Lesson 2: My Water Footprint

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SUMMARY

This lesson centers on a deeper exploration of the water footprint associated with food. Students learned in Lesson 1 that virtual water, especially as it relates to food, typically makes up the majority of their water footprint. In this lesson, they find out why. First, they see an attention-grabbing demonstration of how much water is needed for three food products. Second, they break into groups to do research, and then they teach their classmates about key aspects of water use related to food and agriculture. Next, they think about how their diet is influenced by social groups, advertising, and structures in place at home and at school that encourage them to potentially eat food with large water footprints. Finally, they brainstorm ways they might be able to influence change in those areas. The lesson concludes with students sharing their ideas and providing one another with constructive feedback.

ESTIMATED TIME NEEDED

One 55-minute session

KEY VOCABULARY

water footprint, virtual water, water consumption, sustainability, agriculture, irrigation, water conservation, drought, climate change, sustainable farming

OBJECTIVES

Students will be able to …

- ✓ Provide examples of how different foods require different amounts of virtual water.
- ✓ Research key topics related to the water footprint of food.
- ✓ Teach key topics related to the water footprint of food.
- ✓ Identify external factors that influence their diet and share ideas for overcoming those influences.

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INSTRUCTIONAL EMPHASIS

Instructional methods, key skills, and values/attitudes emphasized in this lesson include the following

VALUES/ATTITUDES

- ☑ Leadership
- ☑ Resilience
- ☑ Mindfulness
- ☑ Optimism
- ☑ Empathy
- ☑ Curiosity
- ☑ Global Citizenry

SKILLS

- ☑ Critical Thinking
- ☑ Creative Problem Solving
- ☑ Collaborating
- ☑ Communicating
- ☑ Information Literacy
- ☑ Systems Thinking
- ☑ Adability

METHODS

- ☑ Problem-Based Learning
- ☑ Real-World Application
- ☑ Modeling
- ☑ Brain-Based Learning
- ☑ Multiple Intelligences
- ☑ Technology Integration
- ☑ Multi-Disciplinary

ATTACHMENTS

- Food's Water Footprint Research Cards
- Food's Water Footprint: Mini-Lesson Team Rubric
- Food's Water Footprint: Mini-Lesson Group Evaluation

MATERIALS

- ☐ 1 L (or 1 gal.) container of water
- ☐ Jar of commercially produced pasta sauce (680 g/24 oz.) (or a picture of one)
- ☐ Chocolate candy bar (43 g/1.55 oz.) (or a picture of one)
- ☐ Steak (170 g/6 oz.) (or a picture of one)
- ☐ Student access to computers, tablets, and/or smart phones, and the Internet

Adobe Stock: PriceM: Irrigation fields

STANDARDS

This lesson, with all components included, is linked to the following standards:

COMMON CORE STATE STANDARDS (CCSS)

English Language Arts: RI.9-10.1–4, 7–10; W.9-10.1.A, 2.A–F, 4–8, 9.B, 10; L.9-10.4.A, 5.B, 6; RH.9-10.1– 4, 7, 10 RST.9-10.1–2, 4–10; WHST.9-10.1.A–E, 2.A–F, 4–10
Mathematics: HSN.Q.A1–3; MD.B.7

NEXT GENERATION SCIENCE STANDARDS (NGSS)

Earth's Systems: HS-ESS2-2, 5; HS-ESS3-1
Ecosystems, Interactions, Energy, and Dynamics: HS-LS2-7
Engineering Design: HS-ETS1-1–3

TEXAS ESSENTIAL KNOWLEDGE AND SKILLS (TEKS)

Biology: §112.34.c.2B, C, G, H; 3A–E; 12E
Earth and Space Science: §112.36.c.1C; 2.B, C, G–I; 3A–E; 11E; 12A, E
Environmental Systems: §112.37.c.2.B, F, I, K; 3A–E; 5B, E; 7C; 8B; 9E, J

CLOUD EDUCATION FOR SUSTAINABILITY (EFS) STANDARDS & PERFORMANCE INDICATORS

Grades 3–12: A4; B7, B9–10, B12–13; C1, C3–10, C16–18, C20–25, C28–37, C40, C42–51; D1–3, D7; F1, F3, F5A–C, F6; G1–2, G4–6, G10, G20–28, G30, G34; H2, H5– 7, H10, H12; I19–22, I27–28, I30, I34–38

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BACKGROUND INFORMATION

With this lesson, students further personalize what they learned in Lesson 1 about their individual water footprints. By investigating virtual water as it relates to food and agriculture, they gain more perspective about why their choices matter and gain insight into actions they can take personally to influence their community to conserve water for a more sustainable future.

