

Resource Guide for 6th Grade Comprehensive Science 1

South Cross Bayou Water Reclamation Facility

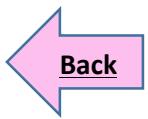
Teacher Resources

- [Resource Overview](#)
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- [Teacher Guide for 20-50-80 Menu](#)
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Student Resources

- [All-Purpose Product Rubric](#)
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6th Grade Comprehensive Science 1 Resource Overview



Choice! The following resources were designed to allow for teacher choice. Choice for teachers allows for customizing what students are expected to learn and differentiating how students are expected to demonstrate learning. By choosing the critical learning focus and the methods of demonstrating mastery, teachers design appropriate boundaries for students.

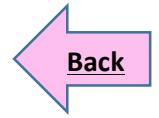
A tour of South Cross Bayou Wastewater Treatment Facility provides opportunities for your students to learn a tremendous amount of relevant information aligned to the Florida Standards for 6th grade Comprehensive Science 1. The Florida Standards have been provided and specific Learning Targets have been written to guide the learning expectations and outcomes. Teachers should review the [Florida Standards and Learning Targets](#) provided and choose which Learning Targets will be the critical focus for students.

A wide variety of Activity Options were developed to meet the needs and learning styles of diverse students. Activity Options have been grouped into three different point values based on the amount of student work associated with the activity. Teachers should review the [Activity Options](#) for the chosen Learning Targets and select a total of eleven Activity Options that are a good fit for their classroom and learners. (*Note: Students will only be expected to complete two of these eleven Activity Options*). To create a customized 20-50-80 Menu for their class, teachers should copy the eleven chosen Activity Options and paste them into the appropriate boxes of the template for the [20-50-80 Menu](#). This ensures that students will only see the eleven Activity Options that are predetermined by the teacher.

By establishing these boundaries, teachers can infuse *student* choice as well. Many teachers observe that if students have both choice and voice then there is an increase in motivation and desire to learn.

Students will preview the [20-50-80 Menu](#) before the SCB tour and predetermine *two* learning activities that best fit their interest, comfort and learning style. Students have many combinations to choose from to earn the necessary 100 points. Scaffolded supports for learning, as well as transparency of expectations, are provided through the descriptions on the [20-50-80 Menu](#), [Product Criteria Cards](#) and [All-Purpose Product Rubric](#). The desired effect of students knowing *how* they will use the information from the SCB tour is an increase in motivation and desire to learn.

6TH GRADE COMPREHENSIVE SCIENCE 1 STANDARDS & LEARNING TARGETS



Pinellas County Schools Mission Statement/ Florida Standards

- Learning Targets

PCS Mission: Educate and prepare each student for college, career, and life.

- Identify and describe various careers available in wastewater treatment.

PCS
Mission

PCS
Mission

SC.6.E.7.4 Differentiate and show interactions among the geosphere, hydrosphere, cryosphere, atmosphere, and biosphere.

- Describe the different interactions that are occurring between the geosphere, hydrosphere, atmosphere and biosphere at South Cross Bayou.

E.7.4

E.7.4

E.7.4

E.7.4

HE.6.C.1.3 Identify environmental factors that affect personal health.

- Identify the hazardous substances in the wastewater that could affect personal health if wastewater is not treated properly.
- Explain the role that the chlorine contact tank and the UV system play in protecting personal health.

HE.6.C.1.3

HE.6.C.1.3

HE.6.C.1.5 Explain how body systems are impacted by heredity factors and infectious agents.

- Identify the different types of infectious agents that could affect the human body if wastewater is not treated properly.
- Describe the different types of diseases caused by the improper treatment of wastewater.
- Explain how body systems would be impacted by the disease(s) caused by the infectious agents in the wastewater.

HE.6.C.1.5

SC.6.L.14.3 Recognize and explore how cells of all organisms undergo similar processes to maintain homeostasis, including extracting energy from food, getting rid of waste, and reproducing.

