



WHAT'S GROWING ON IN VIRGINIA

Virginia Foundation for Agriculture in the Classroom
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About the Newsletter

What's Growing On In Virginia? is a semiannual publication for Virginia educators and those who want to connect children with agriculture through education.

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For additional information and activities, visit our website at
AgInTheClass.org or call 804-290-1143

Student gardens improve academic performance.



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WHAT'S GROWING ON

in Virginia

AGRICULTURE IN THE CLASSROOM • SPRING 2017 / VOLUME NO. 1



Collegiate School students dig up radishes that were planted by their class.

Benefits of school gardens include satisfaction, scores and skills

Along with the obvious benefits of watching things grow, educators have found that school gardens help improve academic achievement, create pride in the school and have a positive impact on students' behavior.

Research has shown that when school gardens are cultivated into students' curricula, their academic achievement grows. According to Michigan State University Cooperative Extension, 12 studies of school gardens

between 1990 and 2010 found that "garden-based learning had a positive impact on students' grades, knowledge, attitudes and behavior."

North Carolina State University Cooperative Extension said gardening "offers schools a way of helping children to identify with their school and to feel proud of their own individual contribution. Gardening ties students to the social and material history of the land."

Other research indicates that students learn better when



Students check the growth of plants in their garden.

they are involved in the process. School gardens provide experiential, hands-on learning.

The informal, unstructured format of garden learning is flexible enough for different kinds of learners to benefit. "Gardening can bring any curriculum category to life—from language arts to lifestyle and nutrition," as well as math and science, according to MSUE.

Additionally, school gardening offers students opportunities for

outdoor exercise while teaching them a useful skill. And gardens containing fruit and vegetables can help revise attitudes about particular foods, according to NCSU Extension. "School gardening, especially when combined with a healthy lunch program or nutritional education, encourages more healthy food choices."

So if you're going to plant a school garden, dig into our guidelines for growing a successful one.

Tips for starting a school garden

- Find a place with at least six hours of sunlight per day, good drainage, access to water and easy access from the classroom.
- Start small, even if it's just a few containers.
- Plant crops that will mature and produce fruits or vegetables during the school year. The following crops do well in the spring or early fall and can be grown in the ground, in raised beds or in large containers

Beets	Peas
Broccoli	Radishes
Cauliflower	Spinach
Lettuce	Turnips
- Plant flowering plants that will bloom during the school year.
- During the winter, grow plants in a cold frame (a transparent-roofed enclosure built low to the ground that protects plants from cold weather), or put the garden to bed until spring.
- During the summer, use the garden for summer classes, invite school garden club members and their families to maintain the garden, or allow school staff to maintain the garden.

Hints on maintaining a garden

Maintenance is the most critical part of a successful school garden. If it is poorly maintained, everyone will lose interest quickly and the garden will disappear.

- Include students and teachers as part of the lessons.
- Ask parent volunteers to assist with classes.
- Invite Master Gardeners to help teach gardening lessons.
- Enlist community garden clubs to assist with classes and teach gardening lessons.
- Establish an after-school or summer garden club with students, teachers and parents.

CONTENT AREA

Science: Life Processes

Objective: for students to:

- Identify water, sunlight and soil as necessary for plant growth.

Materials

- paper plates
- yarn
- scissors
- stapler
- tape
- crayons
- glue sticks
- template (See Page 4)

LESSON PLAN Pre-K

How Does Your Garden Grow?

