

G A R D E N I N G P R O J E C T S A M P L E U N I T

C R E A T E D B Y : D R . J A M E S R Y E
W E S T V I R G I N I A U N I V E R S I T Y
F O R N O R T H E L E M E N T A R Y S C H O O L ,
M O R G A N T O W N

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|--|--|---------------------------------------|---------------------|----------|
| Name of Project: | Just the Berries: Overview and activities | | Duration: | All year |
| Subject/Course: | Science, Math, English Language Arts/Writing, Speaking & Listening | Teacher(s): Forinash and Minor | Grade Level: | 2 |
| Other Subject Areas to Be Included: | Science, Math, English Language Arts - Writing, Listening, Speaking | | | |
| Project Idea Summary of the issue, challenge, investigation, scenario, or problem: | We currently have strawberries growing in our garden beds outside. We will plant bare root strawberries in our classroom in an Earth box so students can see the plants grow and learn how to take care of them. We will transplant the strawberry plants in outside beds in early spring. Students will learn about strawberries, how to care for them and what to do with them once harvested. Students will produce a caretaker's guide for the parents for the summer. This project will allow students to do math and science in a real life environment. | | | |
| Driving Question | How best do we produce and care for strawberries all year long? During the summer? Does a plant need sunlight and water to grow? | | | |

Content Standards to be taught and assessed:

ETS1-1: Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

ETS1-2: Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

LS2-1: Plan and conduct an investigation to determine if plants need sunlight and water to grow.

M.2.MD.1: measure the length of an object by selecting and using appropriate tools, such as rulers, yardsticks, meter sticks, and measuring tapes.

M.2. MD.3: estimate lengths using units of inches, feet, centimeters, and meters.

M.2.MD.4: measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

M.2.OA.1: use addition and subtraction within 100 to solve 1 and 2 step word problems.

M.2.MD.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

M.2.G.2 Partition a rectangle into rows and columns of same-size squares and count to find the total number of them. This is what we could do before planting the bare-roots into the earthbox.

ELA.2.R.C1.3: describe how characters in a story respond to major events and challenges in literary texts.

ELA.2.R.C1.4: Ask and answer such questions as who, what, where, when, why and how to demonstrate understanding of key details in informational texts.

ELA.2.R.C1.6: describe the connection between a series of scientific ideas or steps in technical procedures in an informational text.

ELA.2.R.C2.4: determine the meaning of words and phrases in informational text relevant to grade 2

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| 21st Century Skills to be taught and assessed: | Collaboration | X | Other: | |
| | Communication (Oral Presentation) | X | Writing | X |
| | Critical Thinking/Problem Solving | X | | |

P R O J E C T O V E R V I E W

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|--|---|---|----------------------|--|---|
| Major Products & Performances | Group: | Teach parents how to start Earth boxes. Teach parents how to be caretakers of the outdoor raised garden beds and the strawberry terrace. | ☑Presentation | | |
| | | | X | Class | |
| | | | | School | |
| | Individual: | | X | Community | |
| | | | | Experts | |
| | | | Web | | |
| | | | Other: | | |
| Entry Event to launch inquiry, engage students: | Read the book: "The Little Mouse, the Red Ripe Strawberry, and the Big Hungry Bear ". Have strawberries to share with students. (Reading/Vocabulary - comprehension strategies). Ask questions, " Would you like to have strawberries the whole school year, not just In the summer? How can we make that happen? | | | | |
| Assessments | Formative Assessments (During Project) | Quizzes/Tests | | Practice Presentations | X |
| | | Journal/Learning Log (Science Notebook) | X | Notes/Observations | X |
| | | Preliminary Plans/Outlines/Prototypes | | Checklists | |
| | | Rough Drafts | | Concept Maps (w/ classifications of | X |
| | | Online Tests/Exams | | Other: Data Analysis | X |
| | Summative | Written Product(s), with rubric: | X | Other Product(s) or Performance(s), with rubric: | |

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| | Assessments (End of Project) | Oral Presentation, with rubric | X | Peer Evaluation | |
| | | Multiple Choice/Short Answer Test | | Self-Evaluation (of participation) With Goals | X |
| | | Essay Test | | Other: | |

