

Teaching Science in the TASC Era

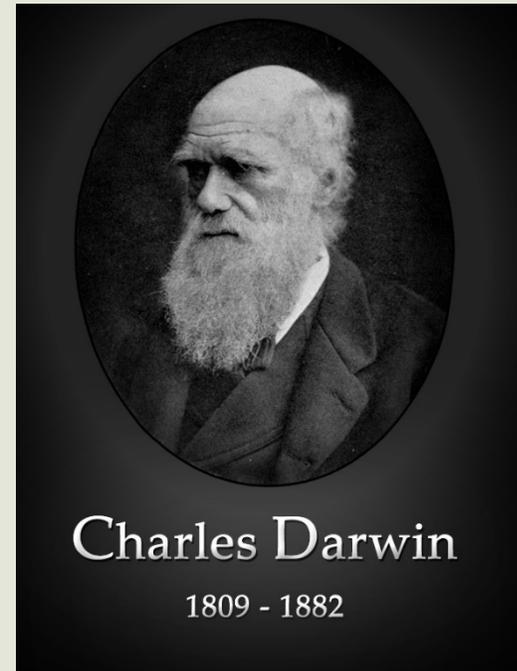
May, 2016

Kathryn Lent and Brett Mosier



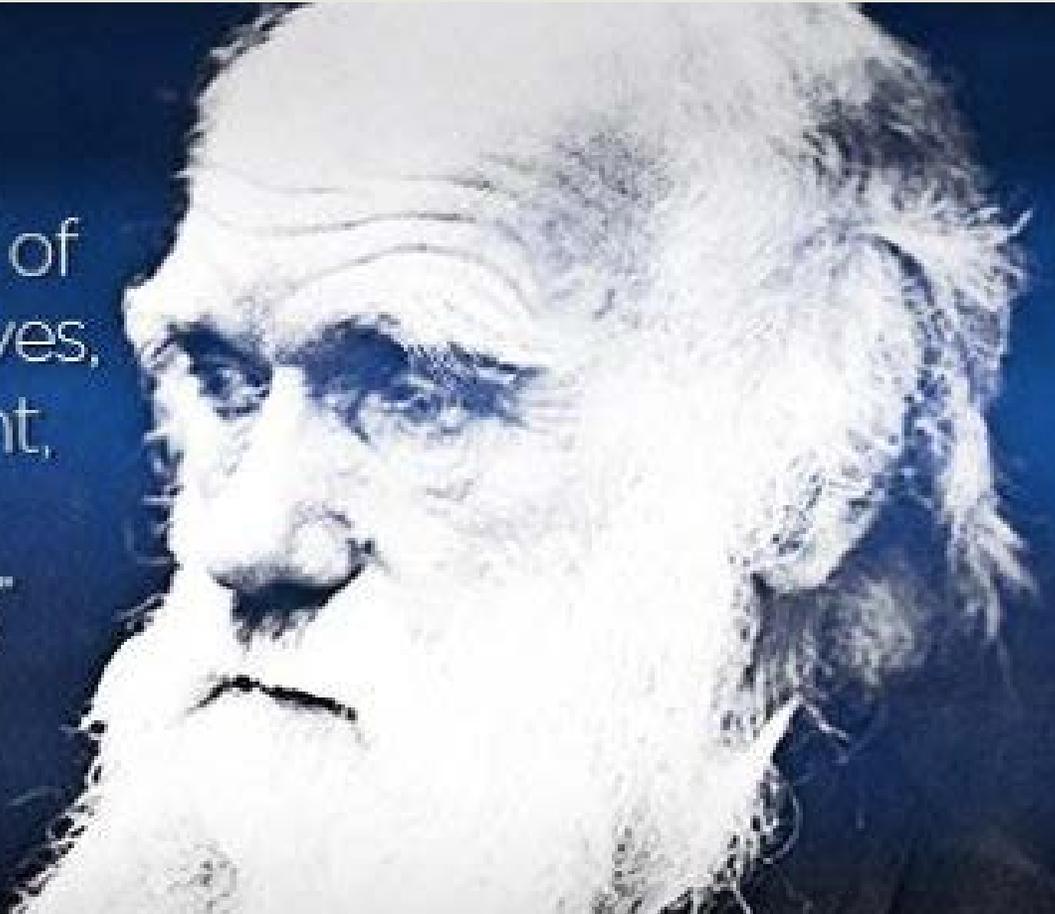
Did you know...