Note that the topic of food can be personal and sensitive for people. Some students may become self-conscious about food as it relates to their physical appearance, physical health, cultural or religious backgrounds, or economic resources. For that reason, encourage students to view this as an opportunity for learning and growth rather than for pointing fingers or passing judgment on anyone's personal eating habits. Everyone has a water footprint.

IN ADVANCE

Read through the Engage activity to understand the overall objective of demonstrating differing water needs for different foods. You can adapt the selection of foods you demonstrate. The Product Gallery tool from the Water Footprint Network can help you obtain the water footprints of a variety of foods. However, please note that the Cross-Disciplinary Connection: Scientific Research on page 10 relates directly back to this initial demonstration and is a great way for students to expand the merit of the demonstration and prompt students to think even more critically.

For the research (Explore) activity, review the activity and determine how much time you will allocate for students to conduct research and how much time for presenting their findings. You may wish to expand this one session into two or more to give students more time to research, plan, and present their lessons.

Make a copy of the Food's Water Footprint Research Cards and cut out and fold the four cards so that for each one, the topic is on the front and the web address is on the back.

Determine how you wish to group the students. You could have them self-select, you could predetermine groups to ensure a balance of skills, or you could randomly create groups. One way to do so would be to make enough copies of the Food's Water Footprint Research Cards sheet so that each student gets one card, then cut out the cards, put them in a container, and have students draw a card and join the other students with the same card to form groups.

Also plan to make a copy of the Food's Water Footprint Mini-Lesson Team Rubric for each student and three for yourself to evaluate the groups' presentations. (See the Assessment Opportunities on page 9 for suggestions on how to get students involved in assessing group projects.)

PROBLEM-BASED LEARNING TIPS

If you are conducting the lessons in this module together as a problem-based learning (PBL) experience for students, remind students to keep the central question(s) they identified in the last lesson in mind throughout this lesson. Have students review their central question and begin to think about any specific research they need to conduct in order to address that question. They may be able to incorporate that research into their group research project (the Explore activity), or they can conduct additional research. At this point, students can begin to think about how they might answer their central question, what kinds of actions they might take to address the question, and who their target audience might be.

In the Elaborate section of this lesson, students think about how their diet is influenced by social groups, advertising, and structures in place at home and at school that encourage a large water footprint for food. Then they brainstorm ways they might be able to influence change in those areas. Students may be able to build upon those ideas in Lesson 3 to enact local change in their community. Suggest that students add helpful links and relevant completed work to their Portfolio.

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ACTIVITY BREAKDOWN

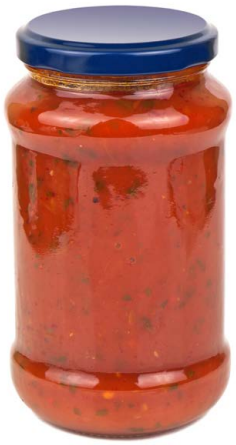
Time	Exercise	Description
5 min.	Engage	Conduct a quick demonstration to emphasize the amount of virtual water in three different foods.
20 min.	Explore	Students work in four groups to research key topics related to the water footprint of food and then create mini-lessons to teach the class what they've learned.
20 min.	Explain	Each group presents their mini-lesson to their classmates.
5 min.	Elaborate	Students think about how their diet is influenced by social groups, advertising, and structures in place at home and at school that encourage a large water footprint for food. Then they brainstorm ways they might be able to influence change in those areas.
5 min.	Evaluate	Students share their ideas about how they could influence change around food and its large water footprint in their community and provide one another with constructive feedback using the "I wonder if …/What if …" method.

