

The State Fair of
TEXAS
Curriculum

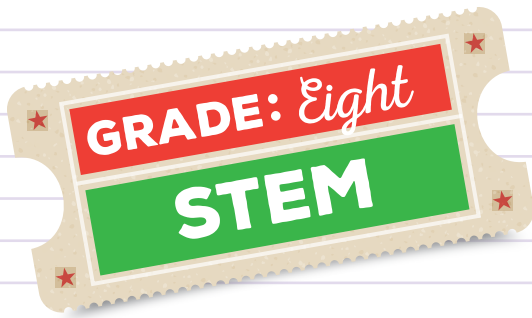
LIVESTOCK & AGRICULTURE

GRADE 8 STEM

ART SAVES LIVES!

ENVIRONMENTAL AWARENESS ON A TROPHIC LEVEL





Art Saves Lives! Environmental Awareness on a Trophic Level



In this lesson students will:

- ★ Research plants and animals at the State Fair, and what is needed to sustain their growth and survival.
- ★ Research the effects of pollutants and other man made factors that have a negative effect on ecological systems.
- ★ Describe producer/consumer, predator/prey, and parasite/host relationships as they occur in food webs within marine, freshwater, and terrestrial ecosystems.
- ★ Use visual representations and diagrams to make connections between different varieties of classification systems.
- ★ Create an art piece that raises awareness of a chosen issue related to agriculture.

What are you passionate about? Are there issues or concerns that you think about that you wish the rest of the world was aware of? How can you raise awareness about a topic that is important to you? In this lesson, students will explore environmental art - or more specifically - art that increases public understanding of an issue, through the eyes of the artist. Students can discover ways they can be a strong positive influence in today's society.

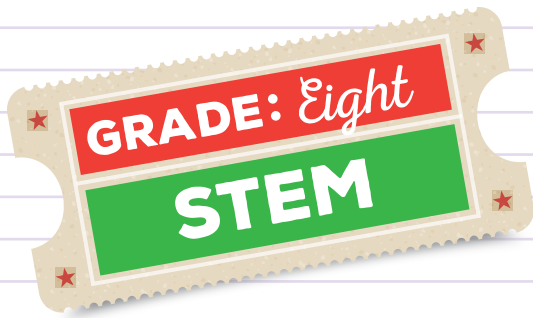


Standards

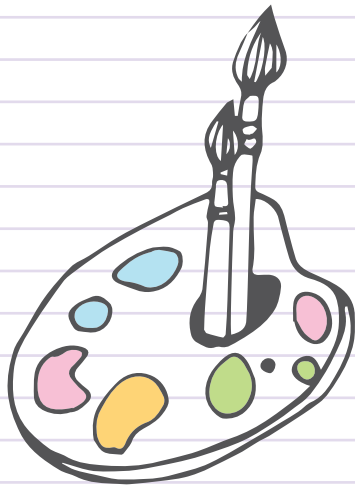
- ★ Math TEKS:
8.1(D), 8.1(E), 8.1(F)
- ★ Science TEKS:
8.1(B), 8.11(A), 8.11(B)
- ★ Art TEKS:
8.1(A), 8.2(A), 8.2(B), 8.3(B)

Turtle sculpture made from recycled materials, by
Helena Maratheftis. helenamaratheftis.com





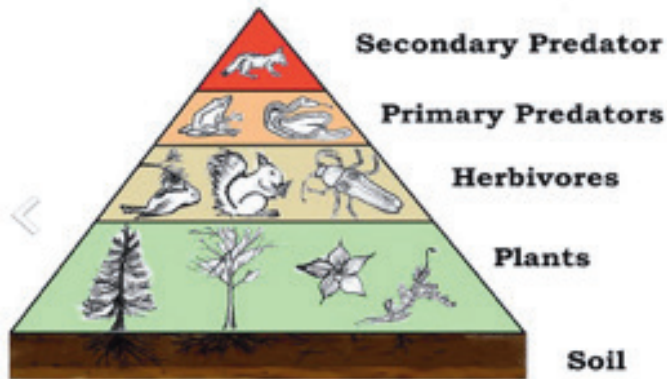
Art Saves Lives! Environmental Awareness on a Trophic Level



