

Thirsty Planet: The Human Body, History, and the Engineering of Water

Student: _____ **Grade:** 5-6 **Length:** 3-Week Sprint

ESSENTIAL QUESTION (DOK 4)

How does the human body depend on water, and how have engineers throughout history designed systems to secure, move, and preserve it?

Your Challenge (Problem-Based Learning Scenario)

A drought is threatening your community's water supply. The mayor has asked a team of young researchers to explain why water matters so much to the human body and what history's greatest water engineers can teach us about solving this crisis today — then to propose a real water-preservation plan.

Depth & Complexity Lenses to Apply Throughout

Depth & Complexity Lens	Guiding Prompt to Keep Asking Yourself
Over Time	How has humanity's approach to securing water changed from ancient aqueducts to modern plumbing?
Patterns	What patterns connect the water cycle in nature to the way water moves through the human body?
Rules	What biological 'rules' govern how much water a human body needs and why?
Big Idea	Why is water essential to both survival and civilization?
Ethics	Who should be responsible for making sure everyone has access to clean water?
Across Disciplines	How do biology, history, and engineering all connect through the story of water?

Guiding Investigation Questions (DOK 3-4 / Upper Bloom's)

The Digestion and Water Process (Human Body)

- Analyze the path water takes through the human digestive and circulatory systems, and identify each organ's role. *[Analyze, DOK 3]*
- Evaluate what happens to the digestive system when the body doesn't get enough water, and judge how serious the consequences can be. *[Evaluate, DOK 4]*

History of Water Engineering

- Analyze one historical water engineering achievement (Roman aqueducts, Hohokam canals, ancient wells) and explain the problem it solved. *[Analyze, DOK 3]*
- Evaluate whether ancient water engineering solutions could still work today, or whether modern problems require entirely new solutions. *[Evaluate, DOK 4]*

Water Preservation Today

- Design an original water conservation plan for your school or home that addresses both human water needs and long-term preservation. *[Create, DOK 4]*

Research Menu — Choose at Least 3 Ways to Investigate

- Diagram the human digestive/circulatory system and trace where water is absorbed and used.
- Research one historic water engineering project and explain how it worked.
- Track your own household's water use for 3 days and calculate ways to reduce it.
- Compare how 2 different cultures throughout history solved water scarcity.
- Interview a family member about a time water was scarce or a water system failed (drought, boil order, etc.).

Show What You Know — Product Choice Board

- Illustrated timeline of water engineering through history
- Diagram/poster of the human body's water journey
- Water conservation action plan (written proposal with data)
- Model of a historic water system (aqueduct, well, canal) with explanation

Along the way, use at least one product option to show progress at each weekly checkpoint (see timeline below).

Study Timeline

Week	Focus	Checkpoint (Show Your Progress)
Week 1	Research the body's water and digestion process.	Labeled body-system diagram
Week 2	Research historical water engineering.	Timeline or case study of 1-2 historic systems
Week 3	Design a modern water preservation plan.	Final conservation plan + presentation

Final Project

Present a Water Crisis Action Report to the 'mayor' that explains how the human body depends on water using accurate science, highlights a historical engineering solution as inspiration, and proposes a specific, realistic water preservation plan for your community.

Audience:

Teacher, classmates, or family acting as 'city council.'

Success Criteria:

- Accurately explains the body's use of water (digestion/circulation)
- Connects a real historical water engineering example to today's problem
- Conservation plan is specific and realistic, with at least one number/data point
- Presentation clearly connects biology, history, and engineering

Reflection Journal Prompts

- What historical water solution impressed you most, and why?
- What is one change you could realistically make to conserve water starting this week?
- How did learning about the body's need for water change how you think about drinking water?