The Plant Doctor Is In: The Story of George Washington Carver

Grade Level: Kindergarten
Written by: Ellen Zainea, Knapp Charter Academy, Grand Rapids, Michigan
Length of Unit: Ten Lessons

I. ABSTRACT
Travel along with George Washington Carver from his humble birth to amazing discoveries and leadership at Tuskegee Institute. In story, song and rhyme, children will learn about his many accomplishments in teaching and agriculture. Dr. Carver utilized a discovery and hands-on approach to learning. In this same spirit, students will grow peanuts in the classroom and gain knowledge about plants as they apply science process skills such as hypothesizing, observing and recording. The unit is introduced by planting peanuts on January 5, George Washington Carver Day, and culminates in May with a peanut harvest and making peanut butter. 10 lessons

II. OVERVIEW
A. Concept Objectives:
1. Students will gain knowledge about the life of George Washington Carver.
2. Students will gain an understanding of Dr. Carver’s discoveries and their applications to agriculture, especially uses for peanuts and crop rotation.
3. Students will observe that in order to grow, plants need sufficient warmth, light and water.
4. Students will discover seeds can be food for animals (including people).
5. Students will gain a basic understanding of plant life and how seeds grow into plants.

B. Content from the Core Knowledge Sequence
1. Science Biographies: George Washington Carver (p.20)
2. What plants need to grow: sufficient warmth, light, and water (p. 20)
3. Basic parts of plants: seed, root, stem, branch, leaf (p. 20)
4. Flowers and seeds: seeds as food for plants and animals (for example rice, nuts, wheat, corn) (p. 20)
5. How farmers must take special care to protect their crops from weeds and pests (p. 20)

C. Skill Objectives
1. Students will listen to and remember the main parts of the story of George Washington Carver.
2. Students will retell the story through rhyme and song.
3. Students will understand the purpose of biographical text.
4. Students will understand why George Washington Carver is a science hero.
5. Students will hypothesize what plants need for growth.
6. Students will observe and record that in order to grow, plants must be provided with sufficient warmth, light, and water.
   Students will observe and label basic parts of a plant (seed, root, stem, branch, and leaf.
7. Students will understand that seeds can be food for animals (including people).
8. Students will understand that farmers can produce healthier crops through crop rotation.

III. BACKGROUND KNOWLEDGE

A. For Teachers

B. For Students
1. The students will have a basic understanding of plant life and that seeds grow into plants.
2. The students will understand the significance of slavery in the United States.

IV. LESSONS

Lesson One: Meet George Washington Carver: From Slave to Scientist

A. Daily Objectives
1. Concept Objectives
   a. Students will gain knowledge about the life of George Washington Carver.
2. Lesson Content
   a. Science Biographies: George Washington Carver (p.20)
   b. Important events and accomplishments of science hero George Washington Carver
3. Skill Objectives
   a. The student will listen to and recall the main parts of the life of George Washington Carver and his contributions to agriculture.

B. Materials
1. George Washington Carver the Peanut Scientist by Patricia and Frederick McKissack
2. Chart paper and markers
3. George Washington Carver Song (Appendix A)

C. Key Vocabulary
1. Biography—a written history of a person’s life written by someone else.
2. Agriculture—farming
3. Crop—The plants a farmer grows during one season
4. Crop rotation—Growing different crops in the same soil so that soil does not wear out.
5. Professor—A college teacher
6. Wizard—A very clever or skillful person
7. Scientist—A person who asks questions and observes what happens in order to find answers

D. Procedures/Activities
1. Teacher explains a biography is a true story about the life of someone.
2. Prior to reading the McKissack book, the teacher helps build background knowledge by inviting students to define the words and recording correct definitions on chart paper.

3. Teacher reads *George Washington Carver Peanut Scientist*. Teacher introduces the George Washington Carver Song and then repeats it two more times inviting students to sing along.

**E. Assessment/Evaluation**

1. Teacher guides students in recalling significant events in the life of George Washington Carver and records them on chart paper.