Notes

IMPLEMENTATION INSTRUCTIONS

Engage

1. Hold up a 680 g/24 oz. jar of pasta sauce or display a photo, such as this one:



Adobe Stock: Volodymyr Shevchuk

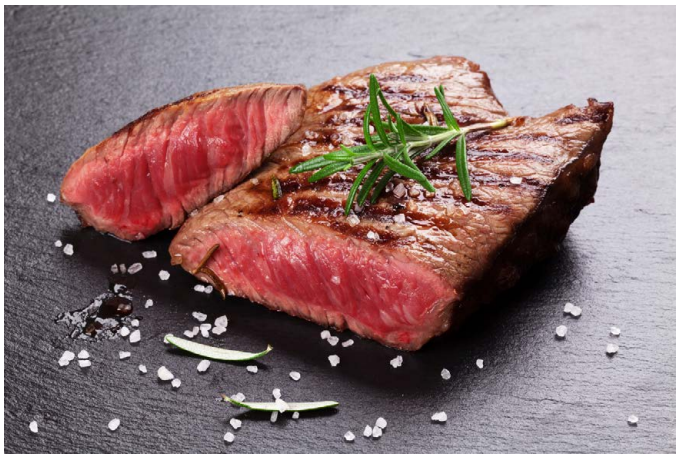
2. There may be a little bit of water in this sauce, but not much, right? To make the pasta sauce, though, water is needed to grow the tomatoes, sugar, garlic, and onions. So how much water, including this "virtual" water, do you think was needed to make this pasta sauce? Hold a liter-sized container of water next to the jar of sauce and say: Imagine 254 of these—this is how many liters of water are needed to produce this one jar of sauce. (If using the standard U.S. system of measurement, hold up a gallon-sized container of water and say: 67 of these are needed to create this much sauce.)

3. Next, hold up a typical chocolate bar (43 g/1.55 oz.) or display a photo, such as this one:

Adobe Stock: iQoncept

4. Ask: How much water, including any "virtual" water, do you think is required to make this one candy bar? Hold the liter-sized container of water next to the candy bar and say: The equivalent of 757 of these is needed to make this one little candy bar. (If using the standard system, hold up a gallon-sized jar and say: 200 of these are needed to make this one bar.)

5. Finally, hold up a 170 g (6 oz.) steak or display a photo, such as this one, of a steak about that size:



Adobe Stock: karandaev

IMPLEMENTATION INSTRUCTIONS, continued

6. Ask: How many liters (gallons) of water do you think it took to produce a steak this size? Hold up the liter (or gallon) container of water again and explain that about 2,555 L of water (675 gallons) are needed to produce just one small steak. Ask students to imagine pouring all that water into this room. How much of the classroom would 2,555 L (675 gallons) of water occupy?

7. At this point, remind students to think back to the water footprint they calculated from watercalculator.org in the last lesson. They may recall that it is not their household's indoor or outdoor water use, but rather their virtual water use—and particularly their diet—that makes up most of their water footprint.

8. Explain that, for most people, diet is the biggest consumer of virtual water. In fact, in a typical person's water footprint, about two-thirds of the water comes from virtual water needed to produce food. So investing a little time into understanding why our diet has such a large water footprint is the mission of this lesson.

Explore

9. Divide the class into four groups.

10. Give each group one of the Food's Water Footprint Research Cards. Instruct each group's members to work together to conduct research on the topic on their card. These topics are explored on the watercalculator.org site, so the web address on the back of their card is a good place for them to start.

11. Tell groups that the goal is for them to consolidate what they learn into a mini-lesson that they can teach to their classmates. Tell them that, rather than simply reading what they find on the website, you expect them to organize graphics, videos, and other information related to the topic into a cohesive lesson that they can use to make the topic interesting and engaging to their classmates. Give each group a copy of the Food's Water Footprint Mini-Lesson Team Rubric to set expectations and help guide their progress.

12. As students begin their work, touch base with each group to ensure they have an effective strategy for approaching the assignment. Make sure they have reviewed the rubric and set expectations for their group, including how much time to allot for researching, lesson planning, writing the lesson, and presenting, as well as roles for each team member, etc.

Explain

13. Have each group share their mini-lesson with the class. If time permits, include a question-and-answer session after each presentation.

Elaborate

14. Have students take out a piece of paper and writing instrument. Tell them they will have two minutes to respond to a writing prompt. The idea is to not think too much about it, but simply to record ideas that come to them. Then share the writing prompt: What are some ways that your diet is influenced by social groups, advertising, and structures at home and at school that encourage a large water footprint for food?