*It has been said
that Darwin
invented biology
through the origin
of species.*

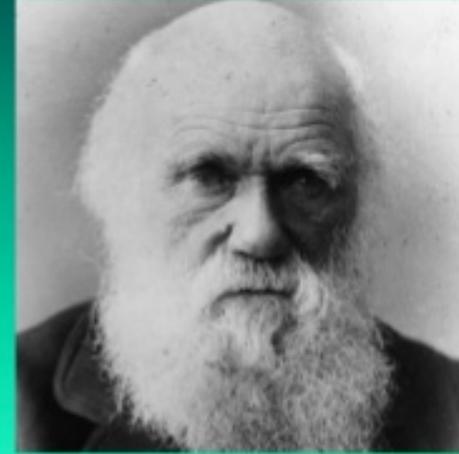


"It is not the strongest of
the species that survives,
nor the most intelligent,
but the one most
responsive to change."

Charles Darwin



Charles Darwin



- Charles Darwin the famous naturalist sailed to the Galapagos Islands in the HMS Beagle in 1831.
- Thirty years later he published his **Theory of Evolution**, one of the most revolutionary ideas science has ever known.

Today's Science Focus Area: Unity and Diversity in Evolution

- Core Ideas of Evolution
 - Inheritance of traits
 - Common ancestry
 - Natural selection
 - Adaptation
- Darwin
 - Evidence that confronted him; the logic moving from the facts of variation, inheritance and struggle for existence to the theory of natural selection as a unifying explanation of the diversity and constant change in nature
- Connections to Mathematics and ELA

From the TASC Readiness Exam

- Scientists have found that both humans and chickens have slits present in an early stage of embryonic development that are similar to the gill structures in fish.
- Discuss:
 - Common ancestry
 - Embryonic stage(s) that are very similar
 - All of life started in the ocean



Characteristics of All Living Things

- Made up of cells
 - Need and use energy
 - Move
 - Respond to their environment
 - Grow
 - Reproduce
 - Excrete waste
- *What are those Living Things?*
 - *Mammals*
 - *Birds*
 - *Reptiles*
 - *Insects*
 - *Plants*
 - *Bacteria*

