

## **Garden Lesson**

**Topic:** Planting in the Garden

### **Learning Points:**

- Gardening should be a fun, rewarding activity as you watch seeds germinate, seedlings grow, and reap the harvests.
- Gardening is a constant learning experience. You never will have all the answers. There is always something new that happens that requires you to question, research, and make adjustments.
- Gardening causes you to take a closer look at nature (the weather, the soil, the plants, the good and bad pests, etc.)
- Gardening may change your perspective on life. For example, one person's weed is another person's favorite plant.

### **Common Core Standards:**

Science: K-LS1-1: Use observations to describe patterns of what plants and animals need to survive.

Science: K-ESS3-3 Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.

Science 2-LS4-1: Make observations of plants and animals to compare the diversity of life in different habitats.

Science 3-LS3-2: Use evidence to support the explanation that traits can be influenced by the environment.

(Apply to the method used in germinating and transplanting plants and their impact on plant development)

Speaking and Listening K-SL3 thru 3-SL3: Ask and answer questions.....for understanding.

### **Items Needed:**

- Tablespoons (use as your trowels if seedlings are small and tender)
- Watering bottles (use same containers that were used in Lesson 2, so students can better control pouring water around the base of the seedlings – not directly on them)
- Water bucket with water
- Stakes or labels to mark hole locations if holes not already done
- Yardstick or other measuring tool to layout planting locations or make modifications in layout
- Seedlings w/ trays
- Seeds – precounted for each bed
- Garden Planning Guide as a reference
- Garden Scale drawing
- Clipboard(s)
- Plant labels
- Marking pens
- Weeding tools if you choose to incorporate weeding with tools into the lesson
- Cleaning supplies for students

**Preparation:**

- Seedlings should have been hardened off for at least one week before transplanting (preferably two weeks – see Seed Lesson)
- If you are considering mixing in compost or some other nutrient (bone meal, blood meal, etc.) into the soil suggest you do so in advance of this lesson. How much in advance depends on what you are adding. This is not needed if beds already have needed nutrients added.
- Water the garden bed(s) the day prior to transplanting so that the soil is moist, without standing water.
- Have a source of water (faucet or a bucket of water) available for filling small watering cans or bottles, which students will use after sowing seeds or transplanting seedlings.
- Have trowels or some other small tool (tablespoons) available for students to create planting holes for transplanting seedlings and for moving seedling from planting cell into garden bed. You may have already created the holes during or following Lesson 4. Also, if your soil is loose (not compacted) it is possible that the students can create the holes by simply using their hands.
- Take inventory of seedlings to determine how many of each crop are viable candidates for transplanting into the garden. Determine how many additional seedlings of each crop you would need to meet your scale drawing plan. Determine how many seeds you will need.
- Have your school garden scale drawing updated and ready, however be open to changes if you see the need
- Water the seedlings several hours before or the evening before they are transplanted. They should be moist but not soggy.
- Have your school garden planning guide ready as a reference
- Have garden labels to mark the location of the different plants (you could pre-mark if you wish)
- Secure key to access school garden and any other storage areas to obtain needed supplies and equipment (stakes, water hose and sprinkler, etc).
- Plan time and method for students to clean up after garden activity.

**Determine Logistics and Ground Rules in the Garden**

- Where do you want students to initially gather in the garden space for your demonstration?
- How will you break the students up into manageable groups given the layout of your garden?
- Who will supervise each group while they are sowing seeds and/or transplanting the seedlings?
- What instructions will you give once students have finished planting (example: set area off to the side of the planting beds for students to pull weeds – create a contest based on who can pull the weed with the longest roots – have someone supervise the activity).
- What arrangements will you make for students to brush off their clothes and shoes and clean their hands once they leave the garden area?

## **Begin Class Lesson** (In the Classroom):

### **Review Statement:** (1 minute)

Previously we have made a list of plants to grow, created a planting guide, and a scale drawing showing where we want to place our plants and seeds. We are now ready to plant our seedlings and/or seeds in the school garden.

### **Question to create attention/interest:** (1 minute)

Are you ready to plant the seedlings and sow some seeds!?

### **Statement:** (2 minutes)

Advise students on how you plan to proceed to the garden area.

### **Introductory Statements:** In classroom or garden ( 10 minutes)

You may remember from our Planning the Vegetable Garden Lesson that there were some questions we needed to answer before planting (you may choose to use an overhead for this section). Here are the answers to those questions:

- How much space does each plant need when fully grown (maturity size)?
  - Using our updated planner we have decided to plant our seedlings about (fill this in) inches away from each other in rows. We also may plant some seeds or other seedlings in between these rows (could show them the garden drawing).
  - Carrots, green onions (Scallions) and radishes can be planted closer together (about 2" apart) in narrower rows.
- Do you sow seeds indoors or directly outdoors?
  - It depends on the crop. Read the seed packet or a planting guide for information on whether seeds are directly planted in the garden or should first be planted indoors.
- When should you sow seeds?
  - You sow seeds at different times of the year depending on what they are. The seed packets and our planner give us that information.
- When should the crop be ready to harvest?
  - Different crops grow at different speeds, however many of the crops we are growing should be harvested in the next 45 to 90 days.
  - We may sow seeds for some crops that will harvest while we are away from school.
- What plants need more protection from hot or cold weather?
- Lettuce is one of the most fragile plants, especially if the weather is too warm. Kale may be one of the most durable (strongest) crops. When we plant we try to shade the more fragile plants by placing them near taller plants, such as Kale or Broccoli.
- What plants grow better next to each other (companion plants)?
  - Many gardeners say that lettuce, carrots and radishes work well together. There are other suggested combinations such as tomatoes, basil and parsley.
  - Also there are companion flowers that are suggested for the vegetable garden such as Marigolds that attract good pests and animals into the garden.