---

**Lesson Two: Meet George Washington Carver: Plant Professor**

**A. Daily Objectives**

1. **Concept Objectives**
   a. Students will gain knowledge about the life of George Washington Carver.

2. **Lesson Content**
   a. Science Biographies: George Washington Carver (p.20)
   b. George Washington Carver as a baby, knowledge about his growing years, his career as a student, teacher, and a scientist; his work at Tuskegee Institute
   c. How farmers must take special care to protect their crops from weeds and pests (p.20)

3. **Skill Objectives**
   a. The student will listen to and recall the main parts of the life of George Washington Carver and his contributions to agriculture.

**B. Materials**

1. *A Weed is a Flower* by Aliki
2. Chart paper and markers
3. George Washington Carver Song

**C. Key Vocabulary**

1. Weed-A plant with no value

**D. Procedures/Activities**

1. Teacher reviews the meaning of a biography.
2. Teacher reviews vocabulary from Lesson One and information on chart written the previous day.
3. Teacher reads *A Weed is a Flower* by Aliki.
4. Teacher guides students in recalling significant events in the life of George Washington Carver and records them on chart paper.
5. Teacher and students sing the George Washington Carver Song.

**E. Assessment/Evaluation**

1. Teacher guides students in recalling significant events in the life of George Washington Carver and records them on chart paper.

---

**Lesson Three: Peanut Products and the Peanut Professor**

**A. Daily Objectives**

1. **Concept Objectives**
   a. Students will gain knowledge about the life of George Washington Carver.

2. **Lesson Content**
   a. Flowers and seeds: seeds as food for plants and animals (for example, rice, nuts, wheat, corn) p.20
b. Non-food uses of the peanut discovered by George Washington Carver

3. Skill Objectives
   a. The students will understand why George Washington Carver is a science hero by learning about his many discoveries of ways to use the peanut.

B. Materials
   1. *The Life and Times of the Peanut* by Charles Micucci
   2. Paper and markers or crayons for class book
   3. Magazines
   4. Glue
   5. Scissors

C. Key Vocabulary
   1. Goober peas—Civil War era name for peanuts.

D. Procedures/Activities
   1. Teacher reads pages 26-30 of *The Life and Times of the Peanut* which relate the story of George Washington Carver’s discoveries of peanut uses.
   2. Each student illustrates a page for *Peanut Power*, a class book about nonfood peanut uses. This can also include cutting out pictures from magazines.

E. Assessment/Evaluation
   1. Students’ individual class book pages will reflect their understanding of nonfood uses for the peanut.

Lesson Four: Bad Bugs and Tired Terrain

A. Daily Objectives
   1. Concept Objectives
      a. Students will gain knowledge about the life of George Washington Carver
      b. Students will gain an understanding of Dr. Carver’s discoveries and their applications to agriculture, especially uses for peanuts and crop rotation.

   2. Lesson Content
      a. How farmers must take special care to protect their crops from weeds and pests. (p. 20)
      b. Crop rotation is necessary for maintaining good soil
      c. Pests, for example the boll weevil in cotton fields, can be destructive and farmers must find ways to control them

   3. Skill Objectives
      a. Students will understand the importance of the work of George Washington Carver as a teacher, educating farmers and students about proper soil cultivation, crop rotation and ways to combat pests, specifically the boll weevil.

B. Materials
   1. *George Washington Carver: The Peanut Scientist* by Patricia and Frederick McKissak
   2. LCD projector


5. The Boll Weevil Song by Tex Ritter.

6. Paper plates, tag board, markers, craft eyes for farmer mask

7. 8 ½” x 11” tag board, pipe cleaners, craft eyes for boll weevil hat (Appendix B)

8. George Washington Carver Song (Appendix A)

9. Chart paper and marker

C. **Key Vocabulary**
   1. Boll weevil—An insect that ruins the cotton plant laying its eggs on the squares and bolls
   2. Boll—Unripe pods that contain the lint and seed of the cotton plant
   3. Square—Part of the cotton plant on which the flowers grow
   4. Infertile—Overused soil that is not good for growing crops
   5. Crop rotation—Growing different crops in the same soil so that the same crop does not rob the soil of necessary nutrients and make it infertile
   6. Cultivation—Taking care of the soil