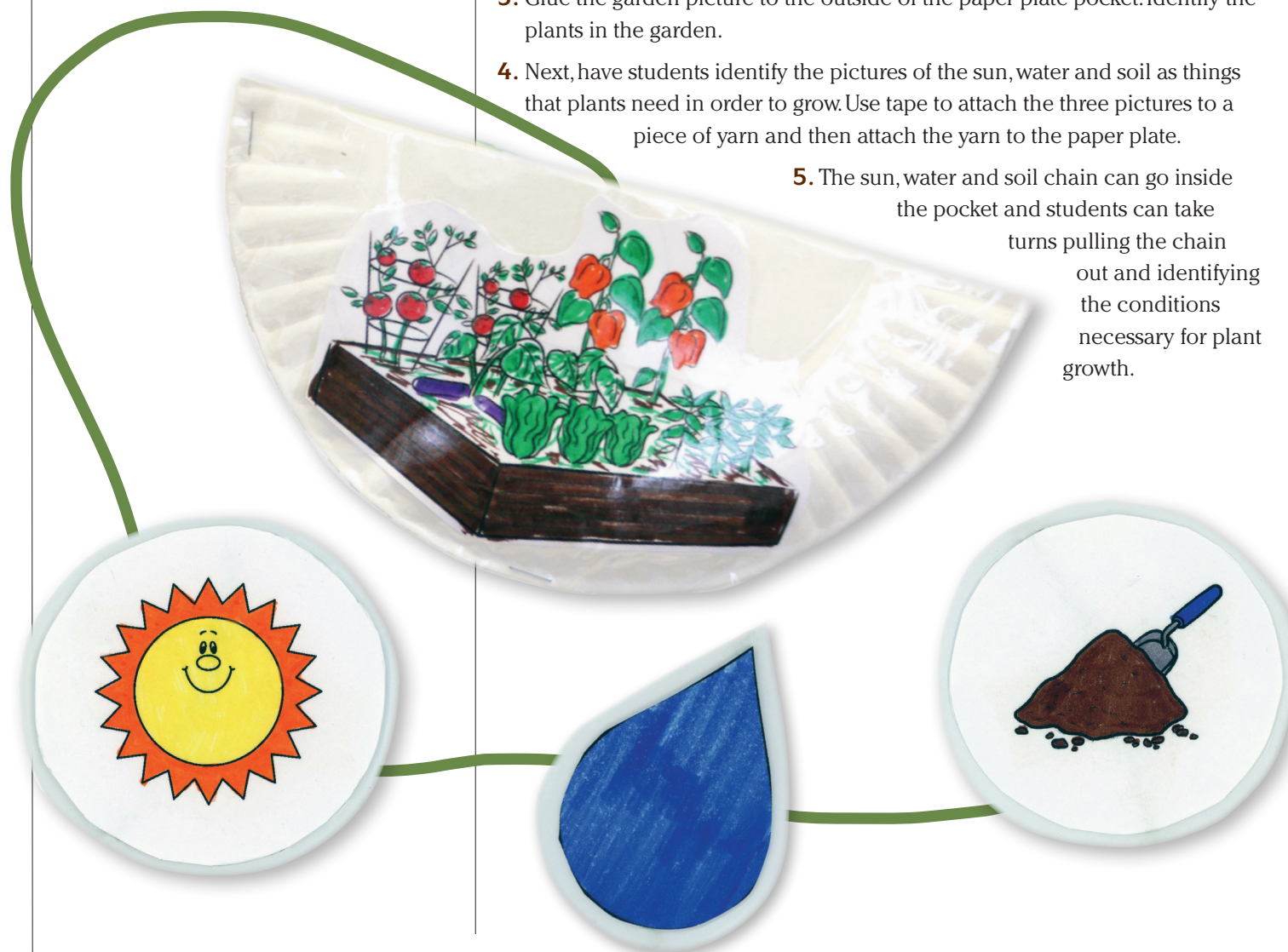
Background Knowledge

While they may differ in their specific requirements, all plants need the same basic conditions in order to grow and thrive—sunlight, soil and water. Sunlight provides green plants with the energy they need for photosynthesis, which is the process plants use to convert carbon dioxide, water and nutrients into carbohydrates they use for energy to grow. Photosynthesis also generates oxygen. Soil contains healthy nutrients for the plant, which it can absorb through its roots. Finally, water is essential for healthy plant cells to function.

