

STEAM Activity: Sewer Systems Versus Human Systems

Type of Teacher Tool: Whole Class, Small Group

Targeted Grade Level(s): 3-5, 6-8

Targeted Curriculum Areas: Science, Visual Arts

Learning Objectives:

The learner will:

1. engage in critical and creative thinking.
2. engage in interactive activities and discussion about the human systems and infrastructure
3. develop an answer for themselves to the question: “Which is most similar to a city sewer system, the digestive system or the circulation system.

National Standards:

English/Language Arts, Science and Literacy in History/Social Studies

Grades 3-6 6-8 College and Career Readiness Anchor Standards for Speaking and Listening

4. Present information, findings, and supporting evidence such that an audience can follow the line of reasoning and the organization.

National Core Arts Standards Visual Arts

VA:Cr2.38A

Select, organize, and design images and words to make visually clear and compelling presentations.

Science

MSETS1-2

Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

Resources/Materials Needed:

1. The following Educate.Today videos:
Infrastructure—7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21
2. Poster board, drawing materials, or digital tables for drawing

Teacher Instructions:

1. Use this activity as your students study any of the following topics:
 - a. Human circulatory system
 - b. Human digestive system
2. Split the class into three groups.
 - a. Have Group 1 watch Infrastructure videos 8,9,10,11,20
 - b. Have Group 2 watch Infrastructure videos 12,13,14,15,21
 - c. Have Group 3 watch Infrastructure videos 16,17,18,19,7
3. Have groups take notes on what they learn about sewer systems in the videos, how they are designed and built, how they function, their purposes, etc.

4. After viewing the videos, have each group discuss similarities and differences they noticed between a city's sewer system and the human circulatory system or digestive system they are studying.
5. Have each group also develop a poster or digital slide showing the human system they are studying: circulatory or digestive and compare their drawing to images they saw in the videos or find online of city sewer systems.
6. Reconvene the class as a whole group, and have a spokesperson for each group explain and identify key components of each system.
7. Have the class discuss the similarities and differences between sewer systems and the human system they are studying.

Alternative Assignment:

1. Have students engage in this activity after they have studied both the human circulatory system and the human digestive system or after they have researched both on their own.
2. Have students continue through the activity as above, but also then vote on which system, digestive or circulatory, they believe is most like a sewer system.

Assessment/Evaluation Options:

1. Evaluate student discussion of the similarities and differences between the systems.
2. Evaluate the student posters or digital images.
3. Have students write a short paragraph explaining what they have learned about the human circulatory system, human digestive system, and/or sewer systems as a result of this compare and contrast activity.

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