

LESSON PLAN

ReWa

Water Matters

Lesson Overview:

This lesson has students consider the processes wastewater goes through as it leaves a home or industry and enters a wastewater treatment facility. It examines the jobs that different individuals have in the facility as well as their importance in the process of helping to create clean, containment-free water that can safely be released into rivers or streams. Finally, it asks students to survey their current situation and reflect on what they might do today, to make a difference in their environment tomorrow.

Essential Learning Goal

How can my choices make a difference in the environment today?

Lesson Progression:

STEP 1 – BRAINSTORMING ACTIVITY

- The teacher will introduce the lesson by asking students, “What happens to the water that you use in your home?” The teacher has a couple of options in how to engage students in their responses. Because it is important to see a progression of knowledge from the beginning of the lesson to the end, student responses should be recorded and saved.
- If students have access to personal devices their responses can be recorded using Padlet. Padlet is an application to create an online bulletin board that can be used to display information for any topic. Padlet is a free service for teachers. A second option would be to write the prompt on butcher paper and have students write their responses to the question on sticky notes, attaching their responses under the question. One benefit to this option is the physical movement of students which encourages participation and allows them to become actively involved in the lesson.
- The teacher will go over the responses to the prompt as a whole class activity.

STEP 2 – SMALL GROUP ACTIVITY

- The teacher will divide the class into six groups to correspond to the six videos. Each group will be given a series of guided questions that are specific to the video assigned to the group.
- The teacher will show each video to the class as a whole. When the assigned group video is broadcasted, the group will be expected to take notes on the video using their questions as a guide to help groups focus on the important aspects of the video.

- After the class has viewed each video, individual groups may use their personal devices to review the video specifically assigned to their group in their group setting, making sure the questions are answered adequately and to the satisfaction of each member of the group.
- Each group will create an infographic about the assigned person in their video and his/her role in the water treatment process. This infographic must answer the guided questions putting special emphasis on how their assigned person's actions today impact our shared future tomorrow.
- The groups must come together, using each group's individual infographic sheets, to create a class flow chart. This chart should help an outsider not familiar with the water treatment process understand what happens to water once it leaves our homes. The flow chart must show the process, as well as the individual roles in making sure the water we use is free from contamination.
- Each group will contribute a statement that reflects their belief how choices today make a difference in the environment tomorrow?
- In the end the class will have a collective statement, made up of the individual statements from each group, that reflect their ideas and beliefs on how they feel they can make a difference in the environment in the future.

Guided Questions for Each Group

BRENT – TEAM LEADER

- » What is the job description of a Senior Maintenance Supervisor?
- » What are the qualifications for Brent's job?
- » Why does Brent think his job is important?
- » In what ways is Brent a "problem solver" in his job?
- » What would happen if Brent didn't do his job?
- » How does Brent's job at ReWa connect to the other jobs at the facility?
- » What does your group find most interesting about Brent's job?
- » How are Brent's choices and actions today changing the environment we will all share tomorrow?

CHASE – PIPE INSPECTOR

- » What is the job description of a Pipe Inspector?
- » What are the qualifications for Chase's job?
- » Why does Chase think his job is important?
- » In what ways is Chase a "problem solver" in his job?
- » What would happen if Chase didn't do his job?
- » How does Chase's job at ReWa connect to the other jobs at the facility?
- » What does your group find most interesting about Chase's job?
- » How are Chase's choices and actions today changing the environment we will all share tomorrow?

CINDY – LAB ANALYST

- » What is the job description of a Lab Analyst?
- » What are the qualifications for Cindy's job?
- » Why does Cindy think her job is important?
- » In what ways is Cindy a "problem solver" in her job?

- » What would happen if Cindy didn't do her job?
- » How does Cindy's job at ReWa connect to the other jobs at the facility?
- » What does your group find most interesting about Cindy's job?
- » How are Cindy's choices and actions today changing the environment we will all share tomorrow?

DUDLEY – COMMUNICATOR

- » What is the job description of a Communicator?
- » What are the qualifications for Dudley's job?
- » Why does Dudley think his job is important?
- » In what ways is Dudley a "problem solver" in his job?
- » What would happen if Dudley didn't do his job?
- » How does Dudley's job at ReWa connect to the other jobs at the facility?
- » What does your group find most interesting about Dudley's job?
- » How are Dudley's choices and actions today changing the environment we will all share tomorrow?

TIM – WATER TESTER

- » What is the job description of a Water Tester?
- » What are the qualifications for Tim's job?
- » Why does Tim think his job is important?
- » In what ways is Tim a "problem solver" in his job?
- » What would happen if Tim didn't do his job?
- » How does Tim's job at ReWa connect to the other jobs at the facility?
- » What does your group find most interesting about Tim's job?
- » How are Tim's choices and actions today changing the environment we will all share tomorrow?

TOBY – TECH SOLUTIONS

- » What is the job description of someone who works in Tech Solutions?
- » What are the qualifications for Toby's job?
- » Why does Toby think his job is important?
- » In what ways is Toby a "problem solver" in his job?
- » What would happen if Toby didn't do his job?
- » How does Toby's job at ReWa connect to the other jobs at the facility?
- » What does your group find most interesting about Tim's job?
- » How are Toby's choices and actions today changing the environment we will all share tomorrow?

Lesson Extensions

- Incorporate vocabulary into the infographic presented to the class for the final group project. Create links with the terms that will give the reader of the infographic definitions of the terms and more information. The teacher could possibly add extra credit if this is added to the infographic.
- Create a puzzle using the vocabulary words that are included in the lesson. Links are provided in the resources.
- The teacher or students can create a bulletin board where their collective class reflective statement about the difference they hope to make in the environment in the future is displayed.

ReWa

VIDEO TERMS

1. **Biology** – the science that studies the growth and life processes of living things.
2. **Challenge** – an interesting or difficult problem or task.
3. **Chemistry** – the science that studies the form and function of basic elements and their compounds.
4. **Complex** – an involved arrangement of parts. Something that is complicated or hard to understand.
5. **Computer science** – the science and study of computers, including how they are made and how they work.
6. **Crew Member** – a person who runs the day-to-day operations at the Water Treatment Plant. These responsibilities include checking water quality and fixing mechanical issues that may prevent the plant from operating correctly.
7. **Detrimental** – damaging or harmful.
8. **Ecosystem** – a community of living things, together with their environment.
9. **Effluent Samples** – water that is tested after treatment at the Water Treatment Plant to make sure it is safe to release into rivers and streams.
10. **Elements** – a part of any whole.
11. **Equipment** – anything kept, furnished, or provided for a specific purpose.
12. **Environment** – all the things together that surround animals and humans in the natural world, including the air, the water, and the soil.
13. **Influent Samples** – water that is tested in the laboratory when it enters the Wastewater Treatment Plant that determines the types of contaminants in the water. Contaminants come from many sources like industry, homes, and toilet waste.
14. **Inspection** – a formal examination.
15. **Lab** – an important part of the water treatment process where tests are performed on the wastewater to look for contaminants in the water.
16. **Larger Lines** – larger pipelines which carry water from the “Public Sewer Main” to the “Pump Station”.
17. **Maintenance** – care or upkeep, as of machinery or property.
18. **Organizational Skills** – the ability to manage time effectively, prioritize tasks, set goals, and develop systems for achieving goals.
19. **Plant** – a building or group of buildings that have machinery and equipment for making things.
20. **Pipeline Technician** – a person whose special skills are used to maintain and keep pipes leading from home and industry to a wastewater treatment facility in good working order.
21. **Pollutants** – something that pollutes, especially a waste substance that makes air, water, or land impure or unhealthy.
22. **Problem** – any question or matter involving doubt, uncertainty, or difficulty.
23. **Public Sewer Main** – a receptacle that accepts wastewater that is carried from a home by the Service Line. The Public Sewer Main is often located in a central area to a home/homes, like under a road.
24. **Pump Station** – a wastewater receptacle along the sewer line progression where water that has been received from the “Public Sewer Main” is pumped through large pipes as the wastewater proceeds to the Wastewater Treatment Plant.
25. **Remote Control Car** – a hand-held device used to control a car or a mechanical mechanism which has attached to it a camera so that pipes or areas not accessible by people can be viewed.
26. **Resolve** – to come to a definite decision.
27. **Senior** – referring to status or rank.

28. **Service Line** – the pipe that carries wastewater out of a home.
29. **Strategic Communications Manager** – a person who conveys information. A primary role of a Strategic Communications Manager is to make a message more understandable using a variety of methods some of which include email, social media, and video.
30. **Supervisor** – one who oversees the work done by others.
31. **Technician** – a person whose work requires special skills.
32. **Testing** – a method for trying or assessing.
33. **Treat** – to act upon in order to get a particular result.
34. **Waste Water** – water that is not clean because it has been used by homes or industry.
35. **Waste Water Treatment** – the process of taking water which has been contaminated by industry and homes and treating it to remove contaminants so that it can be safely released back into rivers and streams.
36. **Waste Water Treatment Plant** – a plant that treats wastewater and removes harmful elements in the water so that the water can be returned to rivers and streams.
37. **Water Supply** – the supply of purified water available to a community.
38. **Waterway** – a river, canal, or other body of water serving as a route or way of travel or transport.

ReWa

SC ELA Standards – Grade 4

APPLICATIONS OF READING (AOR)

ELA.AOR.7: Determine or clarify the meaning of unknown and multiple-meaning words and phrases.

ELA.4.AOR.7.1 Determine or clarify the meaning of known, unknown, and multiple meaning words and phrases, choosing from an array of strategies:

- use context clues (e.g., definitions, examples, restatements) to determine the meaning of a word or phrase;
- consult print and digital reference materials to build and integrate background knowledge; and
- consult print and digital reference materials to find the pronunciation, part of speech, and to determine or clarify the precise meaning of words and phrases.

Indicator Insight: ELA.4.AOR.7.1a Refer to the Vocabulary Support Document for context clues insight

ELA.AOR.8: Analyze word relationships and nuances in word meanings within literary and informational texts.

ELA.4.AOR.8.1 Determine an author's use of words and phrases in grade-level literary, informational, and multimedia texts:

- distinguish between literal and nonliteral meanings of words and phrases (e.g., take steps);
- explain the meaning of commonly occurring similes, metaphors, and idioms, and
- demonstrate knowledge of relationships between words (e.g., synonyms and antonyms) to better understand each of the words

Indicator Insight: d. ELA.4.AOR.8.1 Refer to ELA.4.AOR.1.2 for the types of figurative language students are expected to know at this grade level.

ELA.AOR.10: Evaluate and critique multimedia presentations of a text or subject, including their impact on an audience.

ELA.4.AOR.10.1 Determine and explain how visuals (e.g., illustrations, photographs, maps) and/or multimedia elements (e.g., video, audio) contribute to the meaning of a print or non-print text.

Indicator Insight: none

RESEARCH(R)

ELA.R.1: Use critical thinking skills to investigate, evaluate, and synthesize a variety of sources to obtain and refine knowledge.

ELA.4.R.1.3 Determine which information is relevant to the topic.

ELA.4.R.1.4 Group related findings

Indicator Insights: ELA.4.R.1.1 Refer to the Research Support Document for research support. ELA.4.R.1.5 Refer to OE.5 for more information about citing sources.

WRITTEN AND ORAL COMMUNICATIONS (C)

ELA.C.7: Organize and communicate ideas through a range of formats to engage a variety of audiences.