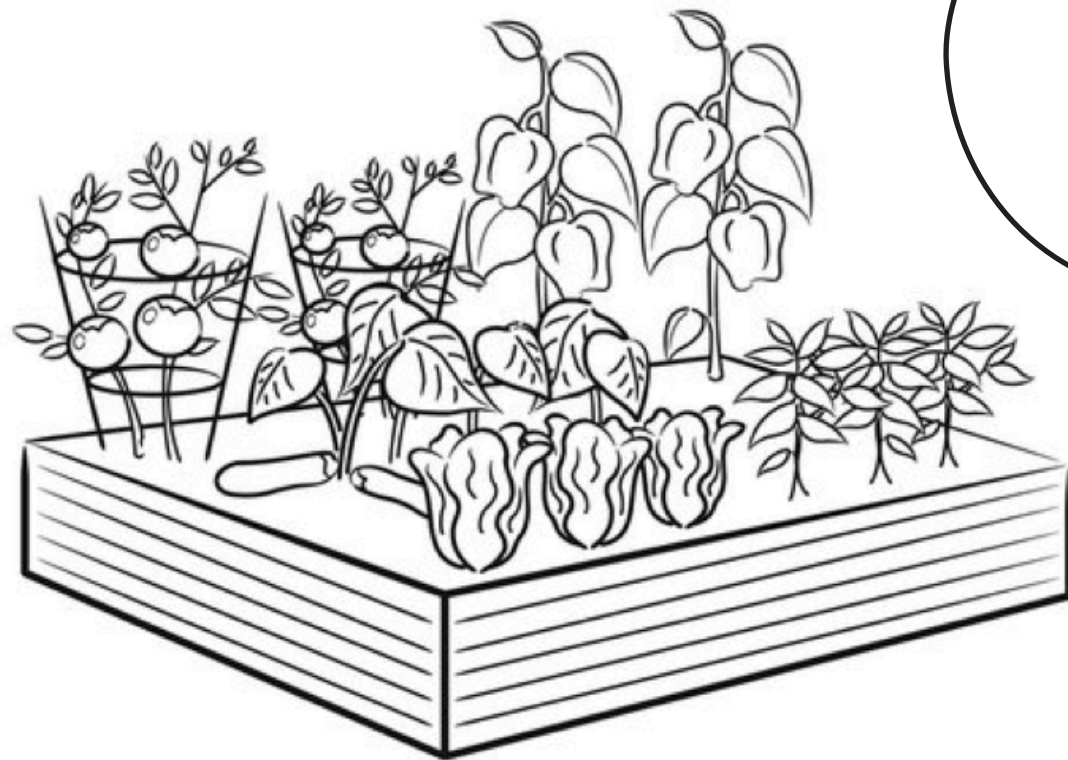
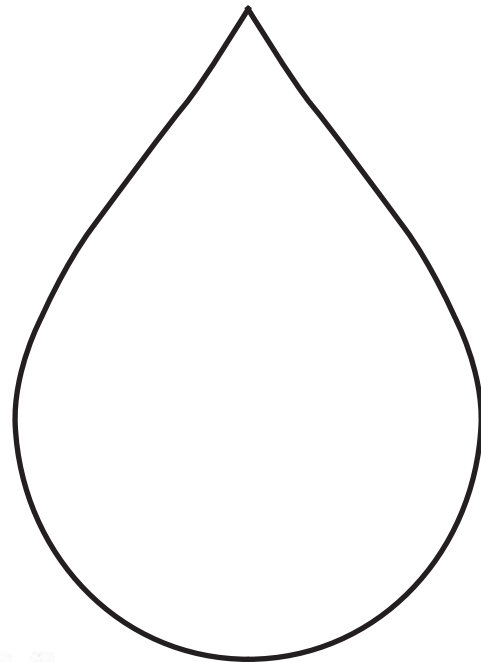
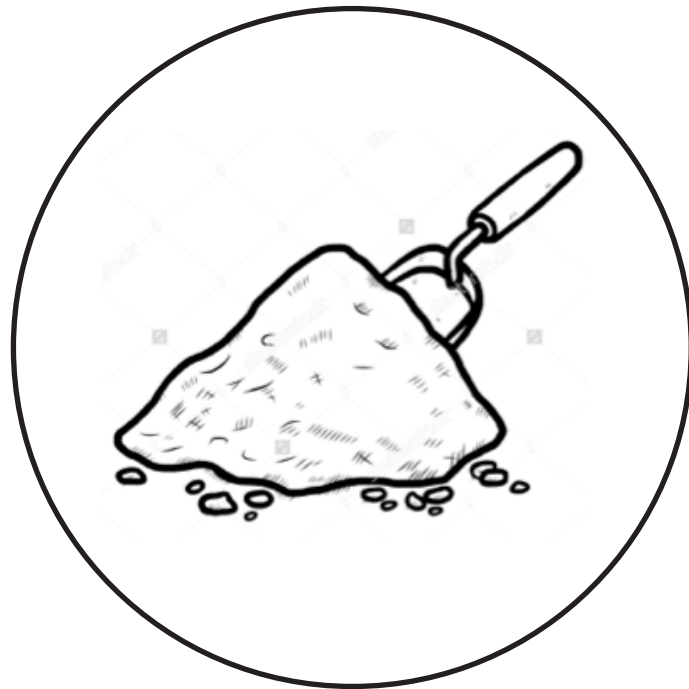
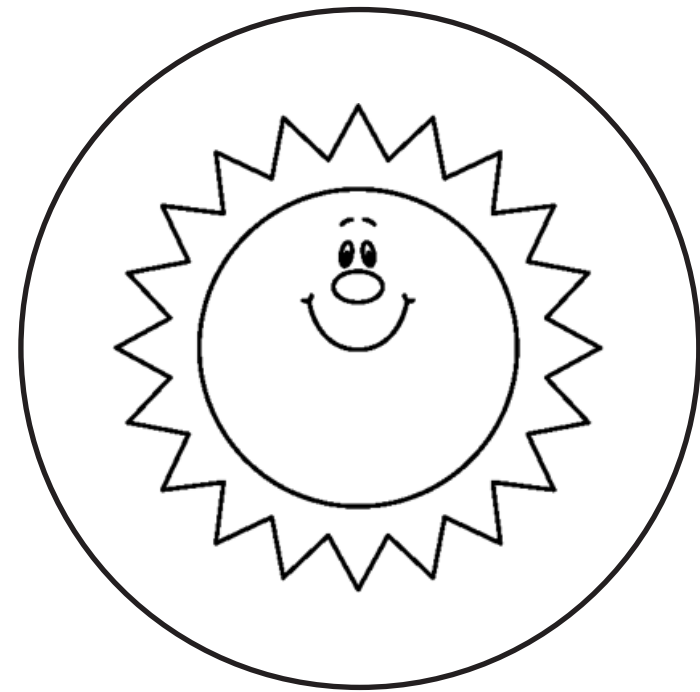
Procedure

