

MANCHESTER COLLEGE
Education Department

LESSON PLAN by: Sahara Kipfer

Source: The experiment idea came from the book- *George Washington Carver: The Peanut Wizard* by Laura Driscoll. The rest of the lesson: original.

Lesson: Experimenting with Peanut Plants

Length: 3 weeks- (first day and last two days 45 minutes each), the following days- 15 minutes each

remember- only 1 day per lesson 😊

Age or Grade Intended: 2nd grade

Academic Standard(s):

- Language Arts 2.4.3 - Research Process and Technology:
 - Find ideas for writing stories and descriptions in pictures or books.
- Language Arts 2.5.2 - Write a brief description of a familiar object, person, place, or event that:
 - develops a main idea.
 - uses details to support the main idea.
- Science 2.1.1 - Manipulate an object to gain additional information about it
- Science 2.1.6. – Use tools to investigate, observe, measure, design, and build things

Performance Objectives:

Using the given rubric, students will create a guidebook that explains how to care for a peanut plant with 83% accuracy (obtaining at least 16 of 18 on the rubric). *good*

Following the teacher's verbal directions, students will record their peanut plant observations in their science journals/diaries for every day of the experiment. ✓

Using the given disposable camera, students will take pictures of their peanut plants throughout the experiment, in which they are to use at least five of these pictures in their guidebook.

Assessment:

The teacher will use the attached rubric to evaluate the students' work. Students will already know what is expected of them because these guidelines would have been explained by the teacher.

Advanced Preparation by Teacher:

The teacher will need to have read *George Washington Carver: The Peanut Wizard* by Laura Driscoll and have developed questions to ask the class throughout the reading of the book. For the experiment that will be conducted, the teacher will need to have: one disposable camera for each student, 3 plastic cups per student, a few measuring cups that can be shared, potting soil, sand, clay, raw peanuts, and construction and computer paper. One caution with using raw peanuts- the teacher will need to make sure that no one is allergic to such a product. If someone is allergic, then a different type of plant could be used with the class. The teacher will also need to create a "Can You Follow Directions" worksheet, as well as a rubric to assess the students' work.

Procedure:

Introduction/Motivation: The teacher will begin the lesson by asking the students: "What do you know about peanuts? For example, can you name any products made from peanuts?" (Bloom's: Knowledge) Only students who have their hands raised will be called upon and the teacher will write their responses on the chalkboard. (Gardner: Visual/Spatial) At least ten facts and/or ideas should be written on the chalkboard. The teacher will then bring the focus to George Washington Carver and his work with peanuts and other plants.

Step-by-Step Plan:

Step 1: The teacher will read *George Washington Carver: The Peanut Wizard* by Laura Driscoll while the students stay seated at their desks. Throughout the book, the teacher will ask the following questions:

- a. After reading page 2, ask students "what was George Washington Carver's nickname?" (Bloom's: Knowledge)
- b. On page 4, it says that "George was a slave." Students should then be asked "can you explain what is meant by the term 'slave'?" (Bloom's: Comprehension)
- c. After reading page 9, ask the students "what would result if a plant did not receive enough water?" (Bloom's: Application)
- d. After reading page 11, ask the students "why do you think George wanted to go to school?" (Bloom's: Analysis)
- e. After reading page 14, ask the students "why did George choose to study plants in college?" (Bloom's: Evaluation)
- f. After reading page 20, ask the students "why do you think all the farmers in Tuskagee grew the same crop, cotton?" (Bloom's Analysis)
- g. After reading page 24, ask the students "can you think of any other ways that George could have introduced the sweet potato and the peanut?" (Bloom's: Synthesis)

Step 2: Once the book is completely read the teacher will direct their attention to pages 16 and 17, where the "dirty experiment" is discussed. The teacher will review the experiment with the class and then explain that they will be conducting the same scientific experiment (Gardner: Logical-Mathematical)

Step 3: The teacher will clarify the details of the 3 week long experiment:

- You are to collect 3 plastic cups and fill them halfway as follows:
 - 1 cup with sand
 - 1 cup with potting soil
 - 1 cup with clay (Gardner: Naturalist)
- Next you are to plant two raw peanuts in each cup, in which they should not be visible when all the way planted.
- Students will then be instructed to water each plant with $\frac{1}{2}$ cup of water each day, which can be done with the provided measuring cups. (Gardner: Logical-Mathematical)
- Students will also be told to write their names, as well as the type of potting material, on the cup. These cups will then be kept on the window sill at all times, that way they are able to soak up the sunlight.