D. **Procedures/Activities**
   1. Teacher rereads Chapters Three and Four of George Washington Carver: The Peanut Scientist by Patricia and Frederick McKissak that explain crop rotation and destruction caused by the boll weevil.
   3. Students listen to Tex Ritter’s version of The Boll Weevil Song. (Appendix B)
   4. Students view brief history of boll weevil and the version of the song as performed by Carl Sandburg on the organic cotton web site. After reading through the song once, teacher rereads inviting students to read along the patterned part of the song “looking for a home, just looking for a home.”
   5. Students make paper plate masks of farmer and boll weevil hats.

E. **Assessment/Evaluation**
   1. Teacher guides students in producing a list of important facts about the boll weevil.

Extension
   1. Students make paper plate masks of farmer and boll weevil hats.

**Lesson Five: Plant Profile and Savory Seeds**

A. **Daily Objectives**
   1. Concept Objectives
      a. Students will discover seeds can be food for animals (including people.)
      b. Students will gain a basic understanding of plant life and that seeds turn into plants.
   2. Lesson Content
a. Basic parts of plants: seed, root, stem, branch, leaf (p.20)
b. Flowers and seeds: seeds as food for plants and animals (for example rice, nuts, wheat, corn) p.20

3. Skill objectives
   a. Students will observe and label basic parts of a plant (seed, root, stem, branch, and leaf.)

B. Materials
   1. The Peanut Plant: Revised Picture Perfect diagram from American Peanut Council (Appendix C)
   2. From Seed to Plant by Gail Gibbons
   3. Peanut Plant Diagram (Appendix C. The page is revised from the American Peanut Council diagram in Appendix F.)

C. Key Vocabulary
   1. Seed-Part of the plant needed for growing a new plant
   2. Root-Part of the plant that anchors it and brings in water and food from the soil.
   3. Stem-Part of the plant that supports the plant and carries water and food to the leaves
   4. Branch-Part that grow from the stem where the leaves and flowers are found
   5. Leaf-Part of the plant where food is made

D. Procedures/Activities
   1. Teacher draws and labels parts of a plant on the board. With teacher guidance, students color and label the parts of a plant on Appendix C.
   2. Teacher reads pages from Seed to Plant which show pictures of plant seeds used as food.
   3. Each student illustrates a page for Savory Seeds, a class book k about seeds people eat. This can also include cutting out pictures from magazines.

E. Assessment/Evaluation
   1. Student’s accurate completion of plant picture.
   2. Students’ individual pages in the class book pages will reflect their understanding of nonfood uses for the peanut.

Lesson Six: Producing a Peanut Plant
A. Daily Objectives
   1. Concept Objectives
      a. Students will understand that in order to grow, plants need sufficient warmth, light, and water.
   2. Lesson Content
      a. Basic parts of plants: seed, root, stem, branch, leaf (p.20)
      b. Factors necessary for plant growth
   3. Skill Objectives
      a. Students will identify the factors necessary for seed germination.
      b. Students will hypothesize what factors are needed for growing peanut plants and provide these factors.
      c. Students will plant peanut seeds, care for them and observe and record their growth.
B. **Materials**
1. Paper and markers and crayons for class book
2. *From Seed to Plant* by Gail Gibbons
3. Chart paper for recording hypothesis and recording care and growth of peanut plants
4. Peanut seeds (purchased from a seed company or raw peanuts from produce section of grocery store)
5. Plant growing box with light and timer (2”x11/2”x6” works well)
6. Soil (Plan ahead and let children dig soil before a frost. Peanuts grow best in sandy soil.)
7. Directions for growing peanuts (Appendix E)
8. Growing Peanuts Song (Appendix D)

C. **Key Vocabulary**
1. Hypothesis-A prediction to be tested in an experiment
2. Observation-Looking carefully at what you see
3. Record-A written account and/or picture record of what is observed
4. Germination-Beginning of growth of a seed