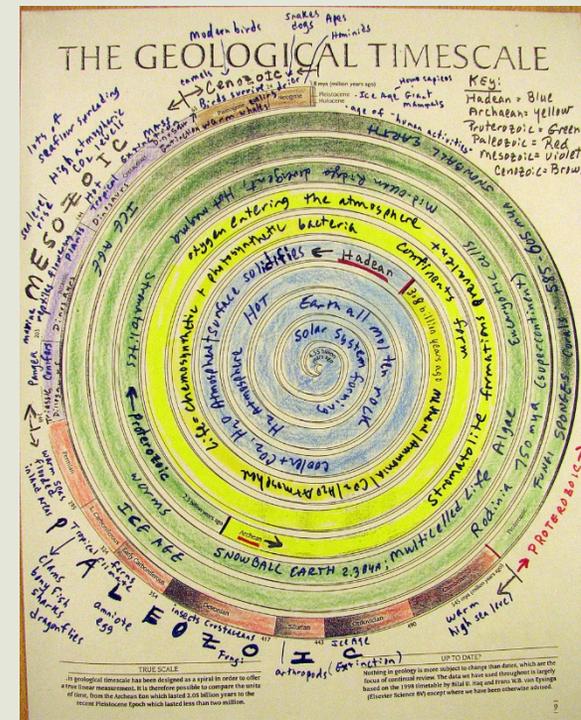
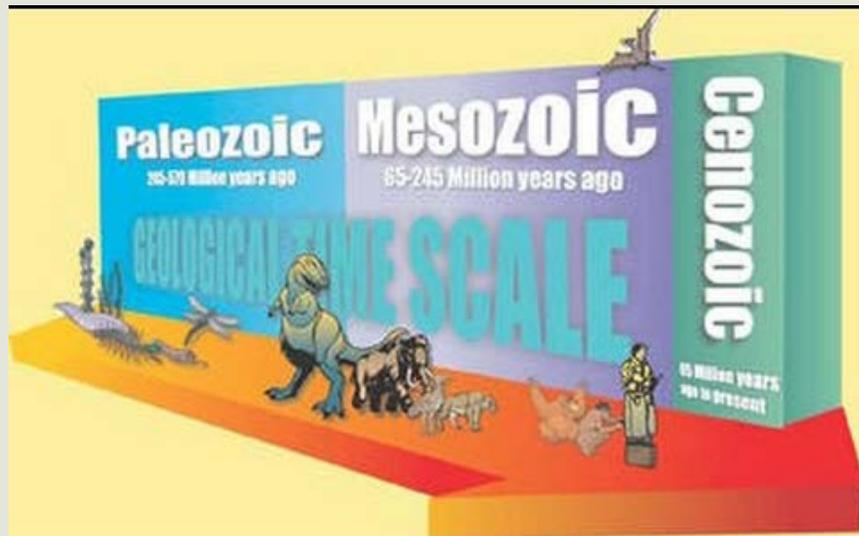
How Old is the Earth?



- 4.6 billion years!

Some Things You Can Ask Your Students

- Give two examples for each of the “Living Things” groups listed on previous slide
- Life is very diverse – why is that?
- What is the Geologic Time Scale?

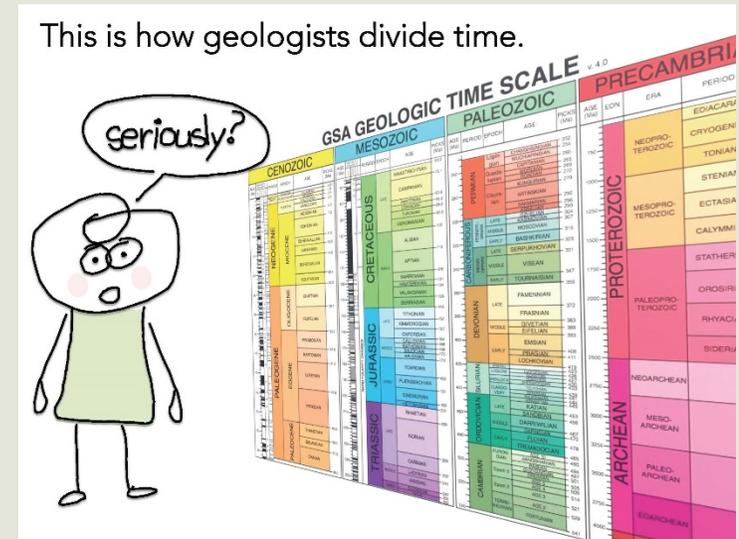


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Geologic Time Scale Handout

Answer the following questions:

- What do you see?
- What are distinguishing characteristics or events that separate the Eras/Periods?
- What might throw students off with this chart?
 - Well, we are going to fix that with the next activity!





Activity Time!