1. Cut a paper plate in half, and staple the halves together to form a semicircle pocket, leaving the straight edge un-stapled.
2. Cut out (or have students cut) and color the elements for plant growth, as well as the picture of the garden.
3. Glue the garden picture to the outside of the paper plate pocket. Identify the plants in the garden.
4. Next, have students identify the pictures of the sun, water and soil as things that plants need in order to grow. Use tape to attach the three pictures to a piece of yarn and then attach the yarn to the paper plate.

5. The sun, water and soil chain can go inside the pocket and students can take turns pulling the chain out and identifying the conditions necessary for plant growth.



Cut and color these elements



CONTENT AREA

SOL: Math 3.7, 3.8, 4.7, 4.8

Objective: for students to:

- Calculate area and perimeter for a given garden item.

Materials

- 8 1/2" x 11" white paper
- 1" square pieces of construction paper
- pencils
- tape
- yarn (one yard per student)
- ruler, yardstick or tape measure
- dried beans, peas or corn
- small cups
- small to medium-size item from school garden (or from backyard) such as a leaf or blossom

LESSON PLAN Elementary School

GARDEN MATH: Measuring area and perimeter

Background Knowledge

Perimeter is the outside measurement of a given space. In gardening, it's important to know the perimeter of your garden so you know how much fencing to purchase. Area is the space within a given perimeter. You should know the area of your garden so you will know how much seed, fertilizer and mulch to purchase for that space.

For an excellent lesson to introduce your students to these concepts, search for the "Discover an Acre" lesson plan on AgInTheClass.org.