IMPLEMENTATION INSTRUCTIONS, continued

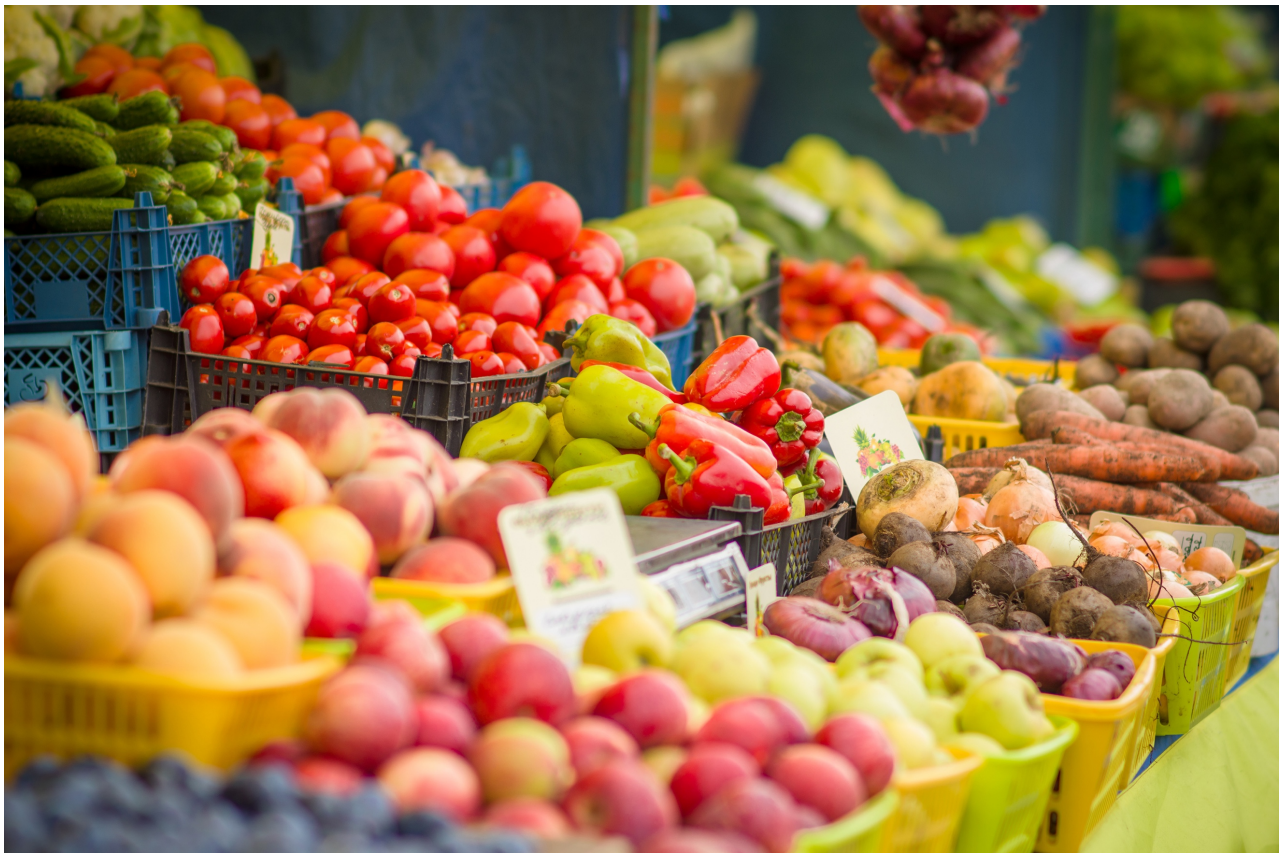
15. After two minutes, tell students you are now going to give them another two minutes to brainstorm ways they might influence those structures to reduce their water footprint.

Evaluate

16. Facilitate a full-class discussion for students to share their thoughts and ideas. Begin by asking students to share some of the influences they recorded. Write those on the board. Have students share their ideas on how they might influence those structures to reduce their water footprint, and then have them share feedback on those ideas. Encourage them to keep their input constructive by using "I wonder if …" or "What if …?" statements rather than blurting out feedback.

ADDITIONAL TEACHING TIPS

This lesson could easily be stretched into two or more class periods. You could also assign students the Elaborate activity to consider at home, and then begin the next class period with the Evaluate activity.



