

Performance Standards Framework for Science

Unit Organizer:

(Approximate Time: four day period)

OVERVIEW: Tabby structures were very popular during the late 1800's. People used specific methods to build what are now tabby ruins. They encompassed math and science to build the structures that we see today as ruins. Many of these ruins are being destroyed by human impact. Also the environments around these ruins are being destroyed by human impact. We will take a closer look on how the ruins were constructed and the environment on Cannon's Point.

STANDARDS ADDRESSED IN THIS UNIT

Focus Standards:

S6E6. Students will describe various sources of energy and their uses and conservations.

- b. Identify renewable and nonrenewable resources.

S6CS1. Students will explore the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand to understand how the world works.

- a. Understand the importance of and keep honest, clear, and accurate records in science.
- b. Understand that hypotheses are valuable if they lead to fruitful investigations, even if the hypothesis turn out not to be completely accurate descriptions.

S6CS2 Students will use standard safety practices for all classroom laboratory and field investigations.

- a. Follow correct procedures for use of scientific apparatus.
- b. Demonstrates appropriate techniques in all laboratory situations.
- c. Follow correct protocol for identifying and reporting safety problem and violations.

Supporting Standards:

MCC6.G.2

Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that volume is the same as it would be found by multiplying the edge lengths of a prism. Applying the formulas $\text{volume} = L \times W \times H$ and $\text{volume} = B \times H$ to find volumes of right rectangular prisms with fractional edge lengths in context of solving real-world and mathematical problems.

ELACC6RI3: Analyze in detail how a key individual, event, or idea is introduced, illustrated, and elaborated in a text (e.g., through examples or anecdotes).

ELACC6W2: Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.

KNOWLEDGE:

- Facts for the lesson

Science:

- Renewable and nonrenewable resources
- Human impact on Cannon's Point – When Sea Island Owned the property they poured concrete on top of the tabby ruins to preserve the ruins, but it will eventually ruin the ruins because the moisture stays inside of the ruins and breaks up the composition that compose the ruins.
- Foreign specimen of plants and animals being brought onto the island.
- The new structures built on Cannon's Point, what will their impact have? - The new Educational Learning Center, The Kayak launching, the restoration of the water examination building.

ENDURING UNDERSTANDINGS

Students will understand that:

Renewable and nonrenewable resources are essential and they will affect us and our future if we are not careful to conserve the resources we use.

Human impact.

Why we impact the environment.

The things we can do to help the environment.

Tabby was a composition mixture that was used to build the houses long ago.

How the volume of a structure was used to build the tabby houses back in the 1800's.

ESSENTIAL QUESTIONS:

OVERARCHING ESSENTIAL QUESTION

What are renewable and nonrenewable resources?

How does the lack of these resources impact our environment today and in the future?

TOPICAL ESSENTIAL QUESTIONS

- How have humans impacted the environment at Cannon's Point?
- How has it affected the resources at Cannon's Point?
- How do we construct Tabby ruins?
- What impact have people had on the ruins at Cannon's Point?
- How do we construct Tabby ruins?
- How can we write about Cannon's Point by creating our own version of what our house would look like in the 1800's?
- How did people in the 1800's use volume to construct structures made out of tabby?

CONCEPTS:

Human Impact on the environment, Volumes, Prisms, Resources (renewable/nonrenewable), measurements, historical housing, Ruins,

LANGUAGE:	
Renewable resources, Non-renewable resources, Tabby, Ruins, Cannon's Point, endangered species, species	
MISCONCEPTIONS	PROPER CONCEPTIONS
Have students come up with things that they think are misconceptions about resources and talking to them about it as a class.	Let the students use their resources in the classroom to prove or disprove the misconceptions about the myths they have heard.

EVIDENCE OF LEARNING:
<p>By the conclusion of this unit, students should be able to demonstrate the following competencies:</p> <p>Culminating Activity: The difference between nonrenewable and renewable resources.</p> <p>Goal: For students to learn how to protect our environment and understand that many resources are not renewable.</p> <p>Role: Relate all the concepts in the lessons to real world scenarios for students.</p>

Audience:

Students and their families.

Situation:**TASKS**

The collection of the following tasks represents the level of depth, rigor and complexity expected of all physical science students to demonstrate evidence of learning

Task:**Day 1:****Context**

- Students have been studying renewable and nonrenewable resources.
- Renewable resources are resources that can naturally be renewed over time.
- Non-renewable resources are resources that cannot be renewed.