D. **Procedures/Activities**
1. Teacher reads about seed germination and plant growth from *From Seed to Plant* by Gail Gibbons, reminding students to listen carefully to identify factors needed for seed germination and plant growth.
2. Students recall factors necessary for plant growth and teacher records them on chart paper.
3. Teacher introduces the Growing Peanuts Song (Appendix F) and repeats it two more times inviting students to sing along.
4. Peanut seeds are planted in lighted growing box and watered. (See Appendix E)
5. Students will take turns caring for the peanuts over the next 4 or 5 months and record their growth in pictures.
6. During these months, review concepts from the first 6 lessons and continue to display the materials used and created in prior lessons. Sing the songs from time to time.

E. **Assessment/Evaluation**
1. Observation of students’ giving care to peanuts and their records of growing peanuts.

**Lesson Seven: Peanuts on Parade**

A. **Daily Objectives**
1. Concept Objectives
   a. Students will discover that seeds can be food for animals (including people).
2. Lesson Content
   1. Flowers and seeds: seeds as food for plants and animals. For example rice, nuts, wheat, corn) p. 20
   2. The uses of peanuts as food for over 3,000 years
   3. Foods made from peanuts
3. Skill Objective
   a. Students will identify several foods made from peanuts.

B. **Materials**
1. *The Life and Times of the Peanut* by Charles Micucci
2. World map
3. Markers and paper for class book, *Peanuts Are Perfect*
4. Magazines
5. Glue
6. Scissors

C. **Key Vocabulary**
1. Goober peas—Civil War Era name for peanuts

D. **Procedures/Activities**
1. Teacher reads from pages in *The Life and Times of the Peanut* by Charles Micucci pages 20-31 which relate 3000 years of people eating peanuts and many of the uses as peanuts as foods today.
2. Students locate on the map some of the places where peanuts have been enjoyed.

E. **Assessment/Evaluation**
1. Students’ individual class book pages will reflect their understanding of peanuts as food.

**Lesson Eight: A Lovely Legume**

A. **Daily Objectives**
1. Concept Objectives
   a. Students will gain a basic understanding of plant life and that seeds turn into plants.
2. Lesson Content
   a. Basic parts of plants: seed, root, stem, branch, leaf (p.20)
3. Skill Objectives
   a. Students will construct and label a picture and model of the peanut plant.
   b. Students will observe and record a grown peanut plant

B. **Materials**
1. Grown peanut plant
2. Plastic compartmentalized vegetable tray from grocery produce section
3. Green pipe cleaners
4. Yellow tissue paper
5. Peanuts
6. Sand
7. American Peanut Council Activity Sheet showing the parts of the peanut plant (Appendix F)

C. **Key Vocabulary**
1. Pegs—Shoots that sprout from the base of the wilted peanut flowers and dive back into the ground where their dark tips swell into peanuts
2. Harvest—The process of picking and gathering food from plants
3. Legume—Plant such as beans, peas, and peanuts

D. **Procedures/Activities**
1. Students color and label the peanut plant activity sheet.
2. The peanut plant is harvested and compared to the drawing on the activity page.
3. Students, in groups, construct a model of a peanut plant.

E. **Assessment/Evaluation**
1. Teacher notes the accuracy of peanut models
Lesson Nine: Preparing a Peanut Party (Note: Some children are very allergic to peanuts, so skip this lesson if you have children with peanut allergies in your classroom.)

A. Daily Objectives
   1. Concept Objectives
      a. Students will discover seeds can be food for animals (including people)
   2. Lesson Content
      a. Flowers and seeds: seeds as foods for plants and animals (for example rice, nuts, wheat, corn) p. 20
      b. How peanuts and wheat are grown, harvested and processed
   3. Skill Objectives
      a. Students will make peanut butter.

