

## Learning to Start a School Garden

*Upper Primary*

### Key Inquiry Questions

1. What are nutrients and how do they affect our bodies?
2. What elements are required to keep crops healthy and thriving?

### Learning Outcomes

1. Students will have an understanding of how fresh fruits and vegetables contribute to good nutrition.
2. Students will learn to plan balanced meals for themselves and their families with locally available foods.
3. Students will consider how factors such as sunlight, water, and soil preparation affect plant health and crop yields.

### Overview

In this lesson, students will begin by getting background knowledge about nutrients and how it affects our bodies by reading the chapters with groups. They will then present their knowledge about the chapter they read and present it to the class. Next the students will create a KWL chart for what they already know about nutrition and what is good for our bodies. They will be separated into groups based off knowledge to then come back and talk about what they have learned in their groups. Once this is done, students will have a lab that will take course over a few weeks: a school garden.

### Materials

#### **SolarSPELL Resource:**

1. “A vegetable garden for all” (Health & Safety -> Nutrition & PA)
2. “Healthy Eating Factsheet” (Health & Safety -> Nutrition & PA)
3. “FDA Vitamins and Minerals Chart” (Health & Safety -> Nutrition & PA)
4. “Sprouting Seeds” (Sciences -> Other Sciences)
5. “Parts of a Plant” video file, 23 minutes (Sciences->Life Science->Plants and Photosynthesis)
6. “A vegetable garden for all” (chapter 5) (Health & Safety -> Nutrition & PA)

**Other:**

Blank paper and pencils

Chalkboard/whiteboard/large piece of paper with a writing instrument

Daily Food Groups Worksheet (attached to the lesson)

**Lab Materials:**

Fruit or vegetable seeds (tomato or squash)

Soil

Small cups/seed trays

Water/measuring cup to water seedlings.

A large bucket or paper bag

Observation logs for each set of seeds (3 total)

## Suggested Procedure

**Before Lesson:**

*(Prior to the lesson, the instructor should review the resource “A Vegetable Garden for All” in order to ensure that the information contained in it is relevant to their students’ experience and make changes if necessary to make the material more relatable to students over the course of the lesson. For example, if the instructor is aware that many students have family vegetable gardens, as opposed to purchasing food from markets, this will affect the content of the lesson.)*

- Begin the lesson with the question, “Where does the food we eat come from?” This question can be written on the board for students to consider.
- After students have been given the opportunity to think about this question, the instructor can create categories on the board “pros/benefits” and “cons/challenges” to where their food currently comes from.
  - If the family obtains most of their food from the market, convenience may be a pro, while expense, market distance, or food availability could be some possible challenges. If students utilize family garden plots, their answers can serve as a valuable segue into the topic of community gardens.
    - Possible answers to the pros and cons of family garden plots could include availability of land and labor resources as a challenge, or freshness and control over food choice could be benefits.
- Following the introductory discussion, students will spend some time exploring the “Vegetable Garden for All Resource”.
  - Assign chapters 1, 2, 4, and 7 to equal small groups
  - Each group will answer different guiding questions as they read their chapter, and one group member will be responsible for recording the group answers.
  - After each group has finished, they will present their findings to the class, answer questions from their peers, and pose any questions of their own to the instructor.
  - Students who are listening to the chapter being presented will be asked to write notes on a piece of paper.



### **Chapter 1 Guided Reading Questions:**

1. In order to be well nourished and healthy, the entire family needs the \_\_\_\_\_ and \_\_\_\_\_ that food provides.
2. \_\_\_\_\_ help prevent heart disease and cancer, while \_\_\_\_\_ contain healthy fiber to aid in digestion.
3. What are 2 food groups that should not be consumed in excess, and why?
4. What are two benefits of a vegetable garden that you think are the most important? Why?
5. How can younger children help in a vegetable garden?

### **Chapter 2 Guided Reading Questions:**

1. In order to plant a garden, you will need \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.
2. Why is it important to know the family's need before starting a garden? How can we find out what the family's needs are?
3. Name 3 vegetables you like to eat that are also easy to grow. (Bonus: name a vegetable you have never tried that is easy to grow!)
4. What vegetables are in the Solanaceous Family? Why is it important to know what families vegetables are in?
5. What are factors to consider when choosing a garden location?