P R O J E C T O V E R V I E W

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| Resources Needed | On-site people, facilities: | Dr. Rye, North Garden Beds, Garden Shed, Melissa Forinash, Alana Minor |
| | Equipment: | Garden Shed, Earth Boxes with trellis, grow lab lights. |
| | Materials: | Strawberry bare-roots, straw, soil, water |
| | Community resources: | HR Scott and Sheryl Jarvis (WVU Extension, Mon County Office) |

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|---------------------------|--|------------------------|---|---------------------|--|
| Reflection Methods | (Individual, Group, and/or Whole Class) | Journal/Learning Log | X | Focus Group | |
| | | Whole-Class Discussion | X | Fishbowl Discussion | |
| | | Survey | X | Other: | |

P R O J E C T T E A C H I N G A N D L E A R N I N G G U I D E

Project: Just The Berries

| Major Product(s) and Presentation students need to | Knowledge and Skills Needed by Students to successfully complete major products and presentations | Scaffolding / Materials / Lessons to be Provided by the project teacher, other teachers, experts, mentors, community members |
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| Checklists Concept Maps | Classification of Strawberries | → Mrs. Forinash and Mrs. Minor |

| | | |
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| Journals | Where and how they grow best. | → Books Handouts w/ Info about strawberries youtube videos |
| | Cutting back runners to the central plant with a crown. | → Mrs. Forinash and Mrs. Minor HR Scott |
| | What do you plant to grow strawberries? How far apart do you plant strawberry plants? | → you tube videos, books, handouts |
| Creating and presenting a caretaker's guide. | How to care for strawberry plants. | → Books, videos, experiences |
| | All the ways one can prepare strawberries. | → handouts, books, recipes |
| | | → |

P R O J E C T C A L E N D A R

Project: Just the Berries

Time Frame: September - May

M O N D A Y

T U E S D A Y

W E D N E S D A Y

T H U R S D A Y

F R I D A Y

P R O J E C T W E E K O N E (8 / 1 2 - 1 6)

Notes

SCHOOL BEGINS

P R O J E C T W E E K T W O (8 / 1 9 - 2 3)

Notes

This week: help students plan and conduct an investigation to determine if plants need sunlight and water to grow using bare root strawberry plants in round pots. Controlled

P R O J E C T W E E K T H R E E (8 / 2 6 - 3 0)

Notes

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| Entry Event | | Get Earth Boxes ready with class as a lesson. | Plant bare-root strawberry plants in Earth boxes. | |
| P R O J E C T C A L E N D A R | | | | |
| Project: | | | Time Frame: | |
| P R O J E C T W E E K F O U R (9 / 2 - 6) | | | | |
| Notes | | | | |
| | | | | Take pictures of Earth Box – students will draw the Earth Box with plants and write what they observe. We will measure plant height, leaf length, runner lengths etc. to compare how much |
| M O N D A Y | T U E S D A Y | W E D N E S D A Y | T H U R S D A Y | F R I D A Y |
| P R O J E C T W E E K F I V E (9 / 9 - 1 3) | | | | |
| Notes | | | | |
| | | | | Take pictures of Earth Box – students will draw the Earth Box with plants and write what they observe. We will measure plant height, leaf length, runner lengths etc. to compare how much |
| P R O J E C T W E E K S I X (9 / 1 6 - 2 0) | | | | |
| Notes | | | | |

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|---|---------------|-------------------|--------------------|---|
| | | | | Take pictures of Earth Box – students will draw the Earth Box with plants and write what they observe. We will measure plant height, leaf length, runner lengths etc. to compare how much |
| P R O J E C T C A L E N D A R | | | | |
| Project: | | | Time Frame: | |
| P R O J E C T W E E K S E V E N (9 / 2 3 - 2 7) | | | | |
| Notes | | | | |
| | | | | Take pictures of Earth Box – students will draw the Earth Box with plants and write what they observe. We will measure plant height, leaf length, runner lengths etc. |
| M O N D A Y | T U E S D A Y | W E D N E S D A Y | T H U R S D A Y | F R I D A Y |
| P R O J E C T W E E K E I G H T (9 / 3 0 - 1 0 / 4) | | | | |
| Notes | | | | |
| | | | | Take pictures of Earth Box – students will draw the Earth Box with plants and write what they observe. We will measure plant height, leaf length, runner lengths etc. |
| P R O J E C T W E E K N I N E (1 0 / 7 - 1 1) | | | | |
| Notes | | | | |