Adobe Stock: Joshhh

REFLECTION QUESTIONS

Use the following questions to prompt critical thinking and guide students to reflect on the lesson:

- Name something about the water footprint of food that you learned from your classmates that was particularly useful or memorable. *(Sample answers: It is helpful to me to think about green, blue, and grey water footprints. It helps me understand why so much water is needed to make certain foods. I think I might start giving up meat one day a week because I think that's a really good—and doable—way to reduce my water footprint. Maybe I could make it fun and get my family and friends into giving up meat one day per week or something like that.)*

- How has exploring the concept of food having a water footprint changed the way you think about your diet? *(Sample answer: People are always talking about sustainability, but it often feels a little out of reach to me. My diet, though, is something that I can control somewhat. One simple action I can take is simply eating meat less frequently, and this can have an impact on my water footprint. I can also figure out other foods that have big water footprints and eat less of those foods. That said, I think that if more people take the simple action of eating less meat, we can manage our water resources in a much more sustainable way. This is powerful to me!)*

- How might widespread changes in the way we think about food influence something huge like global climate change? *(Sample answer: In the United States and other countries where people consume a diet with a lot of meat and dairy, many resources are needed to support this lifestyle. One of the largest resources is water—water for keeping animals hydrated, water for the feed they eat, water to process waste and keep rivers clean, etc. There are other resources, too, such as land to grow crops and graze animals as well as chemicals to manage pests and animals. As a result, heavy meat eating strains global systems, such as water, agriculture, and climate. For example, more chemicals in the air combined with excessive water withdrawals could influence drought conditions in some areas and flooding in others. So if we can, as a society, change the way we think about food, the impact could be enormous and could really help us create a more sustainable future.)*

- What are some characteristics of food systems that are more sustainable? *(Sample answer: Smaller, diversified farms, fewer chemical inputs such as pesticides and fertilizers, greater reliance on biodiversity for pest control and soil fertility, and closer farm-to-consumer connections, such as farmers' markets where foods are supplied to nearby communities by sustainable growers.)*

- How do the water footprints of the various food groups compare? *(Sample answer: Meat, eggs, dairy, and some nuts have the largest footprints. Oils, fats, and processed foods are next. Fruits and vegetables have the smallest water footprint.)*

- Why might it be important to know the steps involved in food production? *(Sample answer: The more we know about the steps involved in food production, the more we know about the impact of our food choices, which allows us to make more sustainable decisions.)*

ASSESSMENT OPPORTUNITIES

You can evaluate the mini-lesson presentations of each group using the Food's Water Footprint Mini-Lesson Team Rubric. You can also let students participate in the evaluation process by giving each student three copies of the rubric and instructing them to use it to evaluate each group's presentation. Students can also use the Food's Water Footprint Mini-Lesson Group Evaluation to reflect on the effectiveness of their own group's results. The Reflection Questions on the previous page also provide an excellent opportunity for checking students' understanding of key topics—whether you facilitate a class discussion or assign the questions for homework or independent work. To further check student comprehension as well as to reteach and extend key ideas from the lesson, see the Additional Activities and Extensions section, which begins below.

DIFFERENTIATION

It may be helpful to pre-assign a specific research topic to students who have learning disabilities or students who are learning English as a second language. You could give them advance notice of the topic and web link so they can do some research ahead of time at their own pace. Similarly, you could let these students know about the Elaborate activity in advance so they can prepare themselves for the fast-paced classroom activity. You may also wish to pre-assign groups so that these students are paired with students who are willing to help and/or who will benefit from these students' strengths. For example, students with strong graphing or drawing skills could be paired with students with strong research and writing skills. Finally, keep in mind that the Water Footprint Calculator and water saving tips are available in Spanish.

CULTURAL ADAPTATION NOTE

As mentioned in the Background Information, food can be a deeply personal and sensitive topic. Some students may become self-conscious about food as it relates to their physical appearance, physical health, cultural or religious backgrounds, or economic resources. For that reason, encourage students to view this as an opportunity for personal improvement rather than for pointing fingers or passing judgment on anyone's personal eating habits.

ADDITIONAL ACTIVITIES AND EXTENSIONS

COMMUNITY CONNECTIONS

- Suggest that students create an awareness campaign to educate their community about the water footprint of food and about changes people can make to their diets to reduce their water footprint. They could, for example, encourage Meatless Monday as a classroom activity, possibly extending into the school community and even beyond. Students can think of clever ways to broaden and expand the concept.

