ages and taste great. They are made from the infusion of plant material in hot water and contain no caffeine. Students will make their own herbal tea bags using coffee filters and the blend of herbs and spices they choose from the assortment provided on the Mobile Lab.

Cooking with Herbs and Plants:

The Improv Chef—In the mobile teaching kitchen, students will cook, eat and learn. Students will be encouraged to improvise while learning to use fresh herbs and additional ingredients to flavor a delicious seasonal plant based recipe. Students will develop an understanding of taste and ways to make the recipe their own. Students will eat their creations.

NGSS & NJSLA-S, 3-ESS3-1, 4-LS1-1, 5-LS1-1, 5-PS1-3, 5-PS1-4, 5-ESS3-1, 3-5-ETS1-1

Grades 6-8

½ Day Vertical Farm Program

Introduction to a Vertical Farm - Students will learn about growing plants hydroponically by observing our classroom vertical farm. They will compare and contrast this type of system model with traditional farming practices. They will discuss the pros and cons associated with this method of producing food. They will review requirements for plant growth.

Hydroponic Growth Rate Experiments—Students will work in teams to construct a simple hydroponic wick system in plastic bottles and plant basil seeds. They will design a set of experiments to conduct in their classrooms to measure the effects of light intensity and/or different nutrient concentrations on the growth of the basil plants.

DNA Extraction—All living organisms have genetic material made of DNA that makes up their chromosomes. Students will get “up close” to this amazing molecule by isolating DNA strands from a strawberry. They will work in teams to extract the DNA and capture and see multiple strands.

See Mitosis in Action! Root Squash—All living cells divide to grow - the process is called mitosis. Students will work in teams and prepare roots from plants in the vertical farm to view dividing cells under the microscope. They will observe plant chromosomes, identify the stages of cell division and count the number of cells in different stages. If time does not permit, the students can graph the results of their counts back at school.

½ Day Mobile Lab Program

Science:

Testing for Sugars and Starch—Simple carbohydrates (sugars) and complex carbohydrates (starches) are very important in our nutrition. Students will learn the difference between simple and complex carbohydrates and their role in human physiology. They will work in teams to investigate the presence of sugars and starches in various “eat”able plants.

Art:

Leaf Skeletons—A leaf's veining system provides food and water to the rest of its cells. Once a leaf is removed from the plant it is no longer getting the nutrients it needs from the ground through the stem of the plant and its tissue will break down easily. Students will treat leaves and remove the soft tissue - all that remains will be the delicate system of veins that make a lacy pattern! They can frame their leaf skeleton, or use it to decorate a homemade card.

Cooking with Herbs and Plants:

Exploring Flavor and Food Science—In the mobile teaching kitchen, students will cook, eat and learn. Students will explore and cook with plants while learning to use herbs to flavor a delicious seasonal fresh garden salad. By creating their own vinaigrette, students will understand the concept of emulsion while experimenting with flavor profiles. Students will eat their creations.

NGSS & NJSLA-S: MS LS1-1; LS1-2; LS1-6, MS LS2-1; LS2-3, MS ESS2-1, MS ESS3-3 MS ETS1 -1 ; ETS1 -2 ; ETS1 -3 ; ETS1 -4

The Mobile Food Lab is a fun, multi-sensory educational experience on wheels. Activities led by professional educators in science, art, and cooking, teach kids K-8 where food comes from, how it nourishes and impacts us, and how it shapes our world.

Book a Vertical Farm and Mobile Food Lab field trip to their home base, the Meadowlands Environment Center in Lyndhurst, NJ.

IMPORTANT INFORMATION

- 2 groups must be reserved for each day*
- Maximum 30 students per group
- \$21/student cost
- Charges apply to a minimum of 20 students/group (Minimum daily charge for 2 groups = \$800 with a 50% non-refundable deposit due prior)
- Each group receives 4 hours of programming
- Includes all food lab activities + vertical gardening
- Time: 9:30 - 2:00 (arrive 15 minutes early)
- Permission slip for each child required
- The Mobile Food Lab is nut-free

* If you wish to register a single class, please call us at 201-460-8300. We may be able to partner you with a class from another school.

By Booking the Mobile Food Lab you are also supporting job opportunities for adults with autism.

For more information or to register, please call 201-460-4623 or email

mdaly@ramapo.edu

The Mobile Food Lab is a joint initiative of diverse partners united in a mission to support learning, innovation, and unique employment opportunities.



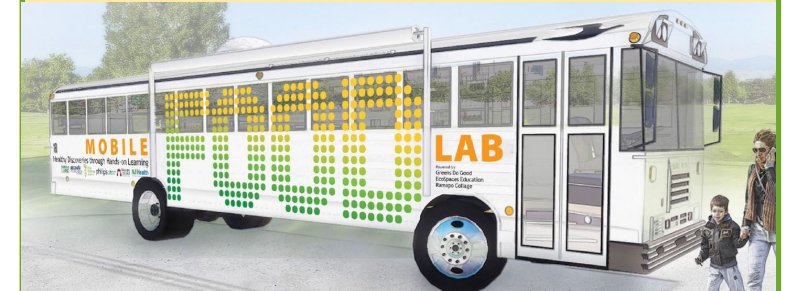
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Operated by
RAMAPO COLLEGE OF NJ

Vertical Farm & Mobile Food Lab



Healthy Discoveries Through Hands-On Learning

A FUN, MULTI-SENSORY
EDUCATIONAL
EXPERIENCE ON WHEELS

Three DeKorte Park Plaza
Lyndhurst, NJ 07071
Phone: 201-460-8300 Fax: 201-842-0630