

THE IMPACT OF DISEASE ON OUR LIVES		Student/Class Goal Students are concerned about recent stories in the news concerning infectious diseases and begin to investigate health issues around them.
Outcome <i>(lesson objective)</i> Each task force will analyze the impact of disease on their lives and make recommendations for controlling infectious disease.		Time Frame Three 45 minute sessions
Standard <i>Read with Understanding</i>		NRS EFL 3-6
COPS Determine the reading purpose.	Activity Addresses Components of Performance Students will prepare a written report as they learn about infectious diseases.	
Select reading strategies appropriate to the purpose.	Scientific inquiry leads students to asking and answering questions about infectious diseases and an epidemic.	
Monitor comprehension and adjust reading strategies.	Students are building their vocabulary to include various infectious diseases. They may have to use dictionaries and continually check their understanding of new terminology.	
Analyze the information and reflect on its underlying meaning.	In order to analyze the effect of a disease on your community; develop a public health policy that addresses the containment of this epidemic.	
Integrate it with prior knowledge to address reading purpose.	Research a disease, create a policy and present findings as part of a public health task force member.	
Materials <i>Colds 101</i> Experiment/Worksheet Glitter and Vaseline <i>Public Health Task Force</i> Activity Impact of Disease Learning Objects		
Learner Prior Knowledge Discuss what a disease is and the different types of diseases of which students are aware – the diseases may be human or animal. Locate on a world map places with a known epidemic, such as: AIDS, Ebola, influenza, Hepatitis A, smallpox, polio, etc. at Epidemics Through Time . In pairs, locate and mark on a world map the disease that you located. As a whole group, mark the map with any disease that was not already located. How far away are these diseases? What affect could there be on your life if any of these disease reach your community?		
Instructional Activities Step 1 - Has anyone ever had a cold? Does anyone know what kind of disease a cold is? Is it serious? Discuss with the group that people in their everyday life comes into contact with others who have or have been exposed to any number of diseases. Conduct the <i>Colds 101</i> Experiment. Thoroughly stir a small amount of colored glitter into a jar of Vaseline. Divide the Vaseline into 1-2 tablespoon portions, placing each in a small Ziploc bag for each student. Hold a class discussion about how germs spread through direct contact. Tell students that they will be doing some research involving members of their families. Give students the <i>Colds 101</i> Worksheet to complete at home and bring back the next class time. Math Extension: After students conduct the experiments at home, have them make a bar or line graph of their data. They can also compute a class average and graph that data. Step 2 – Group will look for articles on disease that are affecting the world at this time. They are encouraged to read magazines, watch the news, watch the Health Channel, and check the newspaper for diseases such as AIDS, mad cow, Ebola, etc. One such article on SARS can be found at Hong Kong: Chasing the Virus . Students read and discuss with the group what implications this disease would have on them and their life.		
TEACHER NOTE Search Eureka Trade Books by keyword “disease” to find a text set for students to read.		
How will your knowing about the epidemics around the world affect your quality of life? What can you do to protect yourself from diseases? Answers might include: vaccinations current, practice good health techniques such as washing hands, watch where you		

travel, preventative health practices such as eating correctly, etc.

TEