

Welcome

Getting Started with
The Great Garden Detective Adventure



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Dear Teacher,

The *Great Garden Detective Adventure* is a standards-based curriculum that integrates gardening experiences and nutrition education messages into lessons designed to teach English/language arts, mathematics, science, and health to third and fourth graders. The U.S. Department of Agriculture, Food and Nutrition Service is providing this curriculum under its Team Nutrition initiative to support national efforts to empower children to make healthful food choices and develop an awareness of how fruits and vegetables are grown.

We offer you these interactive and exploratory lessons as a creative way to teach traditional subjects while providing students with the opportunity to discover fruits and vegetables. Garden-based learning opportunities are a promising way to boost academic achievement as well, especially when it comes to science (Klemmer, Waliczek, & Zajicek, 2005). Helping to increase children's acceptance of fruits and vegetables can also improve their overall diets. Not only does this have significant benefits for their health, children with healthful eating patterns also tend to do better in school (Florence MD et al., 2008; Fu ML et al., 2007; Kim HY et al., 2003; Sigfúsdóttir et al., 2007). In summary, these lessons are designed to engage kids in learning and developing healthy habits.

You can implement these lessons even if your school does not have a large outdoor garden or long growing season. Many schools use container gardens, grow light systems, raised beds, cold frames, hoop houses, and other techniques to provide their students with gardening experiences. So whether your garden is large or small, we look forward to hearing how your students become garden detectives and discover how to make fruits and vegetables part of their daily food choices.

Sincerely,

Your Friends at Team Nutrition

Kids Need Your Help!

- *The Dietary Guidelines for Americans* recommend that we fill half our plates with fruits and vegetables (USDA & DHHS, 2010), but only 26 percent of kids aged 6-11 eat the recommended amounts of fruits and only 16 percent eat the recommended amounts of vegetables (Lorson, Melgar-Quinonez, & Taylor, 2009).
- One in five children aged 6-11 is obese (Ogden et al., 2010). Weight-associated diseases that were once mainly diagnosed in adults are now being observed in children. For example, one-third of children born in the year 2000 are expected to develop Type 2 diabetes in their lifetime (Narayan et al., 2003).

Their future starts now. Small steps, like using this curriculum, can make a healthy difference.

Getting Started

The Great Garden Detective Adventure focuses on the following important activities:

- **Growing fruits and vegetables** so that students understand where food comes from and how it grows
- **Learning about fruits and vegetables** so that students comprehend the important role that they play in helping people grow and stay healthy
- **Harvesting the fruits and vegetables** so that students experience the satisfaction of seeing the fruits of their labor
- **Preparing simple recipes** as a tactile way to explore fruits and vegetables and engage students in sampling the garden produce in their own tasty creations
- **Tasting the fruits and vegetables** so that students sharpen their sensory appreciation of these foods and develop a willingness to try new tastes
- **Creating a healthy school environment** that involves the principal, parent organization (e.g., Parent Teacher Association, Parent Teacher Organization), school food service, and other members of the school community
- **Bringing the information home** via the family newsletter with activities designed to increase the accessibility and availability of fruits and vegetables

These activities and others are designed based on social cognitive theory. Appendix A shows the relationship between elements of the theory and the curriculum activities.

Garden Requirements

The curriculum is designed to be flexible based on the type and size of garden that is feasible at your school, including container gardens, raised beds, and traditional in-ground gardens. It is built around five “easy to grow” vegetables and two perennial fruits that can be grown in both the fall and spring to give you flexibility about when to implement the learning activities. You may choose to plant all featured fruits and vegetables at the same time in the fall or spring or choose to plant some in the fall and others in the spring.

Time Requirements

The time from planting to harvest for the featured fruits and vegetables is approximately 70 days or less. Thus, you may choose to teach the lessons on a weekly basis over the growing season to address them all or space the lessons at longer intervals if you are planting some in the fall and others in the spring.

Educational Standards

The 11 lessons, suitable for both 3rd and 4th grades, are tied to educational standards in science, English/language arts, mathematics, and health. These standards include the Common Core State Standards in English/Language Arts and Mathematics (National Governors Association & Council of Chief State School Officers, 2010), the National Science Education Standards (National Research Council, 1996), and the National Health Education Standards (The Joint Committee on National Health Education Standards, 2007).

In addition, lesson extensions in many of the lessons provide an opportunity to expand learning opportunities for students and to meet additional educational standards through gardening-related activities. Table 1 on page 10 shows the curriculum and its academic foci at a glance. A more detailed list of standards by lesson appears in Appendix B.

Lesson Structure

Each lesson begins with an overview that summarizes the key content in the lesson and how it may be connected to the garden, to school food service, to other elements of the school, and to the home. Next, each lesson plan lists the learning objectives, time required, materials needed, teacher preparation required, standards addressed, and the instructional process.