- Identify where organisms at SCB are maintaining homeostasis, justify your response by providing evidence.

L.14.3

SC.6.P.13.1 Investigate and describe types of forces including contact forces and forces acting at a distance, such as electrical, magnetic, and gravitational.

- Infer the type of force acting upon the wastewater as it travels through the influent pump station.
- Infer the type of force acting upon the wastewater as it moves through the tea cups.
- Infer the type of force acting upon the treated water as it travels through the outflow cascade into Joe's Creek.
- Infer the type of force acting upon the sludge in the as it travels through the dewatering centrifuges.

P.13.1

SC.6.P.13.3 Investigate and describe that an unbalanced force acting on an object changes its speed, or direction of motion, or both.

- Describe how the sides of the tea cups change the direction of motion of the wastewater.
- Describe how the baffles in the chlorine tank change the speed of the flowing water.

P.13.3

6th Grade Comprehensive Science 1 Teacher Guide for 20-50-80 Menu

Learning Targets

Relevant [6th grade Comprehensive Science 1](#) are provided and specific [Learning Targets](#) have been developed. Teachers choose the [Learning Targets](#) and associated [Activity Options](#) that are a desired critical focus for their students.

Student Materials Needed for Activity Options

| | | | | |
|-------------|--------------------------|---------|---|-------------|
| lined paper | glue/tape | markers | colored pencils | white paper |
| scissors | coat hanger (for mobile) | | smartphone or tablet with video recording | |

Special Notes

Since the [Activity Options](#) have either a 20, 50 or 80 point value, the [All-Purpose Product Rubric](#) must be customized by the students. When using the [All-Purpose Product Rubrics](#) have students circle the correct point value for the product (20, 50 or 80) and record the correct partial point values at the top of the full and half credit columns. Use the tables below for partial point values:

| Full | Half | No |
|---------------------------|------|----|
| 4 | 2 | 0 |
| 4 | 2 | 0 |
| 4 | 2 | 0 |
| 4 | 2 | 0 |
| 4 | 2 | 0 |
| 20 Points Possible | | |

| Full | Half | No |
|---------------------------|------|----|
| 10 | 5 | 0 |
| 10 | 5 | 0 |
| 10 | 5 | 0 |
| 10 | 5 | 0 |
| 10 | 5 | 0 |
| 50 Points Possible | | |

| Full | Half | No |
|---------------------------|------|----|
| 16 | 8 | 0 |
| 16 | 8 | 0 |
| 16 | 8 | 0 |
| 16 | 8 | 0 |
| 16 | 8 | 0 |
| 80 Points Possible | | |

Time Frame

Allow one or two 50 minute class periods prior to your SCB visit to have students preview resources and predetermine two activities from the [20-50-80 Menu](#).

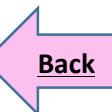
Allow two or three 50 minute class periods after your SCB visit to have students complete their two chosen activities from the [20-50-80 Menu](#).

Additional Forms

[All-Purpose Product Rubrics](#) (two per student)

[Product Criteria Cards](#)

6th Grade Comprehensive Science 1 Teacher Guide for Activity Options



Teachers, below is the master list of suggested in-class activities for students to demonstrate mastery on the [Learning Targets](#). You will narrow down three 20 point options, four 50 point options and three 80 point options and place the eleven options on the [20-50-80 Menu template](#).

Prior to the SCB tour, students will choose two activities (with a sum of 100 points) from the options you provide. Back in the classroom after the SCB tour, students will complete both activities they have selected.