Step 4: The teacher will then explain to the class that they are to take notes about their plants everyday, like a scientific journal or diary. (Verbal-Linguistic). They will be given 15 minutes each day, until the experiment ends, to make observations. Within their journals they can write when they first see their plants peeking through the soil, if the weather has been sunny or rainy, etc. Essentially the students will use their notes to write a "how to care for your peanut plant" guide. In addition to taking notes about their plants, they will be taking pictures. (Garner: Visual- Spatial) Each student will be given a disposable camera, which should be used wisely because only 24 pictures can be taken with each camera.

Step 5: Next the teacher will need to explain the importance of directions because this will be the foundation for their plant caring guide. Therefore, the definition of directions should be given, which is a set or series of instructions for finding or doing something. This definition should be written on the chalkboard, that way students can refer to it as they take notes and eventually write their guide. (Gardner: Visual-Spatial)

Step 6: To further explain the definition of directions and its importance, the teacher will provide the class with an example. The teacher will pass out a "Can You Follow Directions" worksheet to every student, in which they will be given 3 minutes to complete it. (Gardner: Logical-Mathematical)

Step 7: Once the 3 minutes have elapsed, the teacher should tell the students

to put their pencils down. Next the teacher will ask the students "can you explain the importance of this worksheet?" (Bloom's: Evaluation) The teacher will probe the students for the answer: following directions is important because if you don't then something may not turn out right or you may end up doing extra and unnecessary work.

Step 8: The teacher will then explain the writing assignment to the students. They were briefly told what they would be creating, but now the explicit directions must be given. Near the end of the 3 weeks, students will make a "how to care for your peanut plant" guide. To do this, students will need to use the notes they made in their science journal/diary, as well as the developed pictures. The students' guide should include clear and precise directions for taking care of this specific type of plant, such as how much water to give their plant, what soil it thrives the best in, how big the tallest plant of theirs grew to be, etc. (Gardner: Logical-Mathematical and Visual-Spatial) Additionally, this guide can be created on construction or computer paper and then the pages will be stapled together.

Step 9: The rubric that the teacher will grade the students on should be passed out and explained at this point, that way students know what is expected in their writing. (Gardner: Visual-Spatial) Students will be allowed to work on their guides, in class, during the last two class periods of the science unit, although they will be given the option of taking them home.

Step 10: Once the science experiment and the guide are completed, students will be allowed to take their plants home. Those who wish to not take them home can plant them outside the school (if the principal consented).

Closure: At the end of the class period on the last day, students will be required to hand in their "how to care for your peanut plant" guide. If students complete this assignment before the end of the class period on the last day, then they should choose a book to read independently.

Adaptations/Enrichment:

A girl who is allergic to peanuts- She is not gravely allergic, so she can be near peanut products. Therefore, she can grow a different type of plant, such as a tomato or a sweet potato plant.

A boy with a learning disability- He should be given the directions for the presentation in written form, in addition to hearing the teacher explain it verbally.

A girl who is gifted and talented in science- She could take the experiment one step further and add one additional plant to her count, in which the 4th plant would be of potting soil, but it would be kept in a dark, shady spot within the classroom.

Self-Reflection: Did I immediately engage my students' attention in the beginning? If not, how could I change the introduction to better captivate their interest? Were students given ample time to jot down notes about their plants? Should students have been given more time to create their "how to care for your peanut plant" guide? Were the adaptations appropriate for such students? For future references, what would I change about this activity, to see that it is more successful next time?

Excellent
precise
directions!

Can You Follow Directions?

This is a timed test--you have 3 minutes only!