Before You Go

Begin by asking the students some thought provoking questions concerning agriculture today - both crops and animals. Some questions might include:

- ★ What is needed to grow a successful crop (wheat, corn, etc.) in Texas?
- ★ Discuss the following questions:
 - * How does energy travel through an ecosystem?
 - * Where do plants get their energy?
 - * Where do herbivores get their energy? What about carnivores? Humans?
- ★ Introduce the term trophic level:

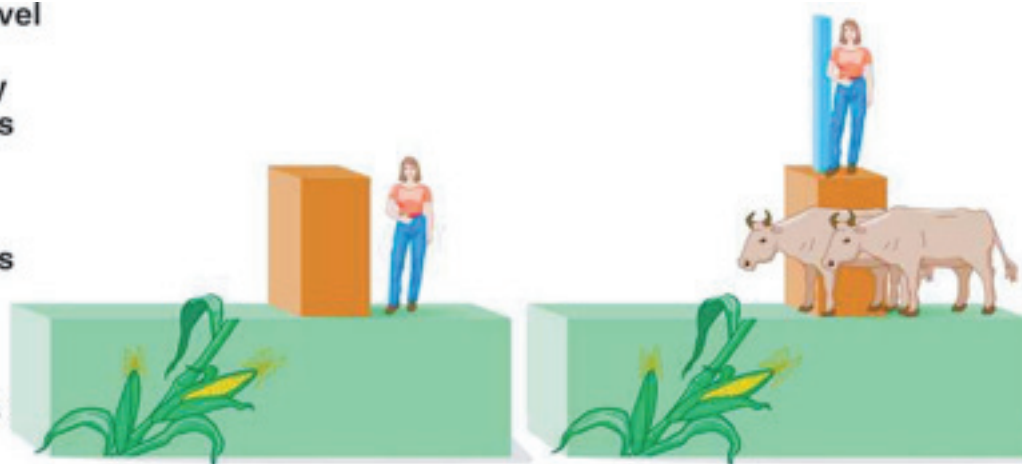


Trophic level

Secondary consumers

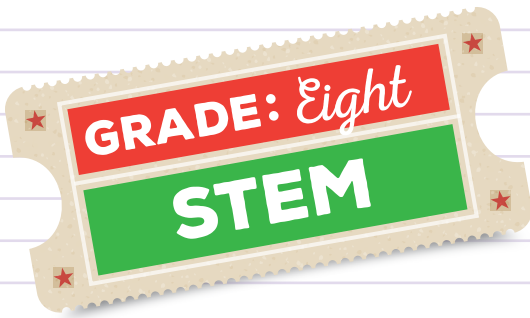
Primary consumers

Primary producers



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- ★ What are some factors that might hinder plant growth?
- ★ What are some things that livestock need in order to thrive and survive so that they might provide us with food?
- ★ What are some factors that might hinder that?
- ★ What could we do to make a positive impact on our farmlands?

Below is a link that you can go through with the students that highlights the importance of farmland and what could happen should it continue to dwindle:

<https://www.farmland.org/our-work/areas-of-focus/farmland>

Next, visit this site with them and form a discussion about the dangers of pollution and how even the smallest things add up to a big difference:

<http://homeguides.sfgate.com/pollution-affect-living-things-79218.html>

Finally, talk to them about **environmental awareness art**.

★ **Environmental awareness art** is art that is created to get people's attention to a problem the artist sees in the environment, so that more people might feel moved to make a positive difference. As you go through each of these examples, ask the students what they think the message of the piece is before reading it to them.

★ <http://www.hongkiat.com/blog/public-awareness-artwork/>

- ★ Tell the students that they will be traveling to both the Greenhouse and the Livestock Barns at the State Fair.
 - * The goal is to discover what is needed to care for both the animals and the plants, and what role they themselves could play in raising awareness of things that society does to harm or hinder that success.
 - * Give them some time to brainstorm some various questions that they could ask the people in the barns and the greenhouse, similar to the questions above.
 - * Encourage them to think about the environmental awareness artwork that you looked at as a class, and think about how they might raise awareness as they travel through the exhibits at the Fair.

