Vocabulary: plan, timeline, map, space

WRITING INSTRUCTIONS FOR A SCHOOL GARDEN BED

FOURTH GRADE

Description

Working in teams, students plan a garden and make a group presentation of their plan to the class. The lesson is the culmination of a garden-planning series that also includes Winter Lesson 1, Measuring and *Mapping the School Garden*; Winter Lesson 2, *Plant Timelines*; and Winter Lesson 3, *Companion Plants*. The planning of a garden space challenges students to synthesize the background knowledge and data they gathered in the previous three lessons. It requires teams of students to integrate a variety of science, math, and language concepts and skills.

Guiding Question

How can we plan what to grow in a garden?

Big Idea

Careful planning can help make a garden healthier and more productive.

Learning Objectives

At the end of this lesson, students will be able to plan and map a seasonal vegetable garden, and make a group presentation of their plan.

Materials

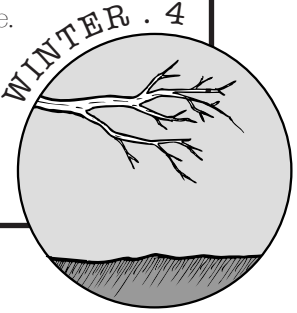
Garden maps that students created in Winter Lesson 1, *Measuring and Mapping the School Garden*.
Vegetable growing calendar that students created in Winter Lesson 2, *Plant Timelines*
Lists of companion plant groups that students generated during Winter Lesson 3, *Companion Plants*.
Blank map of assigned garden area, or squared graph paper to make one.
Rulers, colored pencils, pencils, paper and other drawing/writing tools.
Information sources, such as seed packets or catalogs (online or paper), or vegetable planning guides (online or paper).
Optional: Volunteers to help groups with research and planning.

Preparation

Gather materials.
Preview maps of the garden to choose an area with a simple quadrilateral (4-sided) shape, to make garden planning easier for students, or if the class has an assigned garden area, be prepared to help students locate it on the map.
Optional: Create an outline of your garden area and make enough copies for each group to have several.
Optional: Train volunteers to help groups with research and planning.

Lesson time: see additional time

Additional time: 4-7 hours: 30-60 minutes to introduce the garden-planning challenge. 2-4 hours for group planning and preparation (can be divided over several days). 1-2 hours for group presentations and a follow-up discussion (can be divided over more than one day).



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Lesson time: see additional time

Introducing the Lesson

Engage student interest. Ask students how plants should be chosen for the school garden. Discuss some considerations that go into the decision about what plants to grow: *Will the plant grow food that students would like to eat in the cafeteria? Does the plant grow very well here in our area?* Point out that some foods, such melons, don't grow well in the Willamette Valley because they need a longer, hotter growing season in a place closer to the tropical zone. *Is there enough space in the garden to grow the plant?* Remind students that some plants, such as artichokes, grow very large, and take up a lot of space in the garden. *When does it grow? Will students and other people be around the school to take care of the plant and harvest it at the right time?* Tell students that they are going to practice deciding what plants to grow in one area of the school garden.

Activate prior knowledge. Review with students what they did and learned in Winter Lesson 1, Measuring and *Mapping the School Garden*; Winter Lesson 2, *Plant Timelines*; and Winter Lesson 3, *Companion Plants*.

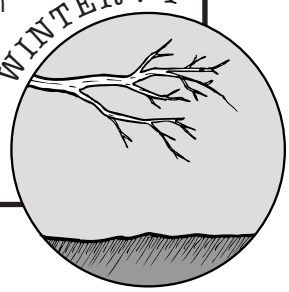
Procedure

1. *Present the challenge.* Tell students that they will be working in teams. The job of each team is to develop a garden plan for growing 6-8 vegetables in one area of the garden. Assign or allow students to form teams.

2. *Assign the garden area.* Have students look over their maps from Winter Lesson 1, *Measuring and Mapping the School Garden*. If the class has its own area in the school garden, guide students to locate it on their maps, Alternatively, if you have chosen a rectangular garden area for students to plan, guide students to locate that. If you made map outlines of the assigned garden area, hand each team several outlines. If you did not make outlines, show students how to use scale to create their own outline on squared graph paper, transferring measurement and shape information from their maps from Winter Lesson 1, *Measuring and Mapping the School Garden*. Briefly discuss the assigned garden area. Point out any features, such as nearby trees or buildings that affect the levels of sunlight in the garden. Discuss soil, water, and other weather conditions in that area of the garden. If time and weather permit, you may wish to go outside as a class and note some observations about the assigned area.

3. *Review research skills.* Remind or show students how to get information from seed packets/catalogs about what conditions a plant needs. Refer to 3rd Grade Spring Lesson 1, *Read About Seeds*, for more information about reading seed packets. Review how to use tables of contents and indexes to find information in guidebooks about vegetable planting. If you have online access to seed-company web sites or vegetable planting guides, show students how to navigate to these resources and locate the relevant information within each source.