### **Chapter 4 Guided Reading Questions:**

1. A \_\_\_\_\_ protects the garden from animals and thieves.
2. Why is it preferable to plant the garden on a slight slope?
3. How can you tell if the soil has enough moisture?
4. Why is it beneficial to use a raised bed?
5. Soil should be prepared \_\_\_\_\_ before planting the garden.

### **Chapter 7 Guided Reading Questions:**

1. What will occur if you water the garden too much? What about if you do not water it enough?
2. Name two things you can do to prevent weeds from growing in your garden.
3. Tilling the soil must be done when the plants are \_\_\_\_\_.
4. What is cultivating, and what are its advantages?
5. Name the form of pest control you think would be most effective/necessary for a garden in your community.



## **During Lesson**

- Introduce the subject of nutrients and nutrition by creating a KWL chart on a large piece of paper, chalkboard, or whiteboard. This will remain in place for the duration of the lesson.
  - KWL stands for “Know, Want to Know, and Learned”. The chart can be created by simply drawing three columns labeled K, W, and L. The first two columns will be filled out before the lesson, and the third will serve as a wrap-up/summary.
- As a group, students will brainstorm what they already “know” about nutrition.
  - The instructor will record these responses and can use this information to gauge the groups’ overall knowledge on the subject, and guide the lesson accordingly.
    - The instructor may find the group has little to no knowledge, some knowledge, or a lot of knowledge.
    - Examples of current student knowledge could be vague or detailed, such as “stew is very filling”, or “tomatoes are a good source of lycopene and vitamin A”. These answers will be recorded in the “K” column of the chart (at this point it is not necessary that the students’ responses are factually accurate- in fact, inaccurate answers may be helpful for the instructor to identify areas on which to focus).
- Ask students to discuss with a person next to them questions they want to answer about nutrition. These questions will be recorded under the “W” category.
- Divide students into pairs or small groups according to their level of knowledge about nutrition (if the whole class has similar knowledge, the instructor can assign groups randomly).
  - Each group will work together to complete a specific assignment relevant to their level of knowledge and then present that assignment to the rest of the class (options are listed down below).

### *Option 1 (Basic Nutrients):*

- Depending on the number of students in the class, the instructor will assign 2-4 nutrients to each small group/pair (sodium, vitamin C and calcium for example).
  1. Using the FDA nutrition fact sheet, students will learn about these nutrients and their functions. Students will be asked to identify two or three foods that are already part of their diet that contain these nutrients, and name several activities they themselves perform that are supported by these nutrients.
  2. To make the activity more advanced, they can repeat that activity for different members of their community, like the sick, elderly, nursing mothers, or young children. (Example: Calcium supports hormone function, which is important for older children, bone and teeth formation, which is important for babies, and nervous system function, which is important to all, but especially the elderly.) Doing this will get the group to start thinking about the nutrition needs of the community.
  3. After all groups have finished, groups will take turns presenting their work in a 2-3 minute summary.