B. Materials
   1. Make Me a Peanut Butter Sandwich and a Glass of Milk by Ken Robbins
   2. Peanuts
   3. Oven
   4. Roasting pan with sides
   5. Directions for roasting peanuts (Appendix F)
   6. Peanut butter recipe from American Peanut Council (Appendix G)

C. Key Vocabulary
   1. Windrows-Long piles of pulled peanuts left to dry in the fields in fall
   2. Combine-A special truck that separates the peanuts from the rest of the plant
   3. Shellery-Place where peanuts are removed from their shells

D. Procedures/Activities
   1. Teacher reads Make Me a Peanut Butter Sandwich and a Glass of Milk by Ken Robbins
   2. Teacher supervises students as they roast peanuts. (Appendix F)
   3. Supervised by teacher, students make peanut butter Appendix (Appendix G)

E. Assessment/Evaluation
   1. Sample the peanut butter!

Lesson Ten: The Wonderful Wizard

A. Daily Objectives
   1. Concept Objectives
      a. Students will gain knowledge about the life of George Washington Carver.
   2. Lesson Content
      a. Science Biographies: George Washington Carver (p.20)
      b. The discoveries, philosophy, and contributions of George Washington Carver to the world
      c. George Washington Carver and ways he used the scientific method
   3. Skill Objectives
      a. Students will understand and celebrate the life and significant contributions of George Washington Carver.

B. Materials
   1. George Washington Carver What Do You See? by Janet and Geoff Benge
   2. Poster Paper
3. Markers and crayons
4. Photos of George Washington Carver available through Iowa State University [On-line]. Available URL:  
   http://www.lib.iastate.edu/spcl/gwc/student/student1.html Permission to use photos will be granted through email with Iowa State University if references are cited. (TZANISH@gwgate.lib.iastate.edu)

C. Key Vocabulary
1. Achiever-Someone who works to succeed in reaching a goal
2. Thrifty-Carefully managing money by not buying something that can be made
3. Synthetics-Combining-Putting compounds together in a new way to make something new.
4. Booker T. Washington-Founder of Tuskegee Institute

D. Procedures/Activities
1. Teacher begins reading George Washington Carver What Do You See? This book can be read as a chapter book with four installments.
2. On the fourth day students make posters of George Washington Carver on which they compose one or two sentences about his life and embellish them with photos from the University of Iowa Collection.

E. Assessment/Evaluation
1. Teacher assesses by quality of learning displayed on the posters.

VI. CULMINATING ACTIVITY
A. Invite upper classmen (such as fourth grade reading buddies) to partner and read to kindergartners The Gold Nut) Comic Gook available from the American Peanut Council. Celebrate by showing off the posters and enjoying peanut butter sandwiches and milk.

VII. HANDOUTS/WORKSHEETS
A. All handouts and worksheets are found in the appendices.

VIII BIBLIOGRAPHY

American Peanut Council Educational Services [On-line]. Available URL:  


Iowa State University http://www.lib.iastate.edu/spcl/gwc/student/student1.html


Robbins, K.  *Make Me a Peanut Butter Sandwich and a Glass of Milk.*  New York, NY:  Scholastic, 1992.  0-590-43550-7.  (This book is not out of print, but currently not available for sale. However, it can be found in many libraries.)
Appendix A

George Washington Carver Song
(Sung to the tune of Aura Lee)

Poor and humble was his birth.
   He was born a slave.
But to all his fellow man,
   Many things he gave.

Student, teacher, scientist,
   He was all of these.
Getting rich was not his goal
   When planting goober peas.

As a boy he loved to learn
   And traveled off to school,
Taking care in all he did
   To keep the Golden Rule.

George found what made plants grow well
   Plant Doctor was his name.
   To his class at Tuskegee
   Many students came.

He told his class to rest the soil,
   "Put cotton seeds away,
Grow sweet potatoes, peanuts too,"
   They would hear him say.

The soil was soon in better shape
   But now a menace came.
It traveled north from Mexico.
   Boll weevil was its name.

The bug wrecked lots of cotton plants,
   Now what would would George do?
He found more use for peanut plants—
   More than 300 too!