Creating a Time Scale

Geologic Time Scale Activity

- Your group will receive a strip of paper 5 meters long and a meter (yard) stick to create a scale timeline of Earth's history
- Suggested scale – 1 meter to 1 billion years
- Use the chart given to add as many notable events in Earth's history as you can to your scale timeline
- Please use any resources to draw pictures/visual representations of the events
- Other tools available: masking tape, markers, index cards
- Feedback

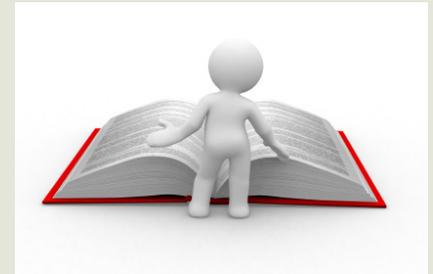


More Activities

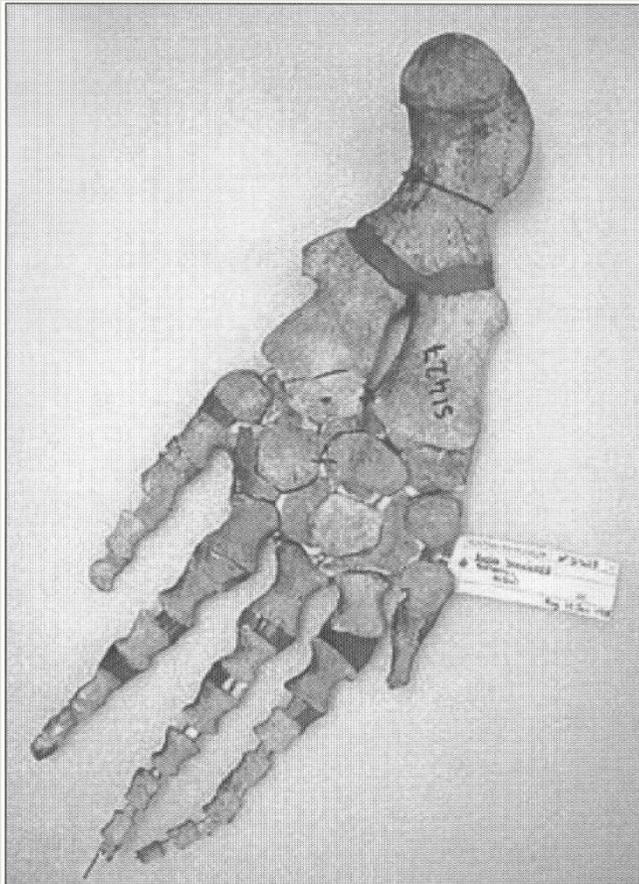
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Student Friendly Definitions

- You will be broken up into pairs.
- Two handouts; “Definitions of Evolutionary Terms”, “Evolution in a Word (or Two)”
- Discuss and agree upon a “student-friendly” definition for each word in the group(s) you have been assigned.
- Discuss the relationship between the words.
 - How are they similar?
 - How are they different?
- Write a sentence or two about the relationship between the words. Be precise.