Learning Objectives(s)

- S6E6. Students will describe various sources of energy and their uses and conservations.
 - o b. Identify renewable and nonrenewable resources.
- S6CS2 Students will use standard safety practices for all classroom laboratory and field investigations.
 - o a. Follow correct procedures for use of scientific apparatus.
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- S6CS1. Students will explore the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.
 - o a. Understand the importance of and keep honest, clear, and accurate records in science.
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Essential Question(s)

- What are renewable and nonrenewable resources?
- How have humans impacted the environment at Cannon's Point?
- How has it affected the resources at Cannon's Point?
- How do we construct Tabby ruins?
- What impact have people had on the ruins at Cannon's Point?

Resources, Media and Technology

- Computers
- Text book
- Crayons
- Markers
- Color Pencils
- Oversized chart paper

Procedures

- Activator: We will begin the class by reviewing renewable and nonrenewable resources and make a list on the board of certain things that the students remember about those resources to further their understanding of the resources in our environment. (10 Minutes)
- Instruction: Students will be placed into groups by the teacher. The students will divide their chart paper in half and label one side renewable and the other side no renewable resources. In their groups they will come up with other examples (beside the examples on the board) of renewable and nonrenewable resources. Students are allowed to use any resources they have in the classroom to compose their list of resources. (30 minutes)
- Students will need to keep a journal and place their different resources in the journal after they finish working with their group. (during group activity)
- At the bottom of their journal students will write what human impacts have affected one renewable and one nonrenewable resource. (10 minutes)
- Students will present in their groups, their findings for their peers (10 minutes)

Informal Assessment

- Students will come to the front of their class with their groups and explain why they choose the resources they did to construct their chart.
- Charts will be displayed outside in the hall way.

Day 2:**Context**

- Students have been studying renewable and nonrenewable resources.
- Renewable resources are resources that can naturally be renewed over time.
- Non-renewable resources are resources that con not be renewed.
- Students will be given a hand out on Cannon's Point that will include general information on Cannon's Point.

Learning Objectives(s)

- S6E6. Students will describe various sources of energy and their uses and conservations.
 - o b. Identify renewable and nonrenewable resources.
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Essential Question(s)

- What are renewable and nonrenewable resources?
- How have humans impacted the environment at Cannon's Point?
- How has it affected the resources at Cannon's Point?
- How do we construct Tabby ruins?
- What impact have people had on the ruins at Cannon's Point?

Resources, Media and Technology

- Cannon's Point hand out
- Computers
- Paper
- Pencil

Procedures

- Activator: Brainpop: Teachers can select from many videos on brainpop that tell about the different kinds of resources –renewable and nonrenewable. This will give students a concrete example of renewable and nonrenewable resource and further their understanding on the topic. (<http://www.brainpop.com/science/ourfragileenvironment/>) (10 minutes)
- Instruction: The teacher will show a presentation on Cannon’s Point. This will give the student’s an understanding of Cannon’s point. We will discuss as a class the impacts of humans being on the island whether they are negative or positive. (30 minutes)
- Students will collaborate in their same groups on what improvements have been made on Cannon’s Point to preserve the environment. They will also come up with other ways that we could help to improve the environment. (20 minutes)
- Walking out the door students will be given a list of things they need to bring for the field trip the next day and what they will need to wear to protect themselves from the mosquitos.

Informal Assessment

- Students will turn their paper in at the end of class for teachers to go over and check.

Day 3:

Context

- Students have been studying renewable and nonrenewable resources.
- Renewable resources are resources that can naturally be renewed over time.
- Non-renewable resources are resources that con not be renewed.
- Students will be given a hand out on Cannon’s Point that will include general information on Cannon’s Point.

Learning Objectives(s)

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Resources, Media and Technology

- Cannon's Point hand out
- Clip board
- Camera
- Piece of paper
- Writing utensil

Procedures

- Activator: Students will be given directions for their activity, a map of Cannon's Point, a camera, and a clipboard. We will also review proper etiquette while on the island.
- Activity: Students will take pictures of renewable and nonrenewable resources at Cannon's Point. (Or what humans have brought over to Cannon's Point and has had an impact somehow on the island). They can also take pictures of the manmade structures to later elaborate on.
 - o They will answer questions such as: How have humans impacted that particular environment?
 - o What is a foreign species to the island?
 - o What plants are native to the island?
 - o What are the tabby structures made of and where did natives get the resources to make the structures from?
- Partners will be assigned for this activity and each group will take five pictures on the resources/human impact/ foreign species/ or structures on Cannon's Point. (time duration is for the entire trip)

Informal Assessment

- Make sure all student groups have at least five pictures for the activity they will continue in the classroom tomorrow to further their understanding

Day 4:

Context

- Students have been studying renewable and nonrenewable resources.
- Renewable resources are resources that can naturally be renewed over time.
- Non-renewable resources are resources that can not be renewed.
- Students will be given a hand out on Cannon's Point that will include general information on Cannon's Point.