20 Points Options *Teachers, place [three options on the 20-50-80 Menu](#).

| | |
|-------|---|
| E.7.4 | Create a mobile to display five interactions between Earth's systems from the perspective of the atmosphere. Describe five specific interactions that occur at SCB where the atmosphere interacts with the other systems: hydrosphere, geosphere, and biosphere. Be sure that each interaction is connected to the atmosphere, has a description of the event or process that occurs at SCB, and labels the second system of the interaction (biosphere, geosphere, or hydrosphere) |
| E.7.4 | Create a mobile to display five interactions between Earth's systems from the perspective of the hydrosphere. Describe five specific interactions that occur at SCB where the hydrosphere interacts with the other systems: atmosphere, geosphere, and biosphere. Be sure that each interaction is connected to the hydrosphere, has a description of the event or process that occurs at SCB, and labels the second system of the interaction (biosphere, geosphere, or atmosphere). |
| E.7.4 | Create a mobile to display five interactions between Earth's systems from the perspective of the geosphere. Describe five specific interactions that occur at SCB where the geosphere interacts with the other systems: hydrosphere, atmosphere, and biosphere. Be sure that each interaction is connected to the geosphere, has a description of the event or process that occurs at SCB, and labels the second system of the interaction (biosphere, atmosphere, or hydrosphere). |
| E.7.4 | Create a mobile to display five interactions between Earth's systems from the perspective of the biosphere. Describe five specific interactions that occur at SCB where the biosphere interacts with the other systems: hydrosphere, geosphere, and atmosphere. Be sure that each interaction is connected to the biosphere, has a description of the event or process that occurs at SCB, and labels the second system of the interaction (atmosphere, geosphere, or hydrosphere). |

50 Points Options *Teachers, place [four options on the 20-50-80 Menu](#).

| | |
|------------|---|
| HE.6.C.1.3 | Write and record a 2-3 minute speech for a town hall meeting. Imagine that you have moved to a newly developed town where wastewater facilities cannot fully treat the high volume of wastewater generated by the residents. You plan to ask for a tax increase so that the wastewater treatment facility can expand in order to properly treat the wastewater. You know that people do not ever <i>want</i> an increase in taxes, but you also know that people <i>expect</i> to be safe and healthy in their town. When writing your speech, persuade the members of the town to vote "yes" for a tax increase by explaining the health reasons for having proper wastewater treatment. |
| HE.6.C.1.3 | Write and record a 2-3 minute speech for a town hall meeting. There is a proposal to reduce wastewater treatment funding by eliminating the chlorine contact tank and UV system. Because you oversee facility operations, your role at the town hall meeting is to speak as an expert in the purpose and processes involved in the chlorine contact tank and UV system at the town's wastewater treatment facility. In your speech be explain how the chlorine contact tank and UV system protecting human health. |

| | |
|--------|--|
| L.14.3 | Imagine a microscopic world where you are the marketing associate for a desirable retirement community for bacteria. Your job is to create a trifold brochure that communicates how SCB is a fantastic place for a bacteria to retire. Focus your brochure on how a bacteria at SCB maintains homeostasis. Research and describe how bacteria at SCB can extract energy from their food, get rid of their waste, and reproduce. |
| P.13.1 | Create an interactive map of SCB wastewater facility. Your map should include all stations at SCB but flaps only need to be created for the following stations: influent pump station, tea cups, outflow cascade, and dewatering centrifuges. Label the type of force on the front side of the flap. On the inside of the flap describe the effect of that force and name the object(s) the force is acting upon within that specific station. |

