

Got Culture?

Zoonotic Diseases

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Grade Level	9th – 10th Grade	**Time Frame**	115 minutes
Subject	Science	**Duration**	3-4 periods
Course	Biology, Environmental Science		

Essential Question

What are zoonotic diseases and what factors lead to their spread in human populations?

Summary

This lesson aims to help students develop an understanding of zoonotic diseases. In this lesson, students will explore how zoonotic diseases spread.

Snapshot

Engage

Students listen to an interview with David Quammen about COVID-19.

Explore

Students complete a digital breakout about zoonotic diseases, specifically Ebola.

Explain

Students discuss the concepts they learned in the digital breakout.

Extend

Students select a zoonotic disease to research and create a webpage of their disease.

Evaluate

Students evaluate and give feedback to their peers.

Standards

ACT College and Career Readiness Standards - Science (6-12)

IOD302: Understand basic scientific terminology
IOD403: Translate information into a table, graph, or diagram
EMI602: Determine whether presented information, or new information, supports or weakens a model, and why

Next Generation Science Standards (Grades 9, 10, 11, 12)

HS-LS1-1: Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells.
LS1.A: Structure and Function

Oklahoma Academic Standards (Biology)

B.LS1.1: Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins, which carry out the essential functions of life through systems of specialized cells.
B.LS1.1.2: All cells contain genetic information in the form of DNA molecules.
B.LS2.2 : Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.

Oklahoma Academic Standards (Biology)

EN.LS2.2: Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.

Attachments

- Bellringer—Got Culture - Spanish.docx
- Bellringer—Got Culture - Spanish.pdf
- Bellringer—Got Culture.docx
- Bellringer—Got Culture.pdf
- Breakout Handout—Got Culture - Spanish.docx
- Breakout Handout—Got Culture - Spanish.pdf
- Breakout Handout—Got Culture.docx
- Breakout Handout—Got Culture.pdf
- Disease Website Rubric—Got Culture - Spanish.docx
- Disease Website Rubric—Got Culture - Spanish.pdf
- Disease Website Rubric—Got Culture.docx
- Disease Website Rubric—Got Culture.pdf
- Lesson Slides—Got Culture.pptx

Materials

- Lesson Slides (attached)
- Bell Ringer Handout (attached; one per student)
- Breakout Handout (attached; one per student)
- TIP Chart (page two of Breakout Handout; one per student)
- Disease Website Rubric (attached)
- Teacher Guide (linked; one per teacher)
- Sticky easel pad paper
- Markers
- Pencils/pens

30 minutes

Preparation

Setting up the Digital Breakout

Before implementing this lesson in your class, preview the digital breakout. If you want to see students' responses, you will need to duplicate the digital breakout and replace the Google Form with the one you create. Use the video, Digital Breakouts Using Google Sites and Forms, to assist you in building your digital breakout. Print out or save the page to the **Teacher Guide** to help scaffold students' work in the breakout.

Building a Google Site

In this lesson, students will develop an informational page for their disease on Google Sites. For each class period, create a Google Site that looks similar to the example.

15 minutes

Engage

Go to **slide 3**. Before class begins, instruct students to complete a Bell Ringer activity that will assess their prior knowledge. Give students the **Bell Ringer Handout** and ask them to record their responses to the following questions:

1. If there were a pandemic/zombie apocalypse, why should we choose you for our survival team?
2. What causes diseases?
3. What diseases can people get from animals?

Go to **slide 4** to introduce the Essential Questions and then to **slide 5** to introduce the Lesson Objectives.

Go to **slide 6** to allow students to listen to the David Quammen interview—David Quammen: How Animal-Borne Infections Spill Over to Humans—about COVID-19. After students listen to the interview, use the I Notice, I Wonder strategy to facilitate a class discussion about the interview and revisit the Bell Ringer questions.

Teacher's Note: Transcript Access Optional

While listening to the interview, consider printing copies of the transcript or posting the link to your LMS to support student understanding.

30 minutes

Explore

Go to **slide 7.** Provide the **Breakout Handout** to each student. Students will record their work on the handout in order to refer to it later in the class. The second page of the handout uses the TIP Chart strategy where students will record Terms, Information, and Pictures for the vocabulary they are exposed to during the digital breakout. You can guide your students on what to include in each column. For example, assign them to write both the scientific and the common names for specific diseases or specific details that are important to note.

Go to **slide 8** and ask students to navigate to the Zoonotic Disease Digital Breakout. If this is your first time using digital breakouts with students, it may take scaffolding to ensure students are navigating through the breakout. Tell them that this breakout will be similar to an escape room. As they work together and listen for clues, more and more pieces of the puzzle will come together. With each correct guess they make, they will be able to move on to the next lock, and they will come closer to completing the breakout successfully.

Allow students to work through the breakout and move through the classroom to support productive struggle. You can allow students to work in pairs. Remind students to record the things they find in the breakout handout.

Reference the **Teacher Guide** to help scaffold students' work in the breakout.

30 minutes

Explain

Go to **slide 9**. Have a discussion with students after the digital breakout (this can include reviewing the answers) and before moving to the Extend activity. Discussion topics could include:

- How do cell and virus structures differ and how does that affect our response to different diseases?
- Zoonotic diseases are becoming more common. Why do you think that is?
- Why are zoonotic diseases more prevalent in specific areas of the world?
- If you have discussed transcription and translation, compare how mRNA and DNA vaccines work.
- Scientists often theorize on the "Next Big One (NBO)," the next global pandemic. Do you think there will be a next big one?
- What have we learned living through a global pandemic?

Transition to **slide 10** and introduce students to the Anchor Chart instructional strategy. Provide students with materials to have students make an anchor chart about the important ideas of Zoonotic Diseases and clarify any misconceptions.

30 minutes

Extend

Go to **slide 11**. Have students return to their partners to discuss the new things that they have learned. Students should create a page with Google Sites with their partners. Pass out a copy of the **Disease Website Rubric** to each group. Make sure to emphasize to students that the five criteria listed must be included in their web pages.

10 minutes

Evaluate

Go to **slide 12.** Allow pairs to form groups of 4 students. Have students trade projects and give feedback using the Exclaim and Question Strategy. Ask students to share one thing that they learned about from another group and one thing they would add to their page.

Resources

- K20 Center. (n.d.). Anchor chart. Strategies. https://learn.k20center.ou.edu/strategy/58
- K20 Center. (n.d.). Bell ringers and exit tickets. Strategies. https://learn.k20center.ou.edu/strategy/125
- K20 Center. (n.d.). Exclaim and question. Strategies. https://learn.k20center.ou.edu/strategy/94
- K20 Center. (n.d.). I notice, I wonder. Strategies. https://learn.k20center.ou.edu/strategy/180
- K20 Center. (n.d.). Tip chart. Strategies. https://learn.k20center.ou.edu/strategy/185
- K20 Center. (n.d.) Google sites. Tech Tools. https://learn.k20center.ou.edu/tech-tool/631
- Pioneer RESA Tech. (2017, November 3). *Digital breakouts using Google sites and forms.* Youtube. https://www.youtube.com/watch?v=SLPPHgXMwTE
- Quammen, D. (2020, March 28). David Quammen: How animal-borne infections spill over to humans. (S. Simon, Interviewer) NPR. https://www.npr.org/2020/03/28/823071230/david-quammen-how-animal-borne-infections-spill-over-to-humans