

Beast of the Southern Wild Engineering Project

CCC: Influence of Science, Engineering, and Technology on Society and the Natural World: 1) All human activity draws on natural resources and has both short and long-term consequences, positive as well as negative, for the health of people and the natural environment. 2) The uses of technologies and limitations on their use are driven by individual or societal needs, desires, and values; by the findings of scientific research; and by differences in such factors as climate, natural resources, and economic conditions.

SEP: Asking Questions and Defining Problems: Define a design problem that can be solved through the development of an object, tool, process or system and includes multiple criteria and constraints, including scientific knowledge that may limit possible solutions.

1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
3. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.
4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

Student Page

Task

After watching the clips from the Beast of the Southern Wild, you will brainstorm possible problems that were observed. Problems can be economic, social, health, resource management, or environmental. As a group title this page Problems Facing Southwest Louisiana and the Mississippi Delta. This will be a component of your project.

You will then research the area known as the bathtub region of lower Louisiana and the Mississippi Delta which begins in the lobby of the Peabody Hotel and ends at Catfish Row in Vicksburg, Mississippi. Each person in the group should have a list of their specific contribution to the project.

Problems Facing Louisiana and Mississippi Delta Page from Video

Information gathered from the group Page

Problem decided upon by the Group – State the problem and share with the group

Research the problem –

Design the Solution – Provide a step by step process and possible materials that would be needed.

Evaluate each group and give positive feedback

Analyze data and test to isolate best and worst solutions

Develop a model

Share final project board using Storyboard format with group- Explanation and neatness counts

Lesson/Unit Title	Beast of the Southern Wild Climate Change Day 1
Lesson Objective	8-ETS1-1 Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
DCI	ETS1.A Engineering Problems: 1) The more precisely a design task's criteria and constraints can be defined, the more likely it is that the designed solution will be successful. 2) Specification of constraints includes consideration of scientific principles and other relevant knowledge that are likely to limit possible solutions.
Daily Journal Entry	Constraint – restriction that defines a project's limitations.
Lesson Outline	<p>Watch video clips from Movie Beast of the Southern Wild https://www.youtube.com/watch?v=IKVJ6POkZzI No time for crying https://m.youtube.com/watch?v=iims4CJobVc sundance trailer https://www.youtube.com/watch?v=jqzWJdcoq1Lc</p> <p>End https://www.youtube.com/watch?v=Ky862fN20Gc</p> <p>Bathtub, was inspired by several isolated and independent fishing communities threatened by erosion, hurricanes and rising sea levels in Louisiana's Terrebonne Parish, most notably the rapidly eroding Isle de Jean Charles.</p> <p>Coastal Erosion USA Today Louisiana Historic Flood August 23, 2016 Bathtub Region Louisiana</p> <p>Brainstorm and come up with a list of problems faced by Hushpuppy and people. Decide on a problem in this area that your group will try to solve.</p> <p>CCC: Influence of Science, Engineering, and Technology on Society and the Natural World 1) All human activity draws on natural resources and has both short and long-term consequences, positive as well as negative, for the health of people and the natural environment.</p> <p>2) The uses of technologies and limitations on their use are driven by individual or societal needs, desires, and values; by the findings of scientific research; and by differences in such factors as climate, natural resources, and economic conditions.</p>
Assignment	<ul style="list-style-type: none"> • Give students precise criteria and constraints of a design problem to guarantee a successful solution • Keep scientific principals and potential impacts on people and the natural

	<p>environment relevant to limit possible solutions</p> <ul style="list-style-type: none"> • Allow students to compare design solutions and evaluate, using systematic processes, to determine how well criteria and constraints were met.
<p>Notes & Comments</p>	<p>SEP: Asking Questions and Defining Problems: Define a design problem that can be solved through the development of an object, tool, process or system and includes multiple criteria and constraints, including scientific knowledge that may limit possible solutions.</p> <p>SEP: Engaging in Argument from Evidence: Evaluate competing design solutions based on jointly developed and agreed-upon design criteria.</p> <p>Constraints: materials have to be real,</p> <ol style="list-style-type: none"> 1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information

