

Ebola epidemic in the DRC

Lesson Map: <http://esriaustralia.com.au/education/SpatialActivity48>

Engage

What is Ebola?

- Click on the URL above to open the Story Map (with built-in interactive maps). A topographic map focused on West Africa is displayed. Read through the information. Then click 'Legend' to show the total number of Ebola cases in the 2014-2016 outbreak.
- ? Why do you think such a large outbreak occurred in such a short time? *[poor communication lines / reporting to officials; unchecked border crossing are regular for work purposes; lack of health professionals – in 2013, Sierra Leone had 0.2 doctors and 1.7 nurses per 10,000 people; poor sanitation and hygiene]*
- ? Other than Sierra Leone suffering particularly from the outbreak, what other geographical challenges did this pose? *[Access to the coast/shipping lines; means potential cases being able to leave the country before being detected]*

Explore

How is Ebola transmitted? What symptoms are experienced by those affected?

- Continue to read through the Story Map. Read 'Transmission of Ebola'. Stop to discuss as necessary.
- ? Why might animal to human transmission be more likely in the Democratic Republic of the Congo? *[Living in close proximity to animals in the rainforest; may sometimes be required to gather water from the same water sources; may hunt some of these animals for meat]*
- Continue to read through the Story Map. Read 'Symptoms'. Stop to discuss as necessary.
- ? The incubation period can include anywhere from 2 to 21 days. What problems may a delayed onset of symptoms (15 – 20 days) cause? *[Answers will vary. A major issue is that health professionals and humanitarian aid may think it is contained to one area however, it may have spread over great distances by hosts before they display*

Download student worksheet [here](#).

Time

30 minutes

Activity

Investigate the Ebola outbreak in the Democratic Republic of the Congo

Learning Outcome

Students will be able to:

- Define Ebolavirus and understand how its major characteristics
- Identify the spatial distribution of major Ebola outbreaks
- Examine and analyse the challenges that exist for the DRC in containing the virus

ACARA Curriculum Link

Year 11 Geography – Responding to risk and vulnerability in hazard zones – Ecological hazard zones

[ACHGE006](#) | [ACHGE007](#) | [ACHGE012](#) | [ACHGE014](#) | [ACHGE15](#)

Teacher Feedback:

To share your feedback on this, or any Spatial Activity, please contact education@esriaustralia.com.au

symptoms, which then causes cases elsewhere]

Explain

What environmental factors contribute to large-scale Ebola outbreaks?

- Continue to read through the story map and the section titled 'Total of confirmed cases in the DRC'.
- Click on the 'Legend' to bring up additional information about the number of confirmed Ebola cases in various DRC health districts. Zoom in on the map. Click on individual 'circles' to bring up the name of a health district and the exact number of cases confirmed.
- ? When considering the location of this outbreak and the 2014-2016 outbreaks in West Africa, what environmental conditions does the Ebola virus thrive in? *[Warm equatorial regions, high annual precipitation, rainforest areas]*
- ? What factors, other than environmental factors, may be contributing to the spread of this virus in the DRC? *[poor hygiene and sanitation; lack of education regarding how to best deal with the Ebolavirus; access to clean water and food sources]*
- Continue to read through the story map and the section titled 'Environmental conditions'.
- The map shows both of the African outbreaks (West Africa and DRC) and 'Total Annual Precipitation'. Click 'Legend' and scroll down the legend box to see more information. Zoom in on the Africa to get a closer look.
- Continue to read through the story map and the section titled 'Access to basic drinking water'. Click 'Legend' to bring up additional information.
- ? What percentage of the population has access to basic drinking water in the following countries: DRC, Guinea, Sierra Leone, Liberia? *[HINT: click on individual countries & take latest number as it is from 2017. DRC 43.24%; Guinea 61.9%; Sierra Leone 60.81%; Liberia 72.95%]*
- ? What do you think is meant by the term 'basic drinking water'? *[This term refers to drinking water from improved water sources. i.e. piped water, boreholes, springs etc. that is not more than 30 minutes for a round trip]*
- ? How might this differ to 'safe drinking water'? *[Safe drinking water is water that is delivered to the user safe for drinking, food preparation, personal hygiene and washing. It is required to meet quality chemical, biological and physical standards]*

- ? What challenges may exist for the DRC in being able to access 'safe drinking water'?
- [Answers will vary but may include: lack of suitable infrastructure i.e. plumbing and piping; lack of governmental funds; challenges of terrain/biome i.e. rainforest, mountainous; remote proximity to dense population areas]*

Extend

What can be done to limit the spread of Ebolavirus in the DRC?

- Continue to read through the story map and the section titled 'Treatment' and 'Prevention and Control'. Stop to discuss as necessary.
- Continue to read through the story map and the section titled 'Conclusion'.
- ? Research one of the specified areas (e.g. education) and to find relationships between potential disease outbreaks and a specified area? *[Answers will vary]*
- Explore Ebola further by visiting the sources acknowledged at the end of the story map.

Next Steps:

Request a free ArcGIS Online Account for your school:

Australian schools can request a free ArcGIS Online account as part of Esri Australia's Classroom GIS Initiative. A school subscription provides additional map layers, content, features and privacy.

Learn more about ArcGIS Online, and apply for your ArcGIS Online School subscription at <http://esriaustralia.com.au/education>