Learning Objectives(s)

- S6E6. Students will describe various sources of energy and their uses and conservations.
 - o b. Identify renewable and nonrenewable resources.
- S6CS2 Students will use standard safety practices for all classroom laboratory and field investigations.
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Essential Question(s)

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- How has it affected the resources at Cannon's Point?
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- What impact have people had on the ruins at Cannon's Point?

Resources, Media and Technology

- Cannon's Point hand out
- Pictures (teacher must get developed after trip)
- Large paper
- Markers
- Crayons
- Color Pencils
- Cannon's Point resources (given to students throughout the week)
- glue

Procedures

- Students will gather supplies together and meet in their partners. (10 minutes)
- Students will compile a collage together of the pictures they took at Cannon's Point and explain why they took the pictures they did and what impact it will have/ has had on the environment. (40 minutes)
- The collages will be displayed in the hallway so other students are able to see what the students were working on and the field trip we took. (Hopefully this will spark interest for other students and encourage students to want to take a trip to Cannon's Point!) (10 minutes to hang posters outside as students finish)

Informal Assessment

- Posters

Day 5:

Context

- Students have been studying renewable and nonrenewable resources.
- Renewable resources are resources that can naturally be renewed over time.
- Non-renewable resources are resources that cannot be renewed.

Learning Objectives(s)

- ELACC6RI3: Analyze in detail how a key individual, event, or idea is introduced, illustrated, and elaborated in a text (e.g., through examples or anecdotes).
- ELACC6W2: Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.

Essential Question(s)

- What are renewable and nonrenewable resources?
- How have humans impacted the environment at Cannon's Point?
- How has it affected the resources at Cannon's Point?
- How do we construct Tabby ruins?
- How can we write about Cannon's Point by creating our own version of what our house would look like in the 1800's?

Resources, Media and Technology

- Language journals
- Pencil
- House made in math involving tabby structures

Procedures

- Activator: The class constructed their own version of a house made out of tabby on a sheet of graph paper in math. (5 minutes)
- Students will write and describe what their house would look like and have inside if they only had the resources of the 1800's on Cannon's Point. (45 minutes)
- Students will present a brief description on what they wrote about in their journals (10 minutes)

Informal Assessment

- Students will turn in their journals at the end of class.

Day 6:

Context

- Students have been studying renewable and nonrenewable resources.
- Renewable resources are resources that can naturally be renewed over time.
- Non-renewable resources are resources that can not be renewed.

Learning Objectives(s)

- MCC6.G.2
 - o Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that volume is the same as it would be found by multiplying the edge lengths of a prism. Applying the formulas $\text{volume} = L \times W \times H$ and $\text{volume} = B \times H$ to find volumes of right rectangular prisms with fractional edge lengths in context of solving real-world and mathematical problems.

Essential Question(s)

- What are renewable and nonrenewable resources?
- How have humans impacted the environment at Cannon's Point?
- How has it affected the resources at Cannon's Point?
- How do we construct Tabby ruins?
- How can we write about Cannon's Point by creating our own version of what our house would look like in the 1800's?
- How did people in the 1800's use volume to construct structures made out of tabby?

Resources, Media and Technology

- Blocks
- Rectangular prism structure
- Pencil
- Paper
- Water to represent the volume filled

Procedures

- Activator: Talk to students about volumes. Have them come up with a list that the teacher will write on the board, of different rectangular prisms in the real world. (10 minutes)
- During the lesson teachers will talk to students about the tabby ruins on Cannon's Point and how they were constructed. They will relate the volume of rectangular prisms to the rectangular prisms that people in the 1800's used to construct the tabby ruins out of. (15 minutes)
- Students will use graph paper to construct a house on their own and then find the volume of that house and draw furniture of what would be inside if it were constructed in the 1800's. (35 minutes)

Informal Assessment

- Students will turn in their graph paper at the end of class and will use it in literature tomorrow.

Description:

In individual lesson plans listed above in tasks

Discussion, Suggestions for use:

Open group discussion and students should also be able to split into pairs or smaller groups and discuss information covered.

Possible Solution:

What can we do to help our environment?