- Students could take their mini-lessons into the community. They could begin by teaching students at a local middle school or elementary school, or they could put together presentations to share at community centers or libraries.

- Suggest that students audit how the school promotes foods that have a large water footprint and foods that have a small water footprint. Encourage them to brainstorm ways the school could better influence people to choose a diet with a lower water footprint. Get them to think strategically about the best way to implement changes to policy (for example, radical change might not be an option, but perhaps small steps with more significant changes over time might be doable). Then they could put together a compelling strategic plan to present to school administrators.

ADDITIONAL ACTIVITIES AND EXTENSIONS, continued

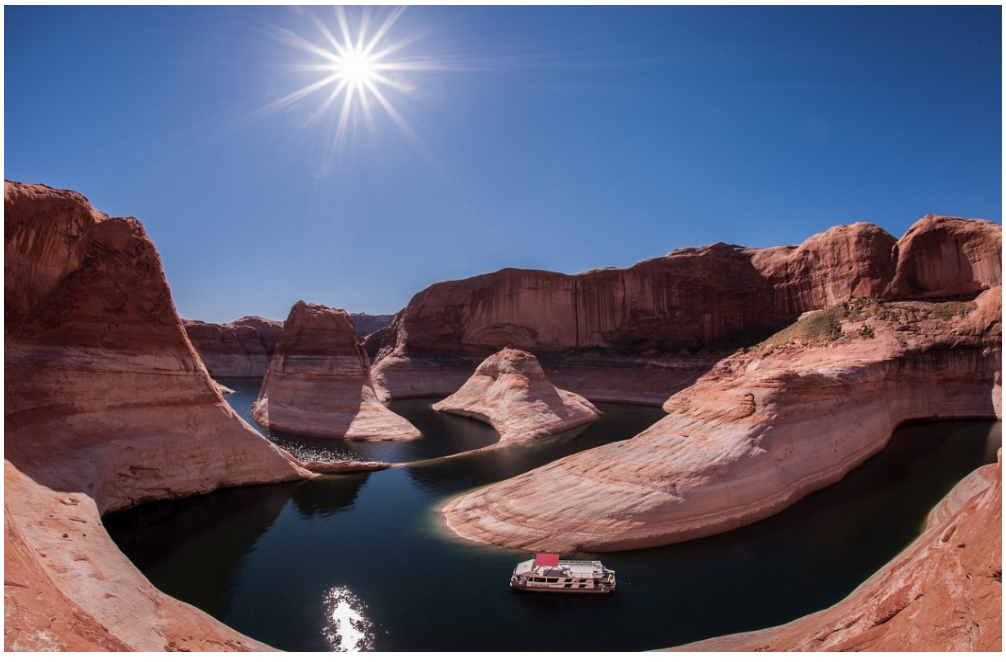
CROSS-DISCIPLINARY CONNECTION: SCIENTIFIC RESEARCH

Ask students: Do you think food should be labeled according to how much water goes into it? Suggest that they read the article Rethinking the Water Footprint which summarizes the following study: A Revised Approach to Water Footprinting. Tell them to note that the article mentions an activity that is similar to the one they used at the beginning of the class in which they compared the water footprints of pasta sauce and chocolate. Facilitate a class discussion to talk about how the article enhances their understanding of the demonstration and whether labeling food with water footprint information might be helpful. Also encourage discussion by asking: Is it better to get something with a low water footprint from a water-stressed area or something with a high water footprint from a water-abundant area? Emphasize that these are complex questions that research is helping us better understand and address so we can make more sustainable choices. Simply being aware of the complexity of the issue is also helpful in guiding us to find ways to better conserve water and waste less water.

Point out that the article is from 2010 and suggest that students investigate to see if any more recent research has been conducted or whether the cited author or university program could add new insights. Then have students summarize their findings in a report or opinion article.

CROSS-DISCIPLINARY CONNECTION: AGRICULTURE

Direct students to go to watercalculator.org/intro and search for "Colorado River." They will find several articles about concerns that the Colorado River is drying up. Encourage students to analyze the issue, including who it affects (HINT: farmers figure heavily in this); factors that have contributed to the concerns; and what actions state and federal water managers, representatives from cities and native nations, and farmers are taking to manage it. You may also wish to invite a geography, social studies, or agriculture teacher or a local water management expert to the classroom to further discuss the issue. Students could prepare a list of questions in advance for the guest, and then summarize their findings in a short report.