4. *Plan.* Give groups time, in one or more sessions, to plan their gardens. Hand out to teams the vegetable growing calendar that students created in Winter Lesson 2, *Plant Timelines* and the lists of companion plant groups that students generated during Winter Lesson 3, *Companion Plants.* Also make available for reference seed packets, seed catalogs, and



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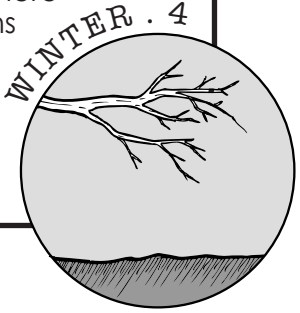
vegetable planting guides. Provide access to online and print references, if possible. Suggest that teams consider a process like the following:

- Brainstorm a small list of veggies that team members like to eat and would want to grow. It's OK to start out with more than 6-8 vegetables, but you might not want to list a whole lot. Remember, you want to end up with only 6-8 vegetables at the end.
- Research to learn whether some of the vegetables you should remove from the list because they cannot grow well in our area. Cross those off.
- Research the plant sizes of remaining vegetables on the list. Rate each one as *small, medium, large* and *extra-large,* and note the size on your list. Use math skills to decide if some vegetables should be removed from the list because too few of them would fit in the assigned garden area. Keep any paperwork showing your math calculations, just in case you need it later.
- Look at the planting calendar you made earlier. Decide if you want to drop any plants from the list because of the time they are planted. Then, see which vegetables on your list can be planted at about the same time. Make notes about planting time on your list. You may want to rewrite the list (with your notes) in order of planting, from early in the year to later.
- Look at the remaining vegetables on the list. Use your lists of friendly companion plants to figure out which ones might grow together in groups. Rewrite or mark the list to show possible companion planting groups.
- If the list still has too many vegetables, work together as a group to pick out 6-8 that you think would work especially well in the garden area you are assigned.
- Now, map out how you would arrange your plants in the garden area. Try several arrangements on different sheets of paper, if you want, until you get one you like.
- Add notes to your map about when to plant each plant (get this from your calendar), how deep to plant (get this from a seed packet or catalog), how to care for the plant as it grows (get this from a seed packet or catalog or planting guide), and when you think the veggie will be ready for harvest (use your calendar or calculate from seed packet or catalog information).
- Get ready to present your plan to the class. Decide who will talk, who will show your map, and what you will say about your vegetables and why you picked them. Be prepared to tell where you found all your information. You may want to make a list of your sources.

5. *Present plans.* Allow each team to present its plan and map to the class. After the presentations are finished, decide as a class, which plan you would like to actually enact if you could (or, if your class has its own garden bed, which plan you actually will enact). Discuss the similarities and differences among plans. Are there aspects of several plans that could be combined? Are there any questions that you still need to answer before you could choose a plan? How could you find the answers?



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Assessing Student Knowledge

Conduct informal assessments of your students' knowledge by asking observing them during small-group planning sessions and subsequent discussions. You may also wish to more formally assess groups by creating a rubric to score their research and presentations.

Extensions

Involve the school community. Invite the school garden coordinator, and/or school cook to the presentations to comment on any gardening issues that students may not know about, and to suggests when and how different vegetables might be prepared and served in the cafeteria.

Go electronic. Once students understand the goals and concepts of garden planning, you may want to have them use a free trial subscription to an electronic garden planner, such as PlanGarden, www.plangarden.com or GrowVeg, www.growveg.com, which include assorted calculators and visualization options, to quickly generate and compare several alternative garden plans. Compare how electronic planning relates to planning on paper. What information do both require? What advantages and disadvantages does each method have?

Write about the plan. Have students, individually or in teams, write instructions that would help someone unfamiliar with the garden plan enact. Students should explain anything that might be unclear. Alternatively, students could write descriptions of how they envision the garden. How will it look when all the plants are just planted, or growing fully or being harvested?

Books & Resources

Books:

A Backyard Vegetable Garden for Kids, by Amie Jane Leavitt (2008, Mitchell Lane Publishers)

Blue Tomatoes, Orange Tomatoes: How to Grow a Rainbow Garden, by Rosalind Creasy, Illustrated by Ruth Heller (2009)

First Garden: The White House Garden, by Robin Gourley (2011, Clarion Books) – About the fruit and vegetable garden planned by Michelle Obama.

Grow Your Own Pizza: Gardening Plans and Recipes for Kids by Constance Hardesty, Illustrated by Jeff McClung (2000, Fulcrum Publishing)

Kids in the Garden: Growing Plants for Food and Fun, by Elizabeth McCorquodale (2010, Black Dog Publishing)

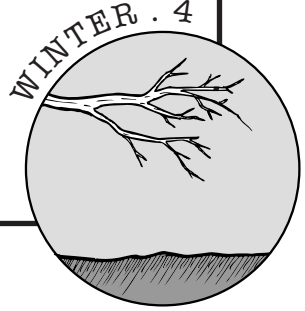
Planting the Seed: A Guide to Gardening, by Suzanne Winckler (2002, Lerner Publishing Group)

Web Sites:

PlanGarden, www.plangarden.com

Oregon State University Extension http://extension.oregonstate.edu/gardening/

Vegetable Garden Plans, http://www.squidoo.com/vegetable-garden-plans shows several models, including the alphabet garden, which may help spark theme idea for teams of students.



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OR. Dept. of Ed. Key Standards

Oregon Science K-HS Content Standards:
4.1L.1Compare and contrast characteristics of fossils and living organisms.
4.2L.1 Describe the interactions of organisms and the environment where they live.

Oregon Common Core State Standards for Mathematics:
4.MD.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

Oregon Common Core State Standards for English Language Arts:
4.W.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic.
4.W.8 Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.
4.SL.4 Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.
4.SL.5 Add audio recordings and visual displays to presentations when appropriate to enhance the development of main ideas or themes.