Procedure

- A**
1. Have students pick a garden (or backyard) item about the size of their hand and bring it into the classroom.
 2. Students should trace outlines of their items on paper. A couple of small pieces of tape may be needed to hold items in place for tracing.
 3. Remove the items to reveal their outlines.
 4. Give each student a piece of yarn about one yard in length.
 5. Ask them to use the yarn to outline the perimeters of their traced objects.
 6. Cut the yarn at the point where it overlaps the starting point.
 7. Remove the yarn from the paper, and lay it on a ruler, yardstick or tape measure to determine the perimeter of the garden item in inches.
 8. Write the answer on the paper with the outline. **Example:** perimeter = 14"

- B**
1. Give students a 1" square of colored construction paper, and have them glue it to the paper with the outline.
 2. Give students a small cup with dried beans (You also may use peas or corn).
 3. Ask them to fill the square inch with the dried beans, laying them side by side.
 4. Count the number of beans in the square inch, and write that number on the paper beside the square inch. **Example:** 18 beans = 1 square inch
 5. Estimate the number of beans needed to fill their garden item outline, and write that estimate on their paper.
 6. Fill the leaf outline with dried beans, laying them side by side.
 7. Count the number of beans in the outline, and record the total.
 8. Divide the number of beans in the outline by the number of beans in the square inch to give the total number of square inches in the garden item.

Extension

Have students measure the perimeter and area for other items and spaces within the garden. Items that can be measured are table tops, stepping stones, a sidewalk or a raised bed. Small spaces can be measured in inches and square inches, while larger spaces can be measured in feet and square feet.



BONUS ACTIVITIES

Grow an edible plant parts garden



Students harvest the fruits of their labor.

We typically eat parts of plants but not all of them. The following is a list of some favorite edible plant parts that can be grown in a Virginia garden:

- the roots of carrots, beets, radishes, turnips and sweet potatoes
- the stems of asparagus, kohlrabi and potatoes
- the leaves of lettuce, spinach, cabbage, Swiss chard, collards, kale, mustard greens and bulb onions
- the flowers of broccoli, cauliflower, nasturtiums and violas

- the fruit of tomatoes, peppers, cucumbers, squash, beans and peas (in the pod), eggplant, melons and pumpkins
- the seeds of beans and peas (shelled), corn and sunflowers

You can plant these fruits and vegetables and then eat the edible parts after harvesting. The garden should be located in an area that receives at least six hours of sunlight daily.

Let students create a desktop container garden

Give every student a medium- to large-size plastic lid (the size from a peanut butter or mayonnaise jar). Place a couple of damp paper towels inside the lid. Sprinkle seeds on top of the damp towels. Then place the lids in a clear plastic bag to keep them moist.

Have students check their “gardens” each day and record their progress. After they germinate, the seeds can be transplanted to a container of soil or to the school garden plot to grow to maturity.



LITERARY CORNER

City Green, DyAnne DiSalvo-Ryan, Houghton Mifflin, ISBN: 0395810973

The Curious Garden, Peter Brown, Little, Brown Books for Young Readers, ISBN: 0316015474

From the Garden: A Counting Book About Growing Food, Michael Dahl, Picture Window Books, ISBN: 1404811168