Pixabay.com: skeeze: Colorado River

ADDITIONAL ACTIVITIES AND EXTENSIONS, continued

CROSS-DISCIPLINARY CONNECTION: HEALTH SCIENCES

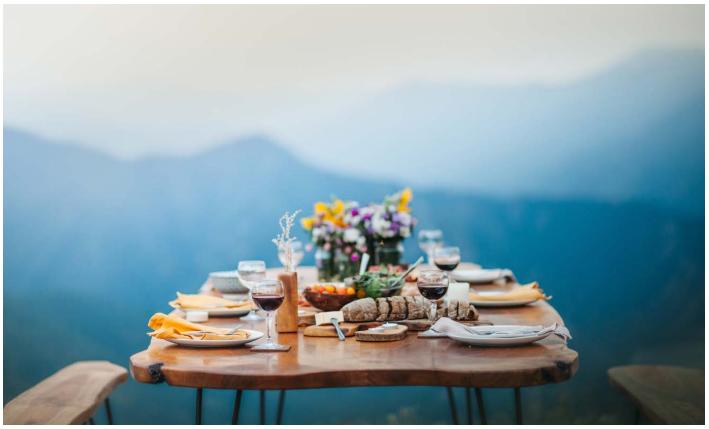
- Encourage students to conduct a personal food audit by paying attention to the foods they eat for a 24-hour period (or longer) and then using the Product Gallery tool from the Water Footprint Network to determine the water footprint of each food. They can then use this information to make changes to their diet. Students can evaluate key aspects of their diet before and after the food audit. It may be useful to have a nutrition expert who is also familiar with the environmental impact of foods visit the class to speak on the topic and answer any questions students have. Students can then use what they've learned to encourage friends and family members to complete a food audit and make healthy, sustainable changes to their diets.

- Share with students that most nations provide nutritional guidance for its citizens. In the United States, this information comes from the United States Department of Agriculture. Explain that over time, nutritional recommendations tend to change based upon new research findings and national trends. For example, students may enjoy reviewing A Brief History of USDA Food Guides. These recommendations and other widely accepted nutritional information have rarely included consideration for long-term environmental sustainability. That may be changing, however. Encourage students to learn more about the latest trends, starting with the article: New Diet Guidelines to Benefit People and the Planet: More Greens for All, Less Meat for Some. Facilitate a classroom discussion to review students' findings and their thoughts about evolving trends.

CROSS-DISCIPLINARY CONNECTION: LANGUAGE ARTS

Write the following quotation on the board:

"Eat food. Not too much. Mostly plants."
–Michael Pollan


Adobe Stock: monticellllo

Share with students that Michael Pollan is an author who writes books and articles about "places where nature and culture intersect: on our plates, in our farms and gardens, and in our minds" (from MichaelPollan.com). Ask: Do you think Pollan's quoted recommendation would benefit the environment? Even though Pollan may not have been thinking about water footprints when he wrote the quotation, they can think about the quote in the context of the water footprint of food. For example, they could consider how cultivating this attitude might help (or hurt) their water footprint. Ask students to freewrite about their thoughts.

Tell students to consider take a very close look at the words the author uses in the quote. Together as a class, dissect the meaning of Pollan's words using guiding questions such as the following: What does it mean to say, "Eat food"? Do you think the author means just any food? Some people might suggest, knowing something about Pollan, that he means whole foods or healthy foods or "real foods" versus highly processed foods. What might he mean by "not too much?" What do those words mean to you? And what does "mostly plants" mean to you? Again, students could freewrite on these topics. Interested students could learn more about the author, read one of his books or articles, and report back to the class or write a review for the school newsletter.

ADDITIONAL ACTIVITIES AND EXTENSIONS, continued

CROSS-DISCIPLINARY CONNECTION: ECONOMICS

Share with students that humans have cultivated animals for food for thousands of years. Over time, scientists have noted clear patterns in meat consumption that parallel economic patterns. For instance, they have observed that the nations that consume the most meat are the most economically developed countries; those that consume the least meat are the least economically developed. Economists today point to trends that are so easy to follow nation-by-nation that meat consumption is linked to laws of human behavior. Encourage students to further investigate the topic and report back to the class. An article they might start with is The Making of Meat-Eating America, and then read a more recent analysis such as, Meat and Seafood Production & Consumption.