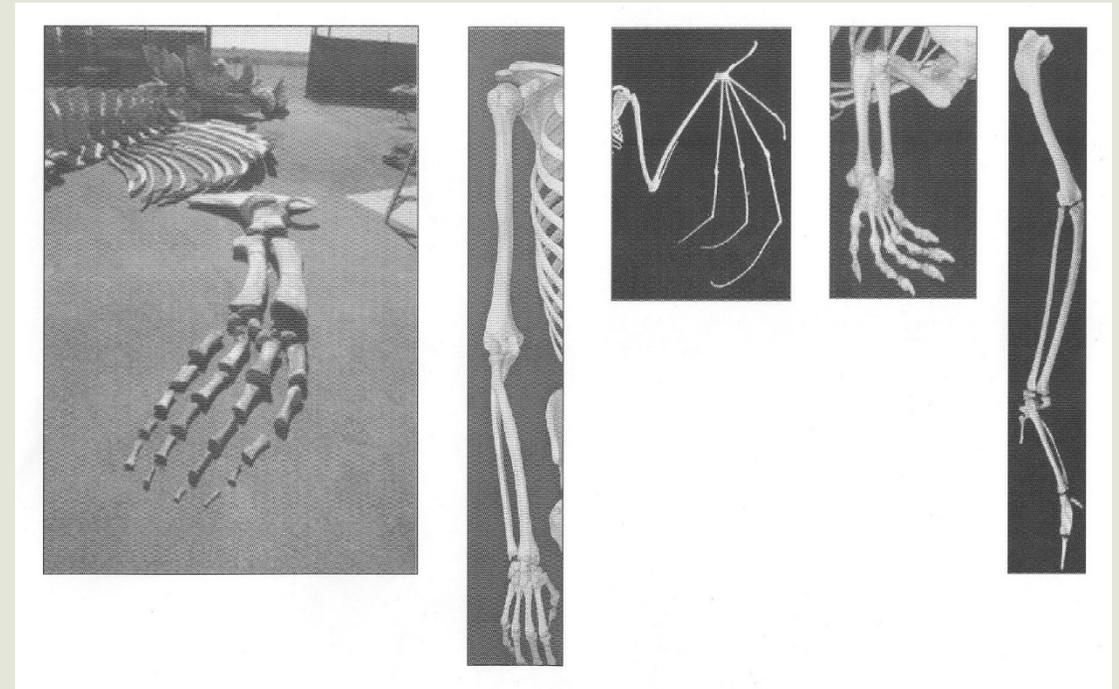
What is this???



- Look at the picture of the bones.
- What are some questions you have regarding the picture?
 - Jot them down

Dem Bones, Dem Bones!

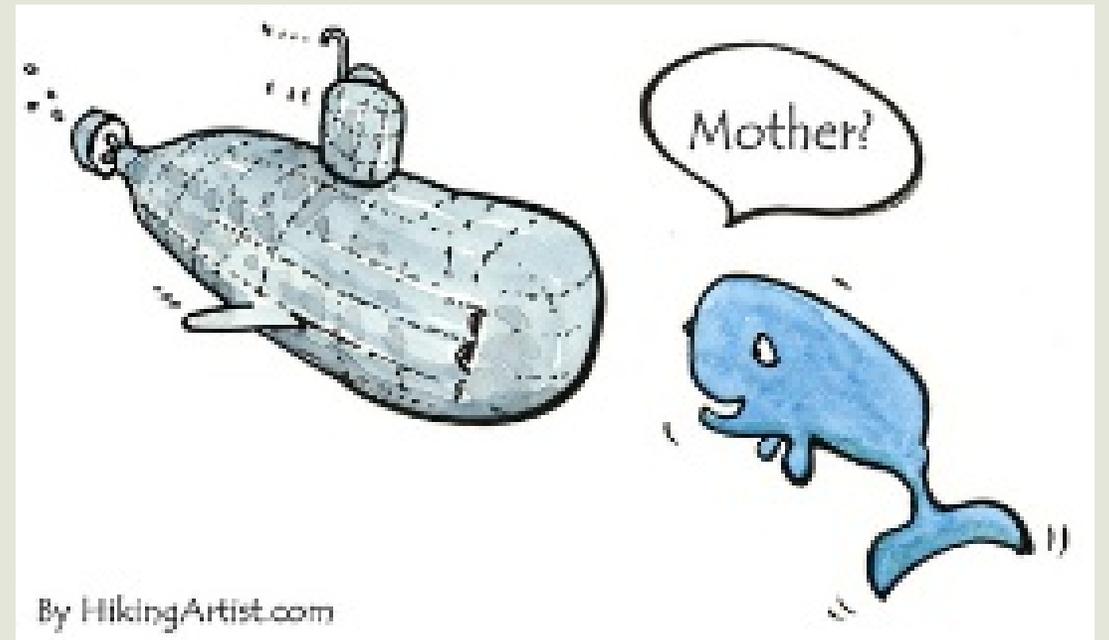
- Identify the bones on your handout.
- What are they?
- Who do they belong to?