About the Theme

The Great Garden Detective Adventure utilizes a mystery and detective theme to engage students in discovering how fruits and vegetables grow, how to prepare them, and the tasty results. The overall message to students is:

Be a Garden Detective! Discover what fruits and vegetables are sweetest, crunchiest, and juiciest. Share what you learned with your family.

This message was tested in focus groups with students in different parts of the country.

Curriculum Overview

Your garden detectives will:

- Plant a class garden and care for it.
- Grow, harvest, prepare, and taste fruits and vegetables.
- Develop a class cookbook.
- Conduct research to learn about a fruit or vegetable.
- Track their fruit and vegetable consumption.
- Create Public Service Announcements (PSAs) about fruits and vegetables.
- Share what they learn with the rest of the school and their families.

The curriculum culminates with a grand Sleuths' Mystery Dinner where the entire school is invited to share in the bounty of the garden and the garden detectives share what they have learned about gardening and their fruits and vegetables.

Five vegetables and two fruits are featured in *The Great Garden Detective Adventure*. These include leaf lettuces, carrots, spinach, Swiss chard, beets, strawberries, and raspberries/blackberries. These fruits and vegetables are ideal for school gardens because they are typically grown during the early fall and spring. They include some fruits and vegetables that may be familiar to most students (e.g., lettuce and carrots) as well as some that are less commonly consumed (but equally delicious). Even if your class does not grow all seven fruits and vegetables, you can still utilize all of the lessons in this curriculum.

Involve the Home, School, and Community

Make the Home Connection. One tool to help students to share what they learned with their families is the *Garden Detective News*. This family newsletter updates parents and caregivers on what the students are learning in class. Each one contains an activity that families can do together to reinforce the content of the curriculum. These newsletters should be distributed to students to take home to their families at the end of every lesson (except for Lesson 7, where the newsletter is sent home in advance).

Encourage parents and caregivers to read the family newsletter and complete the home activities with their child. They can make the recipes in the family newsletter with their child. Let parents know how much the children enjoyed tasting the foods in class. Parents can be good role models for healthy eating behaviors at home.

Encourage students to talk about what they learned about gardening, cooking, and tasting experiences in school. Their enthusiasm can be infectious at home.

The Garden Detective News appears at the end of each lesson in the curriculum and is included on the provided CD-ROM. Schools participating in the Child Nutrition programs may order free copies of the newsletters. Ordering information is available on the Team Nutrition Web site at <http://www.teamnutrition.usda.gov>.

Invite parents to be volunteers in the classroom when the garden is being planted and tended to, on taste testing and food preparation days, or to be chaperones on field trips.

Engage the School and Community. Gather support by meeting with other teachers, school food service staff, administrators, school board members, school staff such as the librarian and grounds/facility manager, and parents, including the Parent Teacher Association/Parent Teacher Organization (PTA/PTO). For example, the librarian can help with the fruit and vegetable case report research (Lesson 3) and may be helpful in identifying age-appropriate garden and nutrition books to augment the curriculum. The PTA/PTO can encourage volunteerism in helping with the gardening and food preparation activities, and can be helpful in fund-raising for needed supplies. Emphasize the link between nutrition and improved academic performance and behavior. Engage them and solicit ideas for planning and implementing the program in your class.

Coordinate with the Cafeteria. Meet with the school food service director to discuss options for food preparation activities and in promoting spinach, Swiss chard, leaf lettuce, carrots, strawberries, and raspberries/blackberries in the school cafeteria. A letter and planning form that you may use to engage the participation of the school food service director appears on page 15. Review the curriculum and the fruits and vegetables included. Food preparation activities are found in Lessons 8-11, but you may choose to do them when they work best for your class schedule.

Ask the school food service director to print the curriculum's key messages on the school menu and/or post the messages in the cafeteria.

Select a date for the Sleuths' Mystery Dinner and get it on the school calendar. You may need to reserve the cafeteria.

There are also valuable resources in the community that can help you with both gardening and food preparation. These include Master Gardeners, the local Cooperative Extension Service, local farmers, farmers markets, AmeriCorps volunteers, and local chefs. The Community Connections section of each lesson provides suggestions for when to use these resources.

Spread the Word. Make contact with the local media. Share details about your class garden, tasting and food preparation activities, and about any special events you have planned (e.g., guest speakers, field trips). You can contact your school district to find out if it has a Public Information Officer or a Public Affairs department. If so, contact the appropriate person for suggestions, tips, and steps to connect with the media. Be sure to have signed parental permission slips if students are going to be interviewed or photographed.

Use school Web sites and social media to help spread the news.

