



## *Water the Matrix of Life* - Albert Szent- Gyorgyi

### Environmental Study of Water - Science

<b>Essential Question</b>	<i>Can life exist without water?</i>
<b>Outcomes</b>	<p>At the end of this module, you will be able to</p> <ul style="list-style-type: none"> <li>● Define what role water plays in living things (organisms).</li> <li>● Explain your water footprint.</li> <li>● Describe how your water footprint impacts water sustainability.</li> <li>● Define the water cycle and evaluate where water originates.</li> <li>● Convert your knowledge to identify 3 water conservation methods.</li> </ul>
<b>Standards</b> Benchmarks identified in <b>RED</b> are priority benchmarks.	<p><b>Science Assessment Targets</b></p> <p><b>L.c.1</b> Flow of energy in ecosystems, conservation of energy in an ecosystem.</p> <p><b>L.c.2</b> Flow of matter in ecosystems and the efficiency of change in communities.</p> <p><b>L.c.3</b> Carrying Capacity, changes in carrying capacity based on changes in population and environmental effects limiting resources.</p> <p><b>L.c.5</b> Description of ecosystems (human causes and effects).</p> <p><b>ELA Content Standards</b></p> <p><b>W.6.1</b> Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience.</p> <p><b>R.4.6</b> Analyze how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of ideas.</p> <p><b>R.3.9</b> Determine the meaning of words and phrases as they are used in a text.</p>
<b>STEM Focus</b>	X Science <input type="checkbox"/> Technology <input type="checkbox"/> Engineering <input type="checkbox"/> Mathematics

**TEACHERS:** this content was designed for ABE/ASE students. Instructional scaffolding used in this lesson can be beneficial for multilingual students.

Because adult classrooms are multi-level, teachers will want to differentiate this HyperDoc by accommodating the different ways that students learn by using scaffolding strategies and appropriate leveled materials. Teachers will want to vary the instructional activities based on their student's needed skills.

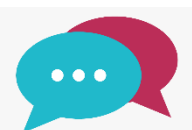
For more information about collaborating and sharing on Google Drive, check out videos 36-45: [Google Junior Training series - YouTube](#).

**STUDENTS:** Before you begin this lesson



- Go to File > Make a copy
- Change the name to: <your name> Water Science
- Begin working in your document
- When completing an activity, make a copy of the document and save with your name and the title of the activity

**Be sure to read carefully. The green text is a prompt for reflection or activity.**



**Engage**

### Watch the video:

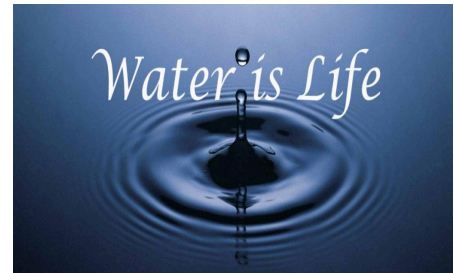


Click the photo to watch the video *Water Changes Everything*. (3:23 min)

### Read the passage:

Using your knowledge about water and the information from the video, consider the following statement by Scientist and Nobel Prize winner Albert Szent- Gyorgyi:

*“Water is life’s matter, mother and medium. There is no Life without water.”*



What do you think this statement means?

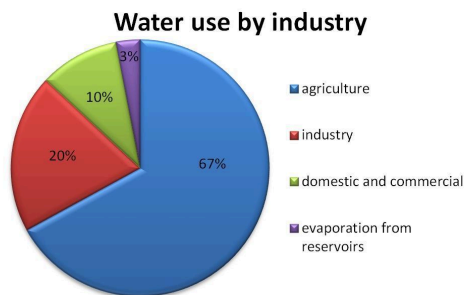
### Complete the activity:

Click the “Water is Life” image to access Padlet, then use the plus sign on the bottom right to enter your answer.



## Explore

Click on the image below to watch the video *Water Usage*:



*Water Usage*. (3:03 min)

### Complete the activity:

Go to the Google Classroom, find the [graphic organizer](#) and write 4 uses for water and one example for each use, then turn in your document to me.



## Explain

## Your Water Footprint

Read the passage:



### Water Footprint

*The water footprint of an individual, community or business is defined as the total volume of fresh water used to produce the goods and services consumed by the individual or community or produced by the business.*

Reading Response:

In the box below, explain the water footprint in your own words.

## Estimate your water footprint

Respond to the question:

How many gallons of water do you think **YOU** use in a day? Answer in the box below.

Discover your actual water footprint:

Take the water footprint [quiz](#) to find out how much water **YOU** may actually use per day.

Respond to the question:

Were your numbers close? Are you surprised?



## Explain

### Your Family's Water Footprint



Respond to the following question:

How many gallons of water do you think


### Calculating your family's water footprint

Now let's calculate an average number of gallons that **Your Family** uses per day. **Take the family quiz [here](#).**

Respond to the following question in the box below:

According to the quiz, approximately how many gallons of water does your family use per day?

	<p><b>your family</b> uses in a day? Answer in the box below.</p> <div data-bbox="318 218 893 287" style="border: 1px solid black; height: 33px; width: 354px;"></div>	<div data-bbox="924 109 1497 189" style="border: 1px solid black; height: 38px; width: 353px;"></div> <p><b>Respond to the following question in the box below:</b></p> <p>Are you surprised at the number of gallons of water your family uses each day? Why or Why not? Answer in the box below.</p> <div data-bbox="924 459 1497 539" style="border: 1px solid black; height: 38px; width: 353px;"></div>
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	<h2>Explain</h2>	
	<p><b>Bon appétit! Let's Eat!</b></p> <p><i>How many gallons of water does it take to grow your food?</i></p>	<p><i>Let's find out how many gallons of water it actually takes to grow a delicious hamburger.</i></p> <p><b>Take the quiz and find out <a href="#">here</a></b></p> <p><b>Respond to the following question in the box below:</b></p> <p>Was your guess close? Why or Why not? Are you surprised? Shocked? How much water does it actually take to grow a hamburger?</p> <div data-bbox="924 1726 1497 1795" style="border: 1px solid black; height: 33px; width: 353px;"></div> <p><b>Watch the video:</b></p> <p>So really, how much water does it really take</p>



**Take a guess:**

How much water (in gallons) do you think it takes to make and grow a delicious hamburger like the one in the photo? Type your answer in the box below.

to grow the food our families eat? Click the photo below to watch the video and find out! *Here's How Much Water Goes Into Making Your Food* (1:33 min)



**Video response:**

What did you learn in the video? What are your thoughts? Write it in the box below.



**Elaborate**



### Carrying Capacity

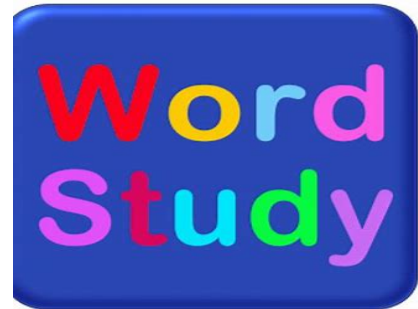
*The carrying capacity of an environment is the maximum population size of a biological species that can be sustained by that specific environment, given the food, habitat, water, and other resources available.*

#### Respond:

What do you think, will there be enough water? Will we run out? What do you think could happen?

#### Complete the activity:

Pre-module vocabulary. Complete the following [quizlet](#) to become familiar with some of the vocabulary in the upcoming module.



#### Complete the activity:

Click on the picture below to complete Activity 1 entitled *Will there be enough fresh water?* and activity two entitled *Using Fresh Water*. **Answer all questions on the [Google Doc](#) in your Google Classroom and submit.**



## Collaborate

**Watch the video:**

**Think, pair and share**

In the boxes below, with a partner or



Click on [Conserving Water at Home](#) (2:57 min) and discover what you and your family can do to conserve water.

family member, **List 3 ways to conserve water:**

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**Join another pair of students and share your list. Add one of their ideas to your list!**



## Evaluate

**In each box, list one thing you learned about water.**

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**Revisit** the [padlet](#) from the beginning of this Hyperdoc. Using what you have learned, **complete** the following:

1. Read and comment on your initial response.
2. Read and comment on two other student's responses.



## Extend

**Read the document:**

**Complete the activity:**

Study vocabulary from [Facts About Water](#) quizlet.

## Facts of Water



Click on the image to read the document *Facts about Water*.

### Watch the video:

Watch [The World's Water Crisis Explained](#) (18:42 min)

### Video response:

Go to Aspire [Camp STEM Facebook](#) page and write a post/ reaction to the video *The World's Water Crisis Explained*.