Whale of a time!

- Handout; *“6 Skeletal Pictures of Whales”*
- What do you notice?
- What are the similarities?
- What are the differences?
- Video:

<https://www.youtube.com/watch?v=IIEoO5KdPvg>



Natural Selection On My Mind

- With your partner, answer the questions on the handout, *“Natural Selection On My Mind”*
- Receive handout, *“Natural Selection”*

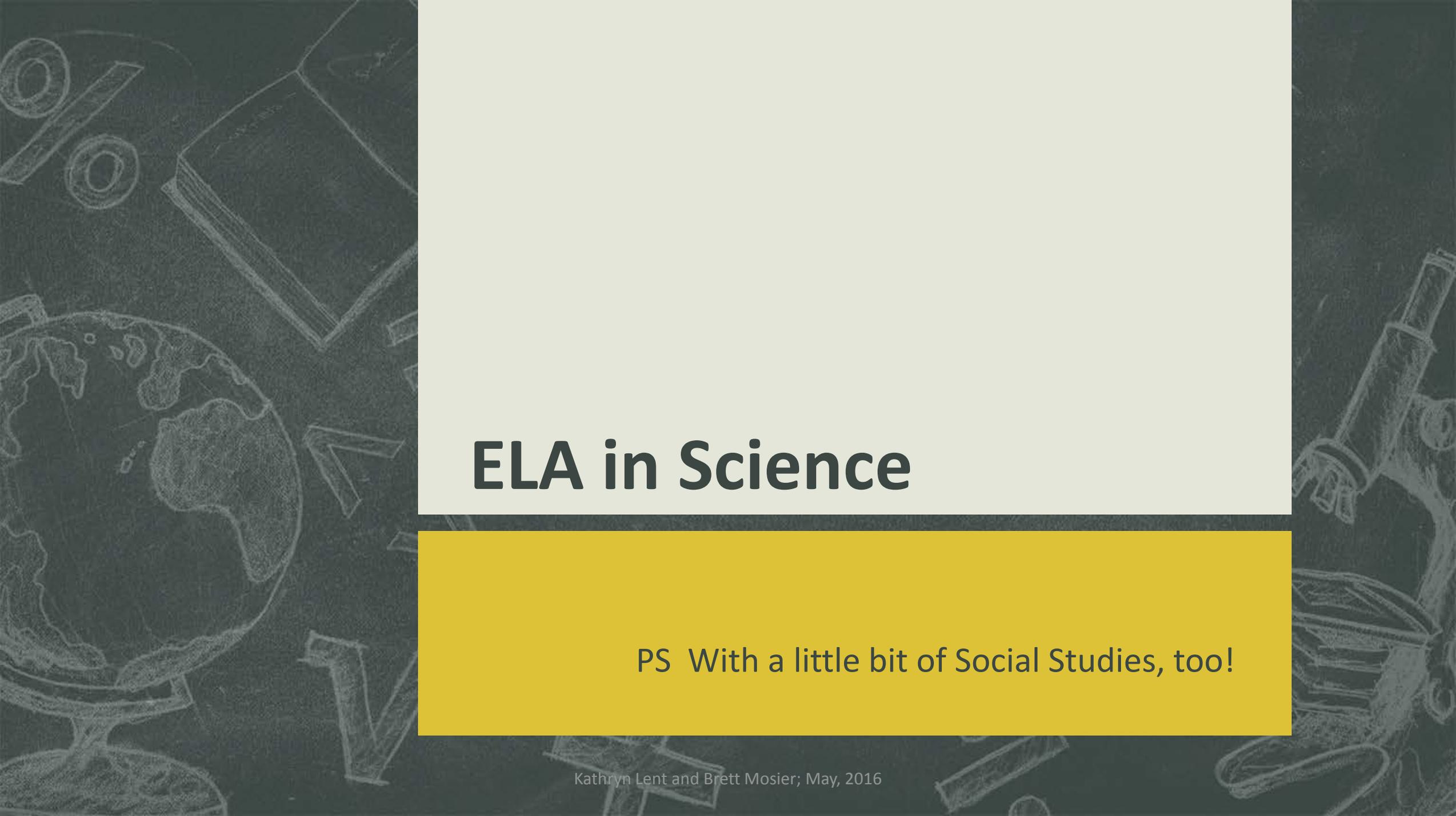


Hop to It!!!