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|--|---------------|-------------------|--------------------|---|
| | | | | Take pictures of Earth Box – students will draw the Earth Box with plants and write what they observe. We will measure plant height, leaf length, runner lengths etc. |
| P R O J E C T C A L E N D A R | | | | |
| Project: | | | Time Frame: | |
| P R O J E C T W E E K T E N (1 0 / 1 4 - 1 8) | | | | |
| Notes | | | | |
| Pinch off blooms as they come on from now until week 15ish. | | | | Take pictures of Earth Box – students will draw the Earth Box with plants and write what they observe. We will measure plant height, leaf length, runner lengths etc. |
| M O N D A Y | T U E S D A Y | W E D N E S D A Y | T H U R S D A Y | F R I D A Y |
| P R O J E C T W E E K E L E V E N (1 0 / 2 1 - 2 5) | | | | |
| Notes | | | | |
| | | | | Take pictures of Earth Box – students will draw the Earth Box with plants and write what they observe. We will measure plant height, leaf length, runner lengths etc. |
| P R O J E C T W E E K T W E L V E (1 0 / 2 8 - 1 1 / 1) | | | | |
| Notes | | | | |

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|---|--|-------------------|--------------------|---|
| | | | | Take pictures of Earth Box – students will draw the Earth Box with plants and write what they observe. We will measure plant height, leaf length, runner lengths etc. to compare how much |
| | | | | |
| Project: | | | Time Frame: | |
| PROJECT WEEK THIRTEEN (11 / 4 - 8) | | | | |
| M O N D A Y | T U E S D A Y | W E D N E S D A Y | T H U R S D A Y | F R I D A Y |
| Notes | | | | |
| | | | | Take pictures of Earth Box – students will draw the Earth Box with plants and write what they observe. We will measure plant height, leaf length, runner lengths etc. to |
| PROJECT WEEK FOURTEEN (11 / 11 - 15) | | | | |
| Notes | | | | |
| | Winterize the garden bed and terrace lightly with straw. | | | Take pictures of Earth Box – students will draw the Earth Box with plants and write what they observe. We will measure plant height, leaf length, runner lengths etc. to |
| PROJECT WEEK FIFTEEN (11 / 18 - 22) | | | | |
| Notes | | | | |

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|---|---------------|-------------------|--------------------|---|
| Runner length measurement lesson | | | | Take pictures of Earth Box – students will draw the Earth Box with plants and write what they observe. We will measure plant height, leaf length, runner lengths etc. to compare how much |
| P R O J E C T C A L E N D A R | | | | |
| Project: | | | Time Frame: | |
| P R O J E C T W E E K S I X T E E N (1 2 / 2 - 6) | | | | |
| Notes | | | | |
| Research all the ways we could use strawberries. Can strawberries be a dessert? A drink? How can we make a drink using strawberries? Is it healthier than other | | | | Take pictures of Earth Box – students will draw the Earth Box with plants and write what they observe. We will measure plant height, leaf length, runner lengths etc. |
| M O N D A Y | T U E S D A Y | W E D N E S D A Y | T H U R S D A Y | F R I D A Y |
| P R O J E C T W E E K S E V E N T E E N (1 2 / 9 - 1 3) | | | | |
| Notes | | | | |
| Hopefully we will be picking some strawberries to eat!! | | | | |
| P R O J E C T W E E K E I G H T E E N (1 2 / 1 6 - 2 0) | | | | |
| Notes | | | | |

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| <p>We will begin discussing what we have learned about taking care of strawberries in our classroom. After Christmas, students will</p> | | | | |
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Plans for four of the lessons in the PBL unit

Lesson 1: Entry Event: Just the Berries (1 day) (Minor and Forinash together)
Week of August 26th

Content Standards:

ELA.2.R.C1.3 - describe how characters in a story respond to major events and challenges in literary texts.