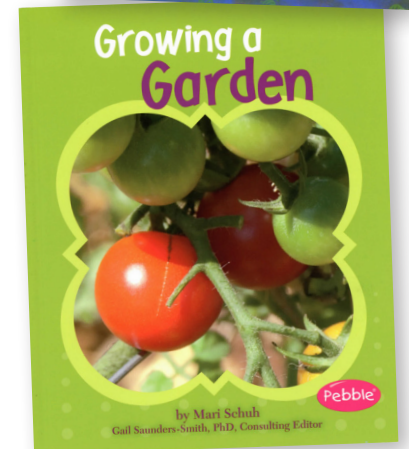
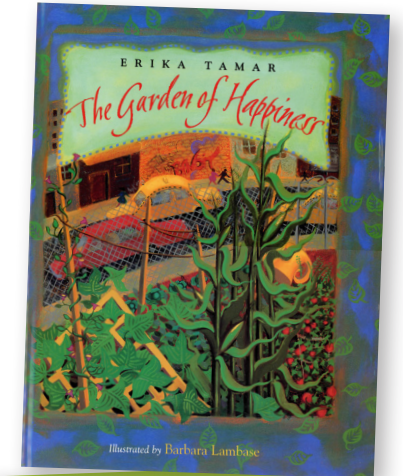
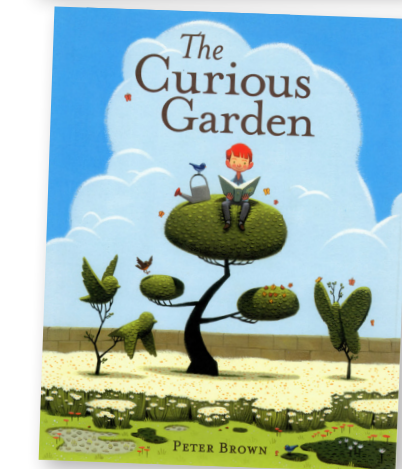
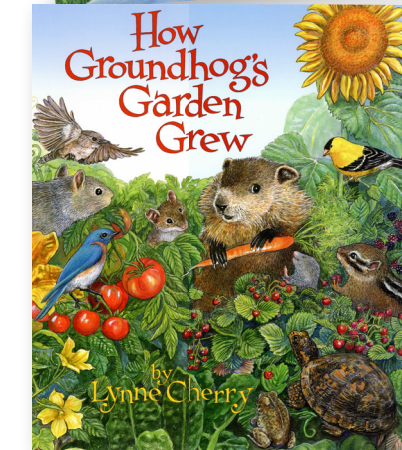
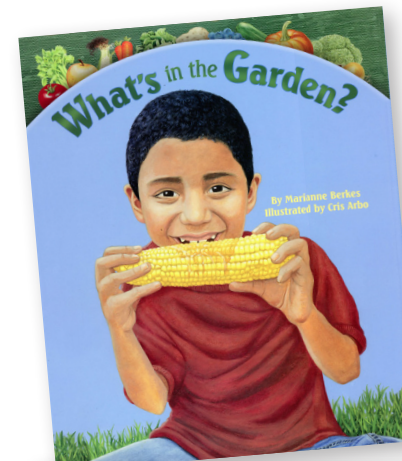
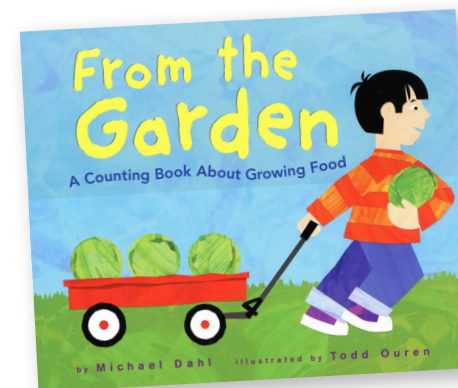
The Garden of Happiness, Erika Tamar, HMH Books for Young Readers, ISBN: 0152305823

Grandpa's Garden, Stella Fry, Barefoot Books, ISBN: 1846868092

Growing a Garden, Mari Schuh, Capstone Press, ISBN: 1429648422

How Groundhog's Garden Grew, Lynne Cherry, Blue Sky Press, ISBN: 0439323711

What's In the Garden?, Marianne Berkes, Dawn Publications, ASIN: B00C5W7X1K



PROGRAM HIGHLIGHTS

Student learning can grow with AITC garden grants

Teachers who want to start a school garden can apply for up to \$250 in grant funding from Agriculture in the Classroom. AITC also offers \$500 Agricultural Experience Grants for teachers who incorporate ag-related programs other than a garden in

their classrooms.

Grant applications will be accepted this summer. Visit our website, **AgInTheClass.org**, and join our mailing list so you will be notified when applications are available.

Grant recipients have used funds for

a wide range of exciting educational opportunities such as creating a pollination garden, salad garden and even a historical Jamestown-inspired garden. Others have used their garden grants to explore aquaponics, native Virginia plants and composting.