Look and listen he advised.
   Remember that each day,
To serve each other and be kind,
   There is no better way!
Appendix B

Boll Weevil Hat

Materials:
Two 8 ¼ x 11” pieces of tag board
Pipe cleaner
Glue
Google Craft Eyes
String

1. Roll one of the papers into a tube to form an 8 inches long tentacle.
2. Cut a slit one inch long on opposite sides of the tube.
3. Fold other paper as shown in Top View.
4. Glue the tentacle tube ends onto the middle of the other paper.
5. Wrap top ends of the paper and glue in corners as shown.
6. Punch 2 holes at the end of the tube and insert a pipe cleaner.
7. Add Google Eyes.
8. Attach a string on either side and attach string to tie on the hat.

Hat designed by Sean Siverly
Appendix C

Name ____________________________

Label the parts of the plant:

Leaf  Flower  Root  Branch  Stem  Seed

Color the picture.

Science Activity Sheet
American Museum Council
How You Can Grow A Peanut Plant

Materials:

- Raw peanuts (may be purchased in the produce section of most grocery stores, at health food stores OR by mail order - see Peanut Marketplace for more information)
- Flower pot or container with drainage hole (6-8 inches in diameter)
- Sandy or sandy loamy soil

Method:

- Soak peanuts in water overnight
- Fill pot with soil to one inch below rim
- Plant three peanuts 1 to 1.5 inches deep and cover firmly with soil but do not pack
- Keep soil moist (not wet). Maintain a temperature of 65 degrees F or above (80 degrees F is ideal)

Peanuts should sprout within five to eight days. Continue to keep plant in a warm location exposed to direct sunlight as much as possible. Blooms will likely appear approximately 45 days after the peanut plant has emerged. (Production of peanuts on potted plant is unlikely, but may occur if kept growing for a minimum of three months)
Appendix E

Growing Peanuts
(Sung to the Tune of Oats and Beans and Barley Grow)

Take the peanuts from the shell.
Water next to make them swell.
Plant the seeds in soil with sand.
Then don’t forget to wash your hand.

In a week the seeds should sprout.
Baby plants will push right out.
The plants will need a lot of light.
Fourteen hours a day is right.

Give them water as they grow.
They’ll photosynthesize you know.
They’ll put oxygen into the air,
As green plants will do anywhere.

As they grow a bush you’ll see.
Eighteen inches it will be.
Flowers will bloom for just a day,
And then as pegs they’ll grow away.

Back into the ground they go.
Down in there the peanuts grow.
Harvest them in four months time.
And now it’s time to end this rhyme!
Appendix G

Peanut Plant Model

A dynamic hands-on model of a peanut plant can be constructed with a plastic vegetable tray found in the grocery store produce section.

1. Fill the compartments with 1 inch of sand.
2. In the middle tray construct the peanut plant stem and 5 branches out of green pipe cleaners. Make leaves of green construction paper to attach to the branches. Tie on brown yarn on the bottom to represent roots.
3. Create flowers out of yellow tissue paper. Attach these to some of the branches.
4. After a day, take the flowers off to simulate wilting.
5. Attach a 6-inch piece of green yarn where the flower was.
6. At the other end of this yarn tape on peanuts and place them in the 5 outside compartments of the vegetable tray.

You will have peanut plant model, which can be constructed and reconstructed!
Peanut Butter is Good for You!
Rudy the rabbit and his teacher are going to make peanut butter.

What will they need?
- Measuring Cup
- Measuring Spoon
- Spoon
- Blender
- 1 cup salted, roasted peanuts
- 1½ teaspoons peanut oil

How will they make it?
- Measure 1 cup peanuts and put in blender.
- Measure 1½ teaspoons peanut oil and put in blender.
- Put top on blender.
- Push button and blend for about 3 minutes.
- Turn blender off.
- Take top off blender.
- Scrape sides of blender with spoon and push peanuts to bottom.
- Put top on blender.
- Push button and blend for about 3 more minutes.
- Take top off blender.
- Scoop out peanut butter!