ETS1-1: Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

Teacher Preparation: Get a copy of the book, “The Little Mouse, the Red-ripe Strawberry and the Big Hungry Bear”. Have some questions ready for students about how characters in a story respond to the major events/challenges in the book. (What the little mouse does? Etc.) Buy some strawberries. Have an idea of how you are going to lead the class discussion about how we can have strawberries all year long. Have a flip chart or use smart board to record student ideas.

Introduction: Preview/Prediction of the book, “The little mouse, the red-ripe strawberry and the big hungry bear”.

Lesson: Read book, “The little mouse, the red-ripe strawberry and the big hungry bear” to the whole class, discuss third person point of view, have students describe how characters in a story respond to the major events/challenges in the book.

Ask students, “What connection can you make between this book and our school garden?” (We hope they say strawberries! If they don’t, lead them toward that conclusion.)

Ask, “Can you think of a way for us to have strawberries all year long?” Discuss as a class and make a plan for planting and growing strawberries in the classrooms. When planning, write down student ideas and discuss how each idea could become reality. We want students to bring up the Earthbox and how it can be used to solve the problem of growing strawberries in the classroom all year long. Prior experience with the garden and growing indoors should help them come to this conclusion.

Ask, “What materials would we need to make this plan happen?” Discuss and make a list of materials.

Closure/Assessment: Everybody eat strawberries. YUM! YUM! We will use observation and class discussions to assess understanding at this time.

Lesson 2: Preparing EarthBox and Planting strawberries (2 days) (Minor and Forinash together)

Week of August 26th

Content Standards:

ELA.2.R.C2.4: determine the meaning of words and phrases in informational text relevant to grade 2 topic or subject area.

ELA.2.R.C3.3: explain how specific images contribute to and clarify an informational text.

ELA.2.R.C1.6: describe the connection between a series of scientific ideas or steps in technical procedures in an informational text.

ETS1-2: Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

Teacher Preparation:

Gather needed materials: EarthBox (fertilizer and dolomite), bare root strawberries, soil, water, bucket, shovels. Make sure to have EarthBox instruction manual. Have a flip chart to write steps on. Have all materials set up in the area the lesson will take place. Find and have videos ready from youtube. Soak the strawberry roots 15 minutes prior to planting and cut off the bottom quarter of the root system to help the plants grow faster.

Introduction Day 1: Show students an empty EarthBox and have a discussion about how it works. (Ask students how they think it works and why they are good to use indoors to grow plants.) Watch video from youtube: [EarthBox & self-watering container gardening](#)

Lesson: Using copies of the EarthBox instructional manual have students read it in small groups and discuss the steps to take to plant in the EarthBox. Have students share whole class the steps to take to prepare the EarthBox and plant in it. Make a list of the steps on the flip chart. Students will read each step in preparing the EarthBox and then we will complete the steps. As we are doing each step, students will record them in their science notebook. Have a discussion with class explaining the need of dolomite and fertilizer that is added to the top part of the soil.

Closure/Assessment: Exit Ticket – have students draw and label a picture and write down what they learned from today’s lesson to check for understanding about the EarthBox and how it works.

Introduction Day 2: Watch the following videos from youtube: [Learn How to Properly Plant Bare-Rooted Strawberry Plants](#) and [How to Plant Bare Root Strawberry Plants](#).

Lesson: Have a class discussion about how we should plant the bare roots. Make sure to ask about the crown and what happens if you bury the crown in the soil. Plant the bare root strawberries with the help of the students.

Closure/Assessment: Have students draw and label the EarthBox with newly planted strawberries in their science notebook.

Lesson 3: Measuring Runner Lengths (2 days) (Minor and Forinash will do in separate classrooms)

Content Standards:

M.2.MD.1: measure the length of an object by selecting and using appropriate tools, such as rulers, yardsticks, meter sticks, and measuring tapes.