- A little lunch activity for you and a partner or two!
 - Handout; *“Rabbits and Population Growth”*



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ELA in Science

PS With a little bit of Social Studies, too!

Conclusion of Hop to It!



- 4096
- 8192

Evolution, Why Should I Care?

- Read the article, *“Antibiotics: Use Them Wisely”*
- Answer the following questions (underline where you find your answers):
 - What are antibiotics?
 - What are viruses?
 - How are bacteria and viruses similar and different?
- Handout, *“Tuberculosis” (front)*
 - What is TB? Know anyone who has had it?
 - Look at the line graph, what information can you get from it?
 - *(Back)* – Why should we know or care about this?



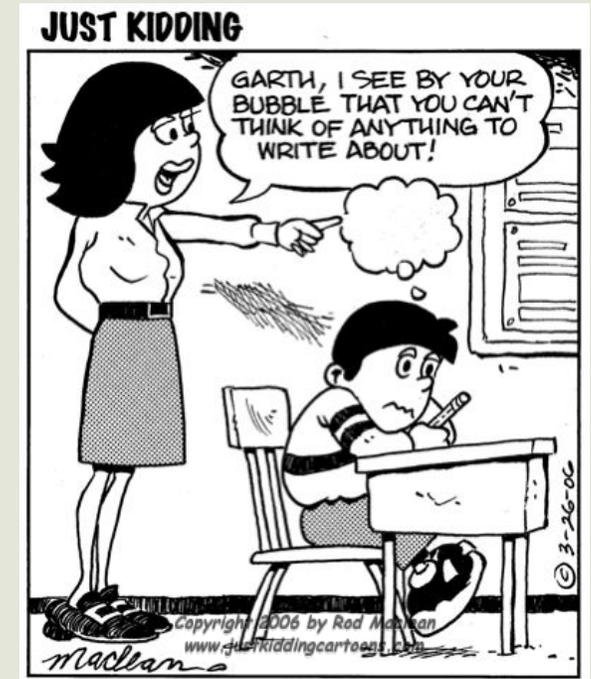
Student Activity

- Read the article, *“Deadly lung disease TB is hard to cure in India, Putting the world at risk”*
- Identify the paragraph mentioning becoming drug resistant
- Underline the parts that provide evidence for the idea that drug resistant bacteria poses a serious problem
- **Circle** the parts of the text that explain why this is a problem in India, specifically
- Handout, *“Information Packet: Informational Essay on Antibiotic Resistance”*



Essay...

- Write an essay about antibiotic resistance
- Critique the Graphic Organizer
 - Consider how the Graphic Organizer could be tweaked for your class
 - What are the positives?
 - What are the negatives?
 - Discuss the scaffolding
- Pro/Con
- Cross-curricular
- How can we do something similar with Social Studies?



McDonald's and Antibiotics

- Article, *“What McDonald’s Is Really Doing by Banning Antibiotics in Poultry”*
- <http://www.eater.com/2015/3/11/8180183/mcdonalds-antibiotics-chicken-food>
- Article, “McDonald’s to stop using chicken treated with antibiotics”
- https://www.washingtonpost.com/business/economy/mcdonalds-to-stop-using-chicken-treated-with-antibiotics/2015/03/04/a4bf7e70-c28b-11e4-ad5c-3b8ce89f1b89_story.html
- This may help make it more personal to your students!



Thank you!

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