80 Points Options *Teachers, place three options on the [20-50-80 Menu](#).

| | |
|----------------|--|
| HE.6.C.1.5 | You are a healthcare worker for the international organization, Doctors Without Borders. You have been asked to speak at a local middle school for the Great American Teach-In. Research a specific region of a country that has experienced an outbreak of an illness due to the lack of proper wastewater treatment. Use your research to prepare a presentation that describes a recent visit to an overseas region that lacked proper wastewater treatment. During your presentation: identify and describe the town you worked in, identify an illness and associated symptoms related to contact with improperly treated wastewater, classify the infectious agent in the wastewater as either bacterial, viral or parasitic, and explain how the infectious agent is transmitted to the residents of that region. |
| P.13.3 | Create a model to demonstrate unbalanced forces acting upon objects within SCB. For each model be sure to demonstrate a change to speed, direction of motion, or both. Be prepared to demonstrate in front of your class or make a video recording of your model as you demonstrate unbalanced forces acting upon your chosen object. Choose <u>one</u> of the following: demonstrate how the sides of the tea cups change the direction of the wastewater or demonstrate how the baffles in the chlorine tank change the speed of the flowing water. Be sure to verbally explain what your model is demonstrating. |
| PCS Mission | Write and present to the class Three Facts & A Fib for each of three different careers that are present at SCB. You may use resources provided by SCB to help you identify careers and give you general information, but your 9 facts and 3 fibs must be information that was not included in the SCB resources. Conduct independent research on the three careers when writing your facts and fibs. |
| PCS Mission | You are an employee at SCB and have been asked to speak at a local high school for the Great American Teach-In. Prepare a presentation that describes your role within the treatment facility. Share with class about a situation (power outage to the city due to storms, infiltration/inflow of stormwater due to leaking pipes, sensor failure in the monitoring of water parameters, etc) when you had to problem solve a major crisis. |

All-Purpose Product Rubric Product: _____ 20, 50, or 80 Point Option Name: _____

| Aspect | Full Credit Points | Half Credit Points | No Credit 0 Points | Peer Feedback | Self Evaluation |
|---|--|--|--|---------------|-----------------|
| Content: Is the content of the product well chosen? | Content chosen represents the best choice for the product. Graphics are well chosen and related to content. | Information or graphics are related to content, but are not the best choice for the product. | Information or graphics presented do not appear to be related to topic or task. | | |
| Completeness: Is everything included in the product? | All information needed is included. Product meets the product criteria and the criteria of the task as stated. | Some important information is missing. Product meets the product criteria and the criteria of the task as stated. | Most important information is missing. The product does not meet the task or does not meet the product criteria. | | |
| Creativity: Is the product original? | Presentation of information is from a new perspective. Graphics are original. Product has elements of fun and interest. | Presentation of information is from a new perspective. Graphics are not original. Product includes an element of fun and interest. | There is no evidence of new thoughts or perspective in the product. | | |
| Correctness: Is all of the information included correct? | All information presented in the product is correct and accurate. | N/A | Any portion of the information presented in the product is incorrect. | | |
| Communication: Is the information in the product well communicated? | All information is neat and easy to read. Product is in appropriate format and shows significant effort. Oral presentations are easy to understand and presented with fluency. | Most of the product is neat and easy to read. Product is in appropriate format and shows significant effort. Oral presentations are easy to understand, with some fluency. | The product is not neat and easy to read or the product is not in the appropriate format. It does not show significant effort. Oral presentation was not fluent or easy to understand. | | |
| Total Grade | | | | | |

Name: _____

Date: _____

6th Grade Comprehensive Science 1 20-50-80 Menu

Student Directions: Choose two activities from the menu below. The activities must total 100 points. Place a checkmark next to each box to show which activities you will complete. All activities must be completed by _____.

20 Points

| | |
|--------------------------|--|
| <input type="checkbox"/> | |
| <input type="checkbox"/> | |
| <input type="checkbox"/> | |