ELA.4.C.7.1 Present information orally to report on a topic or text, tell a story, or recount an experience. When presenting:

- a. demonstrate appropriate speaking techniques (e.g., nonverbal cues, appropriate volume, and clear pronunciation) for a variety of purposes and audiences; and
- b. identify and use appropriate digital tools to enhance verbal communication with support from adults

Indicator Insight: none

ELA.C.9: Evaluate and critique ideas and concepts interactively through listening and speaking.

ELA.4.C.9.1 Identify and explain a speaker's claim(s) and supporting reasons and evidence.

Indicator Insight: none

SC SCIENCE STANDARDS – GRADE 5

ESS3 – Earth and Human Activity

5-ESS3-1. Evaluate potential solutions to problems that individual communities face in protecting the Earth's resources and environment.

RUBRIC

ReWa

Brent – Senior Maintenance Supervisor				
3	2	1	0	ASSESSMENT
The infographic made Brent's job easy to understand. It was easy to learn about how Brent's job connected to the ReWa mission from viewing the infographic. The essential question was answered completely.	The information on the infographic did not explain Brent's job well. Although information was learned and the essential question was answered, it was harder to follow.	It was difficult to learn about how Brent's job connected to the ReWa mission. The answer to the essential question was attempted but was incomplete.	The information on the infographic was confusing and incomplete. Little or no attempt was made to show the connection between Brent's job and the Rewa Mission. The essential question was not answered.	

Chase – Pipeline Inspector				
3	2	1	0	ASSESSMENT
The infographic made Chase's job easy to understand. It was easy to learn about how Chase's job connected to the ReWa mission from viewing the infographic. The essential question was answered completely.	The information on the infographic did not explain Chase's job well. Although information was learned and the essential question was answered, it was harder to follow.	It was difficult to learn about how Chase's job connected to the ReWa mission. The answer to the essential question was attempted but was incomplete.	The information on the infographic was confusing and incomplete. Little or no attempt was made to show the connection between Chase's job and the Rewa Mission. The essential question was not answered.	

Cindy – Lab Analyst

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Dudley – Strategic Communications Manager

3	2	1	0	ASSESSMENT
The infographic made Dudley's job easy to understand. It was easy to learn about how Dudley's job connected to the ReWa mission from viewing the infographic. The essential question was answered completely.	The information on the infographic did not explain Dudley's job well. Although information was learned and the essential question was answered, it was harder to follow.	It was difficult to learn about how Dudley's job connected to the ReWa mission. The answer to the essential question was attempted but was incomplete.	The information on the infographic was confusing and incomplete. Little or no attempt was made to show the connection between Dudley's job and the Rewa Mission. The essential question was not answered.	

Tim – Water Tester

3	2	1	0	ASSESSMENT
The infographic made Tim's job easy to understand. It was easy to learn about how Tim's job connected to the ReWa mission from viewing the infographic. The essential question was answered completely.	The information on the infographic did not explain Tim's job well. Although information was learned and the essential question was answered, it was harder to follow.	It was difficult to learn about how Tim's job connected to the ReWa mission. The answer to the essential question was attempted but was incomplete.	The information on the infographic was confusing and incomplete. Little or no attempt was made to show the connection between Tim's job and the Rewa Mission. The essential question was not answered.	

Toby – Tech Solutions

3	2	1	0	ASSESSMENT
The infographic made Toby's job easy to understand. It was easy to learn about how Toby's job connected to the ReWa mission from viewing the infographic. The essential question was answered completely.	The information on the infographic did not explain Toby's job well. Although information was learned and the essential question was answered, it was harder to follow.	It was difficult to learn about how Toby's job connected to the ReWa mission. The answer to the essential question was attempted but was incomplete.	The information on the infographic was confusing and incomplete. Little or no attempt was made to show the connection between Toby's job and the Rewa Mission. The essential question was not answered.	