

George Washington Carver

An Original Conservationist

Hello all,

My name is Gloria. I have been a science teacher in Southwest Missouri since 2004. Over that time, I have taught a plethora of different courses including basic Physics, Biology, Introduction to Biology (for students with special needs), Forensics and Ecology.

I was recently offered the position of Teacher-Ranger-Teacher which gave me the chance to work with the National Park Service and more specifically the George Washington Carver National Monument in Diamond, Missouri. The goal of the TRT program is to connect teachers with the national parks and to support teachers in the development of a curriculum specific to the park with which they are associated.

George Washington Carver was an interesting man and an important national, historical figure. Although a leading figure in the African American community at the start of the Civil Rights era Carver saw himself as a humanitarian rather than a civil rights leader. Raised by the owners of his mother, an enslaved woman named Mary, Carver was brought up in the post-civil war Midwest. Struggling through the discrimination that was rampant in the Reconstruction Era, Carver none the less was able to secure for himself a college education and become an agricultural instructor at the newly formed Tuskegee Institute. Carver's goals while working at Tuskegee were to develop and teach agricultural methods that would improve the lives of the poorest farmers who tended to be African American. Carver's history and faith led him to a love of the land and a dedication to finding ways to create mutually beneficial relationships between farmers and the land.

This project is designed to accommodate all teaching styles. I completely understand the need to adapt different activities based on length of class periods, number of class periods available for such a project or fully integrated into a curriculum. To that end the project is designed to be taught one of three ways:

Option 1: Each activity can be taught completely independently. Each activity can be completed by student groups or on their own. They can be assignments done as worksheets or mini-projects (option 2). This will allow you the teacher to pick and choose what you want to incorporate without having to worry too much about adapting the instructions or format as it is already done for you. Also, each topic is not dependent on a full understanding of previous topics within the project so feel free to pick and choose what works best for you.

Option 2: Each activity can be easily turned into a mini-project. Instead of a worksheet, students will create a poster, a brochure, a pamphlet or a presentation. Instructions have been provided for

creating a physical product. Also, the structure of the activity will make it easy if you would rather have them create a digital presentation.

Option 3: If you would like to complete the entirety of the project you can do so in a Problem Based Learning format. Most topics have both a lab/activity and a mini-project. The mini-projects can be assigned to different groups and then presented to the class or community members as a complete overview of Carver's life and work.

Please note that the labs may be very long term. Check the teacher instructions to make sure that you start the lab early. Creating compost will take several weeks so completing the lab set up before starting the lab is important so that students reach the conclusion at the appropriate time.

Notes:

- The "Compost in a Bottle" lab should be started 3-4 weeks before you plan to get to that topic. It will have to be checked on weekly (depending on which version of the lab you choose to do).
- Topic 5 is designed as a culminating event. It can be done completely separately from this unit if you choose. However, if you plan on working through the unit I would advise you to do each topic as a mini-project (Option 2) not as a Problem Based Learning Project as that will give students two large projects to complete.

Project Outline:

Topic 1: George Washington Carver: The Man, The Scientist the Artist

- This topic is the history of George Washington Carver so students can gain a basic understanding of who he was and his motivations.
- Teacher Instructions
- Student Worksheet
- Student Worksheet - Answer Sheet
- Rubric
- George Washington Carver National Monument: Introduction Presentation
 - Example: This is a presentation about George Washington Carver. If you want to give some of his background without doing a full day's project this would be a great resource.

Topic 2: George Washington Carver: Sharing the Soil

- Topic 2 is a discussion on the importance of crop rotation and the impact of soil depletion.
- Lab: Know Your Nitrogen
 - Teacher Instructions
 - Lab Instructions and Data Sheet (Student)
 - Lab Additional Resources:
 - Summary of 2008-2009 Large Scale Irrigation and Nitrogen Fertilizer Management Trials in Lettuce

- Sharing the Soil Mini-Project
 - Teacher Instructions
 - Student Worksheet

Topic 3: George Washington Carver: The Importance of Compost

- Topic 3 is a look at how compost is created and what nutrients can be restored to a soil through natural compost. The mini-project is focused on a comparison between compost and manufactured fertilizers.
- Lab: Compost in a Bottle (Student Worksheet)
 - Teacher Instructions
 - Student Worksheet
 - Please note that there are two extensions of the primary lab set-up. The extensions are outlined at the end of the student lab sheet. If you would like to incorporate either or both of the extensions students will have to combine the procedure from the original lab with the extension procedure.
- Composting Mini-Project
 - Teacher Instructions
 - Student Worksheet
 - Rubric
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Topic 4: George Washington Carver: Alternative Uses for Everyday Products

- Topic 5 is focused on one of Carver's passions which was to find alternative uses for traditional crops. Whether turning soybeans into plastics or peanuts into milk Carver was dedicated to helping poor farmers by finding alternative industries to use the products they grew.
- Lab: Making Peanut Milk
 - Teacher Instructions
 - Student Worksheet
- Alternative Uses Mini-Project
 - Teacher Instructions
 - Student Worksheet

Topic 5: George Washington Carver: Welcome to the 21st Century

- Topic 5 is a reflection on how Carver would address current ecological issues. It is designed to be completed as a culmination project at the end of the ecology unit. Regardless of if you completed the previous labs and mini-projects this project is doable. However, if you plan to complete this project it is suggested that you do Topics 1-4 as mini-projects not as Problem Based Learning or students will end up with two culminating projects.
- Culminating Project

- Teacher Instructions
- Student Worksheet
- Rubric