Plan Your Garden

- **Decide what you are going to plant in the garden.** The Grow Sheets in Appendix C: Gardening Resources contain helpful information about the fruits and vegetables featured in the curriculum. Go to your local Cooperative Extension Service office or local Master Gardeners organization to find the variety of seeds and plants that grow best in your area. Check with your local nursery center to see if the seeds or seedlings you need will be available when you need them. You may have to order some seeds or plants in advance and/or start seedlings in the classroom if your spring season is short.

- **Work with your Master Gardener or garden coordinator about when to plant different vegetables in order for them to be ready to harvest for the Mystery Dinner.** The fruit and vegetable plants mature at different times. For example, spinach takes less time to grow and mature than beets and carrots. It is very motivating to the students to be able to prepare and eat the fruits and vegetables they are growing. Therefore, plan the timing of planting and harvesting the fruits and vegetables, so the garden produce will be ready to be used in the food preparation lessons (depending upon local/district health department policies) and the Mystery Dinner.
- **Use community resources, such as Master Gardeners, Junior Master Gardeners, and 4-H clubs.** They can work with students in the garden, show them how to plant, what to plant, and how to work with seedlings in a greenhouse. They can also teach basic gardening in the classroom. Following their training, Master Gardeners are required to give back service time to schools and community gardens, so they may welcome your request for help.
- **When planning a garden, start small and don't overextend the resources.** The garden should have an overall vision and can be built in phases.
- **When choosing a garden location, consider the following:**
 - **Space:** Evaluate how much space is available. If space is limited, container gardening could be an option.
 - **Soil:** The soil should be well-drained and loose. If drainage is not good or the soil is poor, raised beds are a solution. Raised beds with quality soil are very easy to work with. However, do not use pressure-treated wood for raised beds, because the chemicals can leach into the soil and be hazardous to the vegetables. **Soil should be tested for lead and other potential contaminants.**
 - **Sunlight:** Fruit crops need 8 hours of direct sun, and leaf crops and herbs need 6. A way to determine if a place is sunny enough is to place a sheet of paper in the garden area and check to see how long it remains bright, without shade.
 - **Water:** A source for water must be very convenient. Watering ideally takes place very early in the day to reduce evaporation. Consider mulching to reduce the need for water.
 - **High Visibility:** It is good when the garden can be viewed and admired. A school courtyard or a securely fenced area is ideal.
 - **Location:** The garden should be convenient and easily accessed by students and teachers. The location should be planned for protection from active recreation and vandalism.
- **Before launching the school garden project, make a list of the resources you need to get started.** Consider what funds, goods, expertise, and services do not come from within the school community.
- **Be flexible about gardening-related curriculum activities.** Mother Nature is not always cooperative. Some plants may fail to thrive. If you have assigned a small group of students to each fruit or vegetable, you may need to reassign students whose plants have failed to other small groups working with different plants.
- **Use the Web sites listed in Appendix C** for more information and tips on successful school gardening.

Adapt the Curriculum to the Needs of Diverse Learners

The *Great Garden Detective Adventure* was designed to meet the Common Core standards for English/Language Arts and Mathematics in Grades 3 and 4. As you review the curriculum and plan instruction, you may find that some activities appear too challenging for some students in your class. Here are some suggestions for meeting the needs of these students:

Reading Assignments: If some students find the reading assignments in the curriculum too difficult, you may wish to read them aloud. An example of where this may be helpful is in Lesson 5:

Trace the Fruit and Vegetable Trail. It contains a student handout (*Student Handout 5.1*) entitled *Terry and Sam Solve the Mystery of Where Fruits and Vegetables Come From*, which is a story about a class that makes a field trip to a farm. *Student Handout 5.2* contains *Reading Comprehension Questions* about the story. Review the reading comprehension questions with challenged readers before you read the story aloud. This will help them listen for clues in the story to answer the questions.

Research Assignments: Lesson 3: *Investigate Like a Super Sleuth*, requires students to prepare and write a research report about a fruit or vegetable of their choosing. The information they uncover also provides the basis for the development of a poster and Public Service Announcements. If your students have not yet acquired research and report writing skills, you may use this lesson as a vehicle for teaching them. An optional graphic organizer is included in *Student Handout 3.1* (pages 2-3) to help students organize their reports. Alternatively, you may choose to have students do a more limited search for information about their fruit or vegetable and then develop a poster or oral presentation.

Mathematics Handouts: There are two versions of *Student Handout 5.3* in Lesson 5 entitled *Farmer Brown Does the Math* that contain mathematical exercises. *Student Handout 5.3.1* contains an easier version of mathematics (e.g., word problems with only one step). A more challenging version of the handout (e.g., two-step word problems) is numbered *Student Handout 5.3.2*.