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GRADE: *Eight*
STEM

Art Saves Lives! Environmental Awareness on a Trophic Level

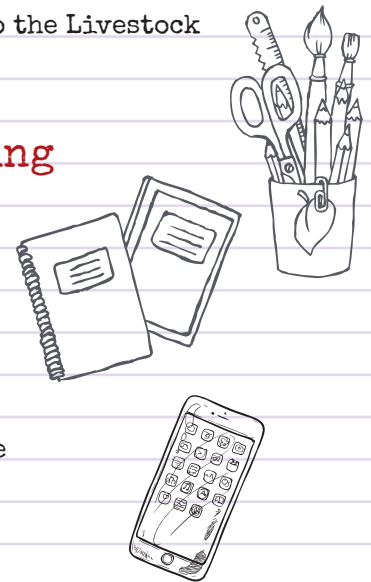


Plan Your Route.

- ★ From the Texas Star, head over to the Greenhouse and take a tour.
- ★ When you're finished, go up MLK Blvd to the Livestock Barns and explore.

Optional Materials to Bring

- ★ Smart Phone, Tablet
- ★ Pencil & Sketchbook
- ★ Science Notebook or Paper



While You're There

The goal of your visit is to gather information about the plants and animals you see in the Greenhouse and Livestock Barns so that you can **complete three projects** back at school: 1. a trophic level pyramid, 2. a graphic organizer of the animals you observed (see Math Connection), and 3. an environmental awareness art piece. Be sure to ask questions of the people that you see caring for the plants/animals. They are there to help!

GREENHOUSE

- ★ Pay attention to all of the things that are needed to grow plants/crops successfully.
- What type of soil is needed?
- What added nutrients are needed, if any?
- Where are they getting the majority of their energy?
- How much sunlight/rain is needed?
- What sorts of things hinder their ability to grow?
- What trophic level would you put them in?

LIVESTOCK PAVILION

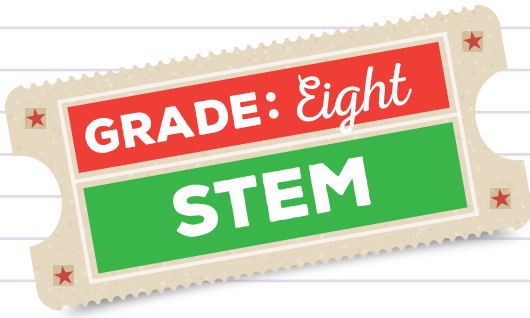
- ★ Join a Guided Livestock Tour.
- Think about all of the different things that are needed to raise and breed healthy animals.
- What do the animals in the livestock barn eat?
- What trophic level would you put them in?
- Could they belong in different trophic levels?

MATH CONNECTION

- Use these questions to help you with the Math Connection portion of this lesson. (See Math Connection at the end of this lesson for details.)
- How would you describe each of the animals?
- What characteristics do the animals have in common?
- What characteristics make the animals different?
- How would you classify or group the animals you observed?

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After the Fair

Trophic Level Pyramid

Using the organisms that you observed at the Fair, create a trophic level pyramid of the “Fair ecosystem”. Be sure to include Fair patrons. Remember that organisms can belong to more than one trophic level.

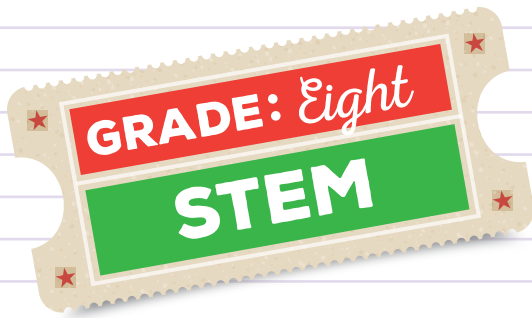
Environmental Awareness Art

Create your own environmental awareness art based on the info that you gathered at the Fair!

- ★ Think about something that you are most concerned about.
 - * Is it the ability for us to save our farmland?
 - * What about the animals...are they being treated/cared for as they should? Are we aware of how important they are to us?
- ★ The medium that you choose for this is up to you.
- ★ There are a variety of ways to create an awareness artwork.
 - * Think back to the examples that you saw in class.
 - * You could create a work outside and photograph it.
 - * You could create a sculpture, drawing, or painting.
 - * The choice is yours, but keep in mind the message that you want to get across.
- ★ Write a brief Artist Statement, detailing the content of your piece, your message, and why it's important to you that the public is made aware of this message.
- ★ Choose how you want to present your artwork, as a class.