M.2. MD.3: estimate lengths using units of inches, feet, centimeters, and meters.

M.2.MD.4: measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

M.2.OA.1: use addition and subtraction within 100 to solve 1 and 2 step word problems. ELA.2.R.C1.4: Ask and answer such questions as who, what, where, when, why and how to demonstrate understanding of key details in informational texts.

ELA.2.R.C2.6: identify the main purpose of informational texts, including what the author wants to answer, explain or describe.

Teacher Preparation: Gather needed materials: books listed below, tape measure, ruler, yard stick, copies of teacher made handout. Cut runners the morning of lesson using scissors. One set of runners need to include a runner shorter than a ruler, a runner longer than a ruler but shorter than a meter stick, a runner longer than a meter stick but shorter than a measure tape. One set of runners is needed per pair of students.

Introduction: Ask students, “What do you think we can do with these materials on the table today? Share and discuss. Tell students we will be doing math with the runners and see what they think we will do with them. Read these books as a class read aloud: Me and the Measure of Things and Length (Math Counts). Make sure to have students ask and answer who, what, where, when, why and how questions about each book. Students also need to identify the author’s purpose for each book. Mini Math Lesson: Review estimating and the unit, centimeters.

Lesson: Pass out the teacher made handout students will record their data on. Discuss each section and what they will be expected to have completed today. The rest will be completed tomorrow. Students will then receive their runners. They will begin by estimating (record) the length of each runner in cm. Then they will choose the appropriate tool to measure each runner. They will record their actual length of each runner. Students will write a statement comparing the estimated length to the actual length. They will write one statement for each runner. (This is as far as we expect students to get the first day.) The next day they will continue and write two word problems using their actual runner lengths. One problem will need to be addition and the other one will need to be subtraction. Students will then have another group solve their problems.

Closure/Assessment: Class discussion about the activity. Ask: “How did it go? What did you learn?” Collect data sheet for assessment.

Lesson 4: Investigation of a plant’s needs
Week of August 19th

Content Standards:

LS2-1: Plan and conduct an investigation to determine if plants need sunlight and water to grow.

ELA.2.W.C11.2: recall Information from experiences or gather information from provided sources to answer a question.

ELA.2.SL.C14.3: produce complete sentences when appropriate to task and situations in order to provide requested details or clarification.

Teacher Preparation: Have 2 pots with soil in them; get 2 strawberry plants from the garden bed that will be planted. Have a live and a dead plant to use for the See Think Wonder or pictures of a live and dead plant. Make sure to have the books: Seeds by Colin Walker and One Bean by Anne Rockwell to read after the investigation is over so that students can confirm their conclusions.

Introduction: Show students a live and dead plant (or a picture of a live and dead plant). Do a See Think Wonder. This is the first See Think Wonder of the school year, make sure to explain how to do a see think wonder and go over the expectations of students and the teacher, i.e., students talking one at a time, students listening when another person is speaking, etc. If students do not come up with this wonder, then the teacher will, “I wonder why one plant is dead and the other one is not?”

Lesson:

1. Help students prepare their science notebooks for their first time using them.
2. Take a wonder about one plant living and one plant dying and tell students they are going to plan an investigation to see if they can find out why a plant would die or a plant would live. The teacher will help students decide to see if water and sunlight are a necessity for a plant to live. This is what the students will be investigating.
3. Students will record the wondering in their science notebooks. Discuss in small groups how they would plant an investigation to determine if sunlight and water is a necessity for plants to grow. Have a class discussion about their ideas and write up a plan as a class. Students will write the plan in their science notebook.
4. Plant the strawberry plants in the pots and put them where they go according to the plan.
5. Students will observe and record their observations with pictures and words for 2-3 weeks.

Closure/Assessment: After 2-3 weeks, students will answer their questions based on their plan and observations. We will discuss their answers as a class. Then we will read Seeds and One Bean as a class. As we read Seeds, we will discuss why a plant needs sunlight and water to grow. After reading, students will be able to confirm if the answers to their questions were correct or not.