Lesson: **Plant Parts and Their Jobs**

Grade Level: First Grade

Subject: Science

**Standards:**

<table>
<thead>
<tr>
<th>Life Science:</th>
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<tbody>
<tr>
<td>Each plant or animal has different structures or behaviors that serve different functions</td>
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**Materials:**

- Books about plant parts such as the “Pebble Plus” series by Vijaya Khisty Bodach (*Flowers, Leaves, Roots, Seeds*)
- FOSS Unit: New Plants plant diagram
- Markers/colored pencils

**Lesson Time:** 45 minutes

**Overview:**

Students identify structures of edible parts of plants and discuss the things that plants need in order to survive.
Lesson: **Garden Observations**

Grade Level: First Grade

Subject: Science and Health

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**Materials:**

- The book *How Groundhog’s Garden Grew* by Lynn Cherry
- Harvested garden plants
- Baskets labeled with plant parts
- Shovels, garden gloves
- Scissors, glue
- Sorting chart

**Lesson Time:** 60 minutes

**Overview:**

Students will visit the school garden to learn where food comes from and how it’s harvested.
Lesson: **Vegetable Soup**

Grade Level: First Grade

Subject: Science and Health

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Materials:

- Crock pot, bowls, spoons, salt, pepper for taste
- Variety of vegetables
- Variety of unhealthy snacks
- The book *Vegetable Soup* by Lois Elheart

Lesson Time: Two 30-minute sessions

Overview:

Students will identify and explain why some foods are healthy and some foods are unhealthy using crops from the garden.
Lesson: **The Rainbow Plate**

Grade Level: First Grade

Subject: Science and Health

**Standards:**

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**Materials:**

- The book *Mossy* by Jan Brett
- Tag board paper (cut in the size of a placemat)
- Glue
- Various colorful pictures of food

**Lesson Time:** Two 30-minute sessions

**Overview:**

Students will learn about different vegetables from the garden and name a variety of colorful foods they need to eat in order to stay healthy.
Lesson: **Tops and Bottoms**

Grade Level: Second Grade

Subject: Language Arts

Standards:

**Language Arts:**

Use a range of strategies efficiently to construct meaning from literature

Materials:

- The book *Tops and Bottoms* by Janet Stevens
- Computer and digital projector
- Trowel
- Ruler
- Seeds for tomatoes, beans, onions, cauliflower, lettuce, squash

**Lesson Time:** 2 to 3 days

**Overview:**

Students will discuss a story about growing plants in a garden, act it out in small groups, and plant seeds.
Farm-to-School Curriculum

Lesson: Become Farmers
Grade Level: First Grade
Subject: Science, Reading, Writing

Standards:

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<th>Writing:</th>
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<tr>
<td>Presentation of Knowledge and Ideas</td>
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<td>With guidance and support from adults, recall information from experiences, or gather information from provided sources, to answer a question.</td>
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<td>Use text features (titles, illustrations, headings, bold type) to locate, interpret, and use information.</td>
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<td>Offspring (new plants) have characteristics that are similar to but not exactly like their parents’ characteristics</td>
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<tr>
<td>Analyze and interpret data about the needs of plants and animals</td>
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Materials:
- Various gardening books for children (ask your librarian to show you and your students the section in the library so you will know what is available in your school)
- YouTube videos on gardening
- Dead plant and a thriving plant
- Various vegetable seeds, label for each student's plant, Small paper cups
- Soil (70% top soil, 30% compost) – or a “Planter’s Mix”
- Plot for garden
- Small digging tools
- Notebook for each child to record his/her observations of growth.

Lesson Time:
Will span several months as the seeds are planted and then begin to grow. Each day will need 5-15 minutes for observations and short discussions.

Overview:
First grade students will become farmers in this lesson about planting and caring for seeds and seedlings over time. They will not only take care of the plants, they will also keep track of growth, label illustrations and monitor progress using science journals.
Lesson: Learning to Eat Through Literature

Grade Level: Second Grade

Subject: Health

Standards:

Health
- Physical and Personal Wellness
  - Identify eating behaviors that contribute to maintaining good health

Language Arts
Speaking and Listening
  - Engage effectively in collaborative discussions

Ed Tech
  Illustrate and communicate original ideas and stories using digital tools and media-rich resources.