CROSS-DISCIPLINARY CONNECTION: SOCIAL STUDIES

Point out to students that they have learned that the U.S. is one of the top meat-consuming nations in the world. As a result, it makes for an interesting case study. Ask students: Why do you think the U.S. might be such a big consumer of meat? *(It is a wealthy nation.)* Explain that while this is true, people in the U.S. also eat more meat than people in other wealthy countries. What else might be a factor? Share that one important reason is that meat is relatively inexpensive in the U.S. compared to other countries. In the mid-1800s, immigrants to the U.S. were amazed at how frequently people ate meat. In their home countries, meat had often been reserved mainly for the wealthy and special occasions. In the U.S., though, meat was cheaper and easier to find. Grazing lands were abundant and often located very close to and even inside cities. Meat markets were common in cities, and the livestock industry was one that exploded early in U.S. history. When railroads, refrigeration, and other technologies came along, the meat industry became a centralized, national industry.

But trends are changing in the U.S. For the last few years, people in this country have been eating less meat per person. A national recession and rising prices caused some people to cut back (although meat-eating trends have started to climb back up post recession). Health warnings about eating too much red meat caused many people to switch from beef to chicken so that chicken is now the most consumed meat. People have also learned more in recent years about industrial animal farming and its impacts to animal welfare and the environment, leading some people to buy meat from animals that were raised more humanely. Notably, while American meat consumption has leveled off, developing nations are increasing their consumption. A new trend is toward plant-based meat substitutes, such as the Impossible™ Burger, and even lab-grown meat. Encourage students to do additional research and consolidate their thoughts about the global impact of these trends in the form of a short news brief or longer investigative journalism article. Some resources that could aid in their investigation include:

- The 900 Gallon Diet: Meat, Portion Size and Water Footprints
- The Industrial Food System: Why It Matters
- Industrial Food Animal Production
- Impossible Burger
- We'll Always Eat Meat. But More of It Will Be 'Meat'
- Your Questions About Fake Meat, Lab Grown Meat and Clean Meat Answered

ADDITIONAL ACTIVITIES AND EXTENSIONS, continued

USING TECHNOLOGY

- Encourage students to further explore the food-related resources on the watercalculator.org site. The site is rich with information and helpful tips for reducing one's food water footprint.

- Encourage students to further explore the resources of the Water Footprint Network, which is a network of organizations that collaborate to solve the world's water crisis. They may have already explored the Water Footprint Product Gallery, but they could further explore the database to get more information on the water footprint of foods they like to eat. In addition, direct them to explore WaterStat, which is the world's most comprehensive water footprint database.

CAREER INSPIRATION

Students interested in this topic will find many different related career options, including careers in agriculture, horticulture, aquaculture, bioscience, corporate social responsibility, sustainable business, animal science, nutrition, education, and more. Some helpful articles from foodprint.org include:

- Get to Work! Jobs in Food Sustainability
- A Guide to College Degrees in Sustainable Food

Encourage students to pick a career that relates in some way to the water footprint of food and write a brief synopsis of the career—including educational background requirements, universities offering relevant programs, and local or regional employers offering relevant opportunities. Then direct students to create an online bulletin board using a tool such as Padlet or Google Keep to share their findings.

SYSTEMS THINKING

Tell students that earlier in this lesson, when they were thinking about ways their diet is influenced by social groups, advertising, and structures at home and at school that encourage a large water footprint for food, they were thinking about mental models. Explain that mental models relate to the way people think about how something works in the real world. These are guiding constructs that people subscribe to, but they can change over time with new knowledge and applied insight. Ask students: Do you think, sometimes, that a mental model could limit our thinking about something? *(Yes. If everyone thinks about something in a similar way and no one really questions that way of thinking, we might be limiting our thinking.)* What is the general mental model about food as it relates to water footprints? *(Sample answer: Most people I know have never heard of water footprints and do not consider them when choosing what to eat.)* How might thinking systemically change this mental model? *(Sample answer: The more people understand about the water footprint of food, they may begin to consider changes to their diet that impact their water footprint, such as eating less meat.)* Wrap up the discussion by explaining that mental models are always works in progress, or hypotheses that evolve as they are tested, and we learn through application.

Adobe Images: Odua Images

RESOURCES/LINKS FOR THIS LESSON

The following resources were cited in this lesson or relate specifically to this lesson:

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