

Lesson One: Systems Everywhere

Objectives:

1. Students will be able to identify human-made and natural systems.
2. Students will be able to identify parts in a variety of systems.

Preparation

Preview *Systems Everywhere* PowerPoint and look through the *STEAM* exhibition preview. Consider using an image/s from the *STEAM* PowerPoint exhibition preview or an anatomy study by Leonardo Da Vinci in your introduction.

Consider consulting with a science or technology teacher to identify systems introduced in the science curriculum. Perhaps a science or technology teacher would agree to meet with your class or share resources (ex. electrical diagram, computer motherboard, poster of galaxies, map of ocean currents, map of local or regional river system, photosynthesis diagram, anatomy drawings or the like).

Resources

Systems Everywhere PowerPoint

STEAM Exhibition Preview PowerPoint

Activities

Introduce the theme in art, that "We are all both parts of larger external systems and made up of smaller internal systems" by defining a **system** as *a set of parts that work together*. Share some examples of human-made and natural systems with which your students will be familiar such as a school system, an entertainment system, a weather system, or a river system. For example: students, teachers, administrators, cooks, and bus drivers are some of the people who work together in a school system. Major US river systems, such as the Colorado and Mississippi River systems, are made up of interrelated tiny streams, washes, creeks, and great rivers.

Introduce the theme in art, that "Art can help us appreciate connections both within us and beyond us" by showing Monica Aissa Martinez' *Anatomy of a House Fly*, or another work from the *STEAM* PowerPoint exhibition preview or an anatomy study by Leonardo Da Vinci. Explain that in a later lesson (Lesson Three at high school level or Lesson Four at elementary level) students will be asked to make an artwork focused on their own bodies.

Introduce the key questions students will be working with in the unit:

- CHOOSE: How can I mix the distinctive characteristics of various media within one artwork?
- LEARN: What can I learn about nature (parts that work together in my body)?
- SEEK: What art ideas can I get from my (internal) natural environment?

Definition: Display slide #1 of *Systems Everywhere* PowerPoint to:

- Define "system."

Example: Display slides #1-4 to show a complex system of systems made by people:

- where we get electricity
- how electricity is moved from place to place
- how electricity is generated

Example: Display slides #5-8 to show natural systems:

- the universe
- galaxies
- solar system
- researching the universe

Example: Display slides #9-11 to show natural systems here on earth:

- geography
- animal life
- plant life

Guided Practice: Display slide #12 to guide students in analyzing parts of systems people depend upon:

- agricultural system (orchard and produce stand)
- transportation system (car and highway bridge)
- water system (canal and fire hydrant)
- Ask students to explain how all three systems work together (Orchard needs water and produce is shipped on highways)

Review and Extension: Ask students to recall natural systems and systems made by people introduced in the PowerPoint and to name as many more as they can.

- list natural systems and some of their parts
- list systems made by people and some of their parts

Preparation for Art Project: Display slides #13-16 to introduce systems within our own bodies as ideas for art:

- human electrical system
- breathing, blood, skeletal, digestive, muscular, and nervous systems that work together in our bodies
- artwork inspired by natural and built systems (house fly and neighborhood)
- preview of art challenge in lesson three (High School) or Lesson four (elementary school)

Vocabulary

system

electricity, electrical

turbine

universe

nuclear

solar panel

resource, resources

generate

galaxy

Milky Way

rotate

orbit

lunar eclipse

volcano, volcanoes

telescope

antenna, antennae

climate

weather

rainforest

transportation

nutrient

agriculture, agricultural

desert

pulmonary

Big Dipper
earthquake
skeletal
digestive
muscle, muscular
nerve, nervous

Extension Activities

Co-teaching or collaboration with science or technology teacher

Assessment Checklist

___ 1. Students will be able to identify human-made and natural systems.

(Discussion during Systems Everywhere PowerPoint presentation, especially slide 12)

___ 2. Students will be able to identify parts in a variety of systems.

(Contributions to discussion of systems introduced in Systems Everywhere PowerPoint presentation and listing of additional natural systems and systems made by people)