**Activity:** (In garden)

**Statements:** (3 minutes)

While in the Garden remind the students:

- Not to sit or stand in the garden beds. This compresses the soil which makes it more difficult for the plants to grow (less soil pores).
- If students are using gardening tools (may not be needed for this activity) they should hold the tool(s) below their waste and use the tools as intended.
- If there is any electrical wiring, outlets, or panels nearby, remind students to stay away from them.
- Return all garden tools to designated location(s). Note: could have a bucket of water for students to wash dirt off the garden tools before turning them in.

### **Order of Planting:**

When working with students of varying ages and sizes it is suggested that you consider planting the garden beds from the inner most bed areas outward to the perimeters. This is to minimize potential damage to seedlings around the perimeter of the bed. It is suggested that your oldest and tallest students plant the inner most portion of the beds and the younger and smaller students plant the easiest to reach areas of the garden bed. In addition you should exercise judgment as to whether your youngest students should transplant any of the more delicate seedlings as opposed to sowing seeds, which is something they would have learned in the lesson on seeds.

### **Demonstrations and Student Planting (30 minutes)**

The majority of this lesson is having the students sow seeds and transplant seedlings based on your garden drawing and your instructions. Below are instructions on how to transplant seedlings and sow seeds in the garden. Also included are some guidelines on weeding should you choose to incorporate it into your lesson. Keep in mind that you shouldn't rush this activity. Do as much as you can in the time available. You can always come back another day to finish the task if needed. In the meantime care for any seedlings that didn't get planted in the garden. They could be further hardened off and monitored for watering and adequate amount of light.

### **Demonstration for Transplanting Seedlings:**

Refer to the "Transplanting Seedlings into the Garden Bed" visuals (2 pages).

Keys to this activity are:

- You cannot over emphasize the need for students to be very careful when transplanting seedlings, especially lettuce and spinach which are very fragile.
- Supervise this activity closely.
- If using tablespoons have students hold them vertically (handle pointing straight up) while they insert them along one of the cell edges. Once spoon is fully inserted, the spoon can then be gently moved under the bottom of the root ball. Then the spoon can be carefully lifted out of the cell.
- **Students should not touch the seedling's stem or leaves** – They should only touch the root ball if they need to move it a bit while on the spoon or in the planting hole.
- Watch to make sure the students are not planting the seedlings too deep in the planting hole. The top of the root ball should be even or a bit lower than the surface of the planting bed. It is OK to carefully move some soil around the stem (without touching it) to provide it with some added support.
- When watering be sure that students do not pour water directly on top of the seedling. This may cause the stem to collapse or break.

## **Demonstration for Sowing Seeds:**

### **In rows:**

Make rows channels about ½" to 1" deep and about 1" wide.

1. Place seeds in bottom of row based on spacing recommendations on seed packet or planner.
2. Using the soil at the edges of the channel, carefully brush it over the seeds at the recommended depth.
3. Lightly tamp (press) down the soil covering the seeds.
4. You should end up with a channel that is about ¼" to ½" deep.
5. Water the channel until moist but no standing water.

### **Individual seed planting:**

1. Create a single hole at the recommended depth (see seed packet or planner)
2. Place seeds in bottom of hole based on spacing recommendations on seed packet or planner.
3. Using the soil at the edges of the hole, carefully brush it over the seeds at the recommended depth
4. Lightly tamp (press) down the soil covering the seeds.
5. You should end up with a hole (basin) that is about ¼" to ½" deep.
6. Water the hole (basin) until moist but no standing water.

### **(Optional) Demonstration for Pulling Weeds:**

If you choose to have students pull weeds, follow these instructions:

1. Pick a specific area such as a 4' x 4' area (you may have several of these areas designated for different groups). If this is a contest then make sure all designated areas have equal opportunity for success.
2. Have a small group of students pick all weeds in the designated area instead of wandering around picking in several areas
3. Let them know that success in pulling a weed is when the entire weed including its complete root system has been extracted (removed) from the soil.
4. The student needs to place his fingers on the ground, grip the base of the weed, and gently pull up at an angle (perhaps even having to pull from different angles) until roots loosen from the soil.
5. If you plan to use tools (hand weeder, trowel, shovel, hoe, etc.) make sure no team has an unfair advantage if it is a contest. Also reinforce proper use of the tools.
6. Once removed gently tap the roots on the ground to dislodge any remaining dirt from the root system.
7. Once done weeds should be placed in a container – not dumped around the garden area.

### **Questions: (3 minutes)**

- Any questions about what we have done today?
- What is our goal in this garden? (have a good harvest)

### **Wrap Up**

#### **Statements: (3 minutes)**

To reach our goal of having a good harvest in the school garden or in your home garden requires that you take all the right steps along the way. That means:

- Properly sowing the seeds at the correct depth in good soil
- Properly spacing the seeds and plants
- Choosing locations in the garden bed that protects the more sensitive plants and makes use of companion plants
- Keeping the soil moist, but not too wet
- Giving the seedlings proper lighting

### **Clean Up**

#### **Return to class**