Lesson/Unit Title	Beast of the Southern Wild Climate Change Day 2
Lesson Objective	8-ETS1-2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
DCI	E ST 1.B Developing Possible Solutions: There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem.
Daily Journal Entry	Constraints continued- the scope for example, is the limit of what the project is expected to accomplish. \S chedule, cost, scope, Management Triangle Pick two of the three
Lesson Outline	<p>http://www.laseagrant.org/communications/videos-media/</p> <p>Oral History Read http://www.huffingtonpost.com/2014/08/28/louisiana-sea-level-rise_n_5731916.html</p> <p>https://www3.epa.gov/climatechange/kids/index.html</p> <p>http://www.climategen.org/what-we-do/education/professional-development/summer-institute/summer-institute-2016/</p> <p>https://toolkit.climate.gov/get-started/step-1-explore-climate-threats</p> <p>Decide on a problem and begin to develop a plan. Students will develop their designs. They will share with classmates and improve upon areas in which suggestions were given. They may also borrow ideas from each other.</p>
Assignment	<p>How to use a storyboard http://www.sciencebuddies.org/engineering-design-process/storyboards.shtml</p> <p>Students will break down the steps in order to show how the process has evolved and how to isolate each practice. They will also explain the approach and teach it to the rest of the class to use in future lessons as a tool.</p>
Notes & Comments	<p>Compare data and tests of design solutions, using systematic processes, and develop a new solution by combining parts of successful components to better meet the criteria for success.</p> <p>\SEP: Analyzing and Interpreting Data: Analyze and interpret data to determine similarities and differences in findings.</p>

Lesson/Unit Title	Beast of the Southern Wild Climate Change Day 3
Lesson Objective	8-ETS1-3 Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.
DCI	<ul style="list-style-type: none"> Identify the successful characteristics of many design solutions to develop a new more successful design solution <p>ETS1.C Optimizing the Design Solution: Although one design may not perform the best across all tests, identifying the characteristics of the design that performed the best in each test can provide useful information for the redesign process—that is, some of those characteristics may be incorporated into the new design.</p>
Daily Journal Entry	With Climate Change and sea levels rising, how with this further complicate the problems?
Lesson Outline	<ul style="list-style-type: none"> Identify the successful characteristics of many design solutions to develop a new more successful design solution <p>New York 400 years ago Ted Talk http://www.ted.com/talks/eric_sanderson_pictures_new_york_before_the_city?language=en&utm_campaign=social&utm_medium=referral&utm_source=facebook.com&utm_content=talk&utm_term=technology</p> <p>Students will reevaluate their design and complete their final project.</p> <p>Story Boards</p>
Assignment	<p>Get Set . . .</p> <p>Introduce today's topic. "Today you and your team mates will cooperatively, collaboratively, and creatively work to design a proposed solution to the problem.</p> <p>Regroup students into their initial teams of four to six from Day 1.</p> <p>Remind students to use positive and productive group behaviors.</p> <p>Use round table sharing and piggy-backing to build on each other's statements and involve everyone.</p> <p>Stay on task and on topic.</p> <p>Use appropriate body language and noise level.</p> <p>Circulate as teams discuss and record possible ideas. Try to listen open-mindedly and respond with directive questions rather than judgmental statements. Praise respectful group interactions and positive, productive work habits.</p> <p>Focus large group attention and invite a spokesperson from each group to share proposed plans.</p> <p>Encourage discussion and debate which will address both strengths and concerns of each proposal.</p> <p>Encourage students to revise plans based on peer feedback. Compliment a strength from each group's</p>

	<p>proposal and highlight scientific thinking and effective integration of process skills.</p> <p>Review the key points of each plan and list on the board by team name or number. Ask students to select the proposal/action plan that they feel would be the most effective.</p> <p>Direct students to write a well-developed paragraph with details that support their choice.</p>
Notes & Comments	<p><i>SEP: Analyzing and Interpreting Data: Analyze and interpret data to determine similarities and differences in findings.</i></p>

Lesson/Unit Title	Beast of the Southern Wild Climate Change Day 4
Lesson Objective	8- tool, or process such that an optimal design can be achieved.ETS1-4 Develop a model to generate data for iterative testing and modification of a proposed object,
DCI	<ul style="list-style-type: none"> • Develop a model to repeat testing, to gather data, and modification, based on that data, to obtain the best possible design. • Design a model for repetitive testing for only the most successful solutions to obtain greater refinement and produce an optimal solution.
Daily Journal Entry	What would decrease the salinity of ocean water?
Lesson Outline	Present ideas to class Receive Feedback How would you develop a model to test? SEP: Developing and Using Models: Develop a model to generate data to test ideas about designed systems, including those representing inputs and outputs
Assignment	ETS1.B Developing Possible Solutions: 1) A solution needs to be tested, and then modified on the basis of the test results, in order to improve it. 2)Models of all kinds are important for testing solutions ETS1.C Optimizing the Design Solution: The iterative process of testing the most promising solutions and modifying what is proposed on the basis of the test results leads to greater refinement and ultimately to an optimal solution.
Notes & Comments	Read in Science Magazine when finished