50 Points

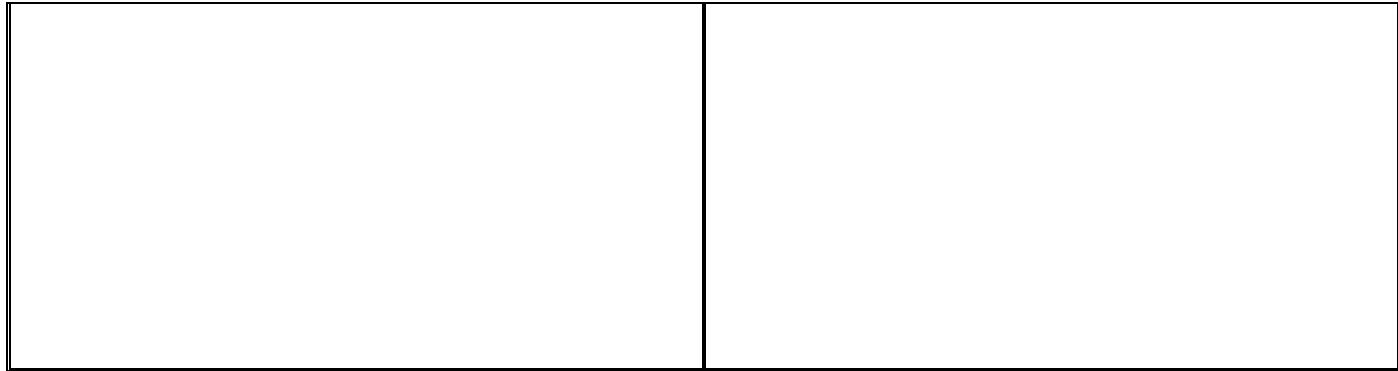
| | |
|--------------------------|--|
| <input type="checkbox"/> | |

80 Points

| | |
|--------------------------|--|
| <input type="checkbox"/> | |
| <input type="checkbox"/> | |
| <input type="checkbox"/> | |

Students, attach the Product Criteria Cards for your two activities in the spaces below.

| | |
|--|--|
| | |
|--|--|



6th Grade Comprehensive Science 1 Product Criteria Cards

Student Directions: The cards below convey additional criteria for various products. Cut out the two applicable product criteria cards and attach each to your 20-50-80 Menu.

| | | |
|---|---|--|
| | <p style="text-align: center;">Mobile</p> <ul style="list-style-type: none">• At least 10 pieces of related information• Includes color and pictures• 3+ layers of hanging material• Is balanced when hanging | |
| <p style="text-align: center;">Interactive Map</p> <ul style="list-style-type: none">• Includes a scale• Has two or more layers that are viewable by lifting paper• Images are in color and are clear• Explanations are thorough and concise• Has a title that explains the location | <p style="text-align: center;">Presentation: Great American Teach-In</p> <ul style="list-style-type: none">• Take on the role of the SCB employee• Cover at least 5 important facts about the job of the employee• Should be 3-5 minutes in length• Script must be approved by teacher before information is presented• Must have props or some form of costume• Allow for questions at the end of presentation | <p style="text-align: center;">Town Hall Speech</p> <ul style="list-style-type: none">• Was videotaped or audio recorded• Script was written and provided to teacher• Begins with introduction and explains your credentials or authority to speak on the subject• Provides appropriate background knowledge and detail for the type of audience• States the purpose for speaking• Has a clear wrap-up that restates the purpose of the speech• Voice was loud and easy to understand |
| <p style="text-align: center;">Three Facts & A Fib</p> <ul style="list-style-type: none">• Can be typed, written or on PPT• Contains exactly four statements: three true statements and one false statement• False statement should not be obvious• Paragraph should be included that explains why the fib is false | <p style="text-align: center;">Demonstrate with a Model</p> <ul style="list-style-type: none">• Size is at least 8"x 8"x 12"• Parts of model must be labeled• Should be in scale when appropriate• Must include a title card• Name should be permanently written on model• Manipulate the pieces of the model to demonstrate the concept• Provide verbal explanations of what you are demonstrating• Provide verbal explanations of all required content• When demonstrating in front of class- provide time to answer class questions | <p style="text-align: center;">Display Board or Brochure</p> <ul style="list-style-type: none">• Uses either a cardboard trifold board (of any size) or a standard sheet of paper folded to create three columns• Clear and visible overall title and section headings• Uses graphics, charts, images etc (can be hand drawn or printed)• Neat and legible• Thoroughly meets the content |