Materials:
- Set of Chromebooks or 1 class period in the Computer Lab;
- Books: *The Berenstein Bears Grow-It! Mother Nature Has Such a Green Thumb* by Stan & Jan Berenstein; *From Seed to Plant* by Gail Gibbons; *Good Enough to Eat: A Kid’s Guide to Food and Nutrition* by Lizzy Rockwell

Lesson Time: One class period

Overview:

A second-grade class will begin their unit on Health/Gardening by first learning about choosing healthy foods, snacks, and drinks every single day. They will read three books and complete two Wixie activities. This lesson will be a springboard into further lessons about seeds, plants, gardening, soil, and planting. It will also set the stage for having the class decide on two vegetables to plant in the garden.
Lesson: The Circle of Life: Part 1
Grade Level: Third Grade
Subject: Science

Standards:

**Life Science:**
The duration and timing of life-cycle events such as reproduction and longevity vary across organisms and species

Materials:
- Books about the life cycle of plants and insects
- Poster paper
- Markers

Lesson Time: Two 60-minute sessions

Overview:
Students compare the life cycle of plants to that of insects. They create posters, write a reflection in their notebooks, and use a Venn diagram to compare and contrast.
Lesson:  **The Circle of Life: Part 2**

Grade Level:  Third Grade

Subject:  Science

Standards:

**Life Science:**
The duration and timing of life cycle events such as reproduction and longevity vary across organisms and species

**Language Arts:**
Introduce a topic and group related information together: include illustration when useful to aiding comprehension

Materials:
- Document camera
- Science notebook
- Markers

Lesson Time:  One 30 minute sessions

Overview:

Students will use information generated from Part One of this lesson to work in groups comparing the different stages of lifecycles and generate a discussion around their findings.
Lesson: **Packet to Package**
Grade Level: Fourth Grade
Subject: Language Arts

**Standards:**

<table>
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<tr>
<th><strong>Language Arts:</strong></th>
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<tbody>
<tr>
<td>Students apply research skills to locate, select, and make use of relevant information</td>
</tr>
<tr>
<td>Skimming to find information related to a topic by identifying key terms</td>
</tr>
<tr>
<td>Formulating research questions</td>
</tr>
</tbody>
</table>

**Materials:**
- Poster paper
- Markers

**Lesson Time:** 60 minutes

**Overview:**
Students will analyze data provided on seed packets and create a document to schedule the planting of seeds.
Lesson: **Seasons, Soil, and Seeds**

Grade Level: Fourth Grade

Subject: Math

**Standards:**

| Math: | 
|-------|---------------------------------|
|       | Appropriate measurement tools, units, and systems are used to measure different attributes of objects and time |
|       | Represent measurement quantities |
|       | There is an interaction and interdependence between and among living and non-living components of ecosystems |

**Materials:**

- 6 – Meat thermometers – with a minimum six inch probe
- Ruler, clipboards, pencils and science notebooks
- Worksheet with data table (attached)
- Books such as *If You Hold a Seed* by Elly McKay, *From Seed to Plant* by Allan Fowler, *The Vegetables We Eat* by Gail Gibbons, *Roots, Shoots, Buckets, and Boots: Gardening Together with Children* by Sharon Lovejoy, *Time for Kids: Plants!* by Brenda Iasevol, and *Roots* by Vijaya Khisty Bodach
- Variety of seed packets (ideally several from different growing seasons; at least one per student)

**Lesson Time:** One class session each month over the course of a year

**Overview:**

Students collect data such as temperature, height, and plant growth over time and create graphs to analyze data.
Farm-to-School Curriculum

Lesson: Farm Field Trip

Grade Level: Fifth Grade

Subject: Health

Standards:

**Health:**

a. Identify eating behaviors that contribute to maintaining good health
b. Make a personal commitment to improve food choices
c. Choose healthy foods and beverages instead of less healthy ones
d. Use current federal nutrition standards and guidelines to plan healthy meals and snacks (MyPlate)
e. Demonstrate the ability to identify and select healthy from unhealthy foods
f. Summarize how to request politely foods that are more nutritious
g. Analyze the difference between disordered eating and eating disorders
h. Investigate potential health effects of dyes, preservatives, and other additives in our food

Materials:

- Carrots or other locally grown vegetables
- Student notebooks/pencils

Lesson Time: Three 45-minute sessions, plus a field trip to a farm

Overview:

Students prepare for a trip to a local farm and participate in a taste test of locally grown food.
Farm-to-School Curriculum

Lesson: **Salad Bar Math**

Grade Level: Sixth Grade

Subject: Math and Health

**Standards:**

<table>
<thead>
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<th>Math:</th>
<th>Quantities can be expressed and compared using ratios and rates</th>
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<td>Health:</td>
<td>Analyze how positive health behaviors can benefit people throughout their life span</td>
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**Materials:**

- Jars or containers with lids
- Oil (different types)
- Vinegars (different types)
- Herbs from the school garden
- Salt/sugar

**Lesson Time:** 60 minutes

**Overview:**

Students practice concepts around ratios by mixing different salad dressings for their garden produce.
Lesson: **Classroom Composting with Red Wigglers**

Grade Level: Sixth Grade  
Subject: Science

**Standards:**

<table>
<thead>
<tr>
<th>Life Science</th>
<th>Organisms interact with each other and their environment in various ways that create a flow of energy and cycling of matter in an ecosystem. SC09-GR.6-S.2-GLE.2</th>
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<td></td>
<td>Connections with other disciplines and information acquisition</td>
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**Materials:**

- Red wiggler worms
- Worm bin filler: shredded newspaper, dry crushed leaves, chopped vegetable waste
- Worm bin with air holes
- Shallow bin for observations
- Magnifying glasses
- Observation graphic organizers
- Copies of the book *Worms Eat My Garbage* by Mary Appelhof

**Lesson Time:** Two 40-minute sessions

**Overview:**

Lesson 1- Introduce composting and the use of red wiggler worms to compost. Give students the opportunity to observe/explore the worms and ask questions/make predictions about the worms’ behavior.

Lesson 2- Set up the vermicompost bin, read sections from "Worms Eat Our Food", and make a poster to be hung in the class about what can be composted.
Lesson: **Optimizing the Size and Space of a Garden Plot**

Grade Level: Seventh Grade

Subject: Math

**Standards:**

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**Materials:**

- Tape measures
- Worksheet printout
- Whiteboard or paper for making chart of measurements

**Lesson Time:** 40 minutes

**Overview:**

Students apply concepts learned in geometry to help arrange plants within rectangular garden beds.
Lesson: **Benefits of Nutrients**

Grade Level: Seventh Grade  
Subject: Health

**Standards:**

| Standard: 2. Physical and Personal Wellness in Health |

**Materials:**

- Computer and projector
- MyPlate power point
- Paper plates
- Markers of different colors

**Lesson Time:** 2 days

**Overview:**

Students will be taught about nutrients (vitamins and minerals) and the importance they have on our bodies. In this lesson, they will study which fruits and vegetables carry certain vitamins and minerals, the affect such nutrients have on our bodies, and why they are an important part of everyone’s daily diet.  
Students will also be introduced to portion sizes from the MyPlate presentation. They will discuss what portion sizes look like in their own opinion of their plate. Students will then draw portion sizes that they feel are appropriate on individual paper plates.
Lesson: **Who Gives a Bean about Kernels, Seeds, and Sister?** (Spring/May lesson)

Grade Level: Eighth Grade

Subject: Social Studies: U.S. Society

Standards:

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<th>Social Studies</th>
<th>Explores the relationship of resources and how they lead to cooperation or conflict</th>
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<td>Geography</td>
<td>Examines places, regions, and connections</td>
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Materials:

- Corn, bean, and squash seeds
- Gardening tools
- Graph paper
- Tape measure

Lesson Time: One 90-minute lesson

Overview:

In this lesson, students are introduced to the evolution, importance, and uses of corn in colonial America. They will learn about the trading of agricultural resources for survival, as well as the history, concept, and creation of a Three Sisters Planting Plan.
Lesson: A Harvest to Eat and Dye For
(Fall/September lesson)

Grade Level: Eighth Grade

Subject: U.S. Society

Standards:

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Materials:

- Containers/bags for harvesting vegetables
- Large Crock-pot, old white t-shirts or cloth, and indigo dye ($14, must be ordered in advance from http://www.knitpicks.com/cfAccessories/Accessory_Display.cfm?ID=80641&media=PPCgpGen&gclid=CNun06fsIMUCFZeDaQodg0oAQA&utm_source=media&utm_medium=marketing&utm_campaign=PPCgpGen
- Two large plastic tubs and water for dyeing
- Set of Classroom Chromebooks

Lesson Time: One 90-minute class period

Overview:

Students investigate primary documents that speak to the importance of early agricultural resources in colonial America and their relationship to geography and indigenous people, trade and survival, while using natural dyes made from plant pigments to tie-dye shirts.
Lesson:  **Como es el Jardín?**

Grade Level: Middle or High School

Subject: **Spanish**

Standards: World Languages

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<td>Standard 3: Connections with other disciplines and information acquisition</td>
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Materials:

- To review comparisons, you may want to use this video: [https://www.youtube.com/watch?v=gHYUjQZhtSk](https://www.youtube.com/watch?v=gHYUjQZhtSk) or this one with more/less commands [https://www.youtube.com/watch?v=uWecVfkkMds](https://www.youtube.com/watch?v=uWecVfkkMds)
- Access to school garden
- Notebooks, writing materials

Lesson Time: 90 minutes

Overview:

Students review comparison vocabulary and learn names of different fruits and vegetables. Using items from the school garden, students will make comparisons and answer questions in Spanish.
Lesson: La Mariposa Monarch
Grade Level: Middle School
Subject: Spanish

Standards: World Language

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<td>Knowledge and understanding of other cultures</td>
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Materials:

- Template for monarch butterfly design
- Postage and envelope to send monarchs made by the classroom to Journey North by the necessary deadline (see Journey North website at http://www.learner.org/jnorth/tm/symbolic/About.html). Also include return postage in order to receive monarchs back from students in Mexico in the spring
- Milkweed seeds or seedlings to be planted in the school garden
- Containers and soil for seeds or seedlings

Lesson Time: 3 to 5 class periods

Overview:

Students learn about the cultural and environmental importance of the symbiotic relationship between plants and butterflies.
Farm-to-School Curriculum

Lesson: **Goals and Gardening**

Grade Level: Middle School

Subject: Counseling lesson for all students: goal setting

**Standard:**

- Standard 6: Students will demonstrate the knowledge and skills necessary to make decisions, set goals, and take action to achieve their proposed goals

**Materials:**

- PowerPoint for goal setting

**Lesson Time:** Four class periods, with follow-up time to work in the garden

**Overview:**

Students learn how to set SMART goals and then work together on building a garden project collaboratively.
Lesson: **The Great GMO Debate: GMOs in Our Food System**

Grade Level: High School

Subject: Science and Language Arts

**Standards:**

| Life Science | Physical and behavioral characteristics of an organism are influenced to varying degrees by heritable genes, many of which encode instructions for the production of proteins
| Evolution occurs as the heritable characteristics of populations change across generations and can lead populations to become better adapted to their environment |
| Language Arts | Deliver organized and effective oral presentations for diverse audiences and varied purposes |

**Materials:**

- Computers with access to databases
- Debate timesheets and roles

**Lesson Time:** 3 to 5 class periods

**Overview:**

Students gather and analyze information from several different sources about genetically modified organisms in our food system and identify pros and cons of potential impacts. Students discuss the concept of credible sources and learn to use a library database to find factual, peer-reviewed information about GMO technology. Students participate in a debate about the topic of GMOs, taking either an affirmative or negative stance and using evidence to support their claims.
Lesson: The Great GMO Debate: Accessing Credible Information

Grade Level: High School

Subject: Language Arts

Standards:

| Language Arts | Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text. |

Materials:

- Presentation on analyzing sources for credibility
- Computers with access to databases

Lesson Time: 1 class period

Overview:
Students learn how to analyze a variety of print and online sources for credibility and use databases to access information available in peer-reviewed journals.
Lesson: **The Great GMO Debate: Considering All Sides**

Grade Level: High School

Subject: Science and Language Arts

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**Materials:**

- Debate roles and schedule of speaking times
- Notecards, pens, etc.
- Debate scoring rubric

**Lesson Time:** 1 class period

**Overview:**

Students work in teams to support or negate a side in a debate around a local issue involving genetically modified organisms.