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Math Connection: Systems Are Everywhere!
How are the Trophic Level organizers above similar to, or different from, the Graphic Organizer for Numbers on the right?



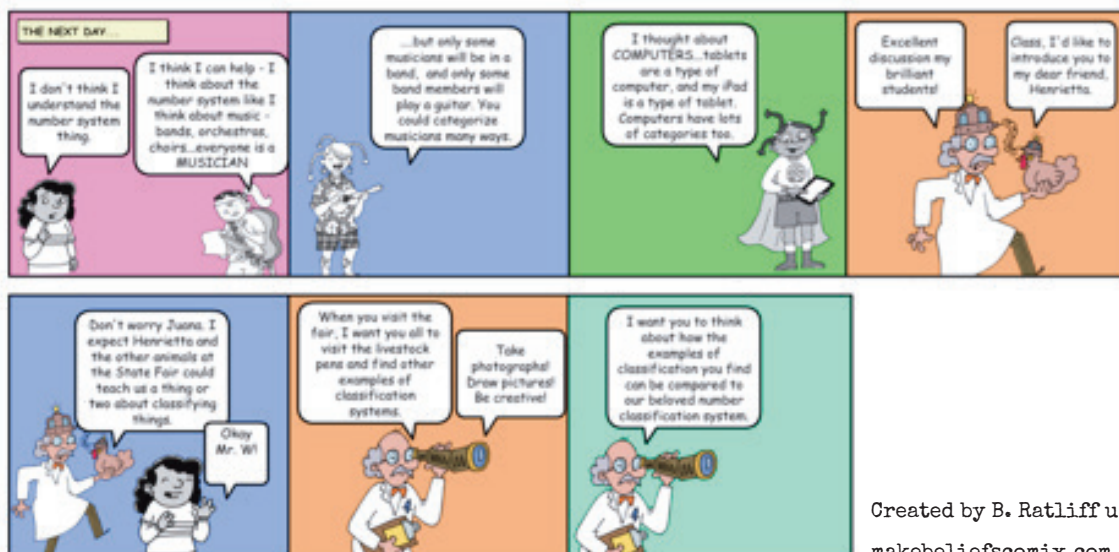
★ **Driving Question:** Why do we need a number system?

- * Like scientists, mathematicians use classification systems to describe, name, and categorize different types of numbers.

Today, Mr. Wifflebird just finished teaching his students about three categories of numbers within the real number system- rational numbers, irrational numbers, integers, and whole numbers.

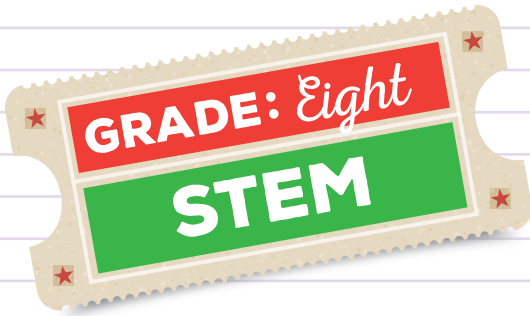
Mr. Wifflebird draws the graphic organizer above to show the relationship between the four categories.

★ **Driving Question:** How does this graphic organizer show the relationship between rational numbers, integers, and whole numbers?



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- ★ **Checking for Understanding:** Draw a graphic organizer to represent the two examples Mr. Wifflebird's students gave about music and computers. What other people/things could be placed in those graphic organizers?
- ★ **Checking for Understanding:** Is Mr. Wifflebird's graphic organizer the only way to categorize rational numbers, integers, and whole numbers? Explain your reasoning?
- ★ **Driving Question:** How is classifying numbers like classifying animals?

After the Fair

Create your own graphic organizer to show how you would classify the animals you observed at the State Fair of Texas.

- ★ How is your graphic organizer similar to the one Mr. Wifflebird used to classify numbers?
- ★ How is it different?
- ★ Share your State Fair of Texas graphic organizer with another classmate. Ask him/her to tell you where certain animals should be placed within your graphic organizer.