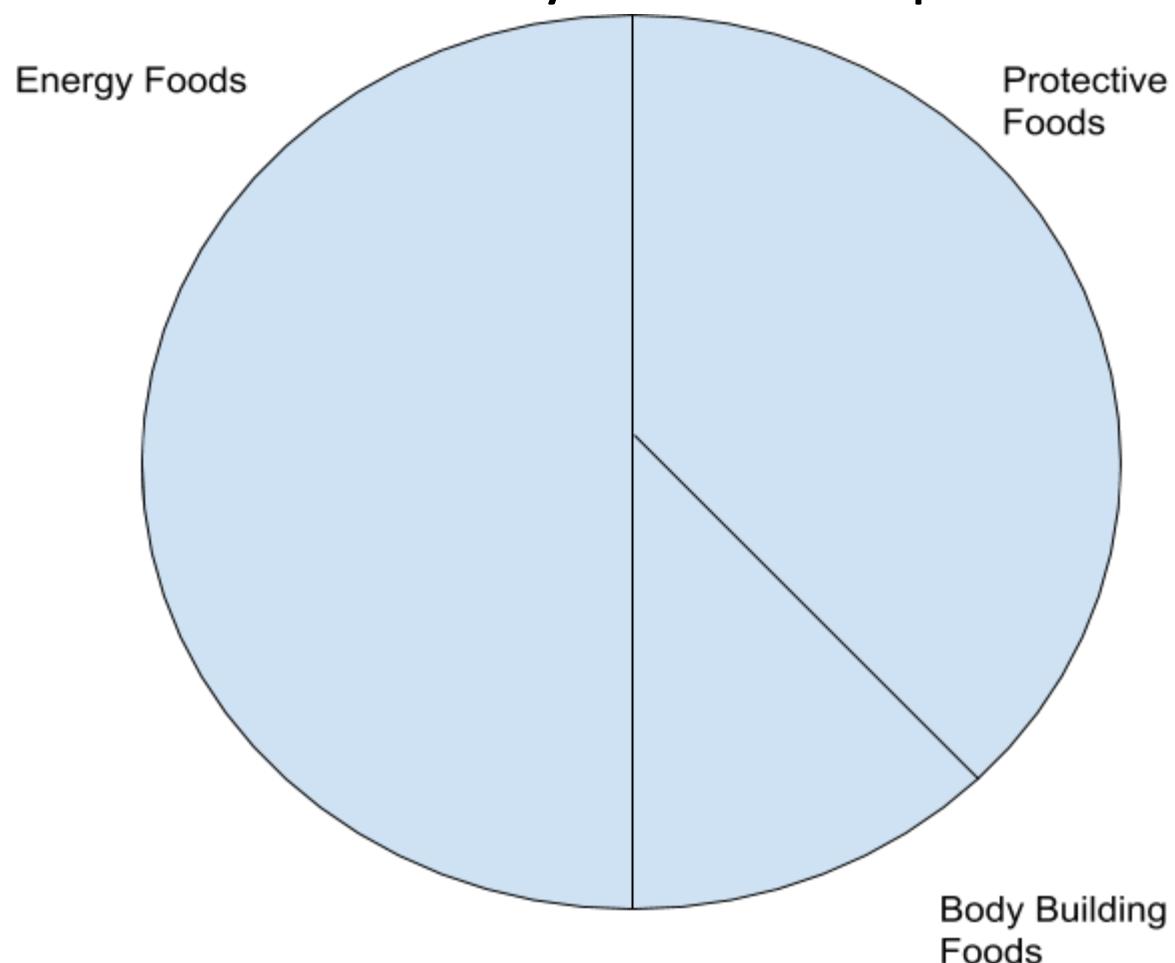


*Option 2(Building a Nutritionally Balanced Meal):*

1. Using the FDA Vitamins and minerals chart, the Healthy eating fact sheet, and the daily plate worksheet, students will design a day's worth of nutritionally balanced meals. These meals should be realistic- they should include foods that are already eaten in the community. They should aim for variety and try to include many different foods and nutrients!
  2. Have students write justifications for which nutrients and foods they include, as well as which meal of the day they are eaten at.
  3. Students should also include any challenges they see, such as foods or nutrients that are difficult to prepare or in short supply. Once their assignment is completed, they will also present their work to the class in a 2-3 minute summary.
- After all pairs/small groups have had a chance to present their work, regather the class for a concluding discussion.
    - Return to the KWL chart to fill in the “L” column- what was learned? Invite students to share the highlights of what they learned. The instructor will record responses but try to let students take charge of the discussion.
  - Ask students to create connection to their own lives, for example, by reflecting on their current diets and what factors affect what they eat and when. This discussion may branch into other subjects such as climate, politics, and history.
    - This will also be written under the “L” column.
  - This discussion and the answers recorded in the KWL chart will serve as a segue into the next lesson, Planning/Designing a community garden.



# Dailey Food Groups



## Nutrients & Their Function:

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.



## Lab

- As a group, the class will watch “Parts of a Plant”.
  - This will help the students familiarize themselves with the topic.
- Split the class into three equal groups to prepare three different containers with appropriate amounts of soil, using the guidelines and instructions in the “Sprouting Seeds” pdf.
  - Each group will write down a prediction about how they think their seeds will do under the specific lighting conditions (full light, some light, no light).
- For the next two weeks:
  - students will provide water to all three groups.
  - record daily observations of the seeds’ progress using the attached daily recording logs.
  - They will remove the paper bag from one of the seed groups for a few hours each day according to the instructions in the “sprouting seeds” pdf.
    - This should take only a few minutes each day. Students should record how long it takes seeds to germinate, how they look, and measure how tall they are growing.
- At the end of the recording period, each group will share their observations with the class and see which seeds grow best and look healthiest.

### Weekly Observation Chart

	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Group A							
Group B							
Group C							
Group D							
Group E							
Group F							