1. Read everything carefully before doing anything.
2. Put your name in the upper right-hand corner of this paper.
3. Circle the word "name" in number 2.
4. In the left corner, write today's date.
5. Draw a square around the title of this worksheet.
6. At the bottom of the worksheet write the alphabet in lowercase letters.
7. Turn this worksheet over to the back and draw your favorite animal.
8. Put a triangle around all the odd numbers on the left side of this worksheet.
9. Work this math problem, 26-18, out on the right side of the worksheet.
10. Underline all even numbers on the left side of this paper.
11. Draw a big X across the front of this worksheet.
12. Now that you have finished reading everything carefully, do only numbers one and

two!

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Grading Rubric for "How to Care for a Plant" Guide

Name: _____

Date: _____

Category	3	2	1	0
Uses ideas/examples from your science journal/diary	5 ideas/examples are used	Only 4 ideas/examples are used	Only 3 ideas/examples are used	2 or less ideas/examples are used
Uses pictures taken with disposable camera	5 pictures are used	Only 4 pictures are used	Only 3 picture are used	2 or less pictures are used
Written Directions	Directions are correctly written and can easily be followed	One step was left out of the directions.		The directions were out of order and/or more than two steps were left out.
Spelling (high-frequency words)	No more than one word is spelled incorrectly	Two to three words are spelled incorrectly	Four words are spelled incorrectly	Five or more words are spelled incorrectly
Uses punctuation correctly	No more than one error is made	Two to three errors are made	Four errors are made	Five or more errors are made
Writes neatly	Handwriting is neat and readable	Can read most of the handwriting, but some words are hard to read		Handwriting is too messy to read

Total points = 18

Your points = _____

Grade/Percent = _____

good

Title of lesson plan:

Experimenting w/ Peanut Plants

Grade level (2 points)

- 2 points Grade level is indicated, clearly developmentally appropriate
1 point Grade level is indicated, but clearly not developmentally appropriate
0 points Grade level is not indicated or not developmentally appropriate

2 / 2

Credit to the creator (2 points)

- 2 points Credit is given to the creator of the lesson/web site included
0 points Credit is not given to the creator of the lesson plan or the web site is not included

2 / 2

Format/Grammar (5 points)

- 5 points Bright Idea is typed with no grammatical/spelling error
4 points Bright Idea is typed with one grammatical/spelling error
3 point Bright Idea is typed with two grammatical/spelling errors
0 points Bright Idea is not typed or contains three or more grammatical/spelling errors

5 / 5

Standards (2 points)

- 2 points Indiana Academic Standards listed and clearly taught in the plan
1 points Indiana Academic Standards list, somewhat clearly taught in the plan
0 points Indiana Academic Standards not listed OR not clearly taught in the plan

2 / 2

Objectives (2 points)

- 2 points Objectives clearly written, clearly taught in the plan, aligned with Indiana standards
1 points Objectives somewhat clearly written, somewhat clearly taught in the plan, somewhat aligned with Indiana standards
0 points Objectives not clearly written, not clearly taught in the plan, OR not aligned with Indiana standards

2 / 2

Assessment (2 points)

- 2 points Assessment for the lesson is clearly developed and linked to lesson; rubric or grade sheet provided
1 point Assessment for the lesson assesses part of the lesson; rubric or grade sheet is provided, but lacks development
0 points Assessment for the lesson is missing or does not assess the lesson; rubric or grade sheet is missing or does not reflect assessment

2 / 2

Lesson Plan Format (10 points)

- 10 points Lesson follows department format and clearly engages learners; creative
8 points Lesson follows department format and somewhat engages learners
6 points Lesson lacks one element of department format and is somewhat engaging
0 points Lesson does not follow department format and does not engage learners

10 / 10

Bloom's/Gardner's (5 points)

- 5 points Lesson clearly indicates where Bloom and Gardner are implemented
3 points Lesson somewhat indicates where Boom and Gardner are implemented
2 points Lesson indicates where Bloom OR Gardner is implemented (not both)
0 points Lesson does not indicate where Bloom or Gardner are implemented

5 / 5

TEN POINTS WILL BE DEDUCTED FOR NOT INCLUDING A CHILDREN'S BOOK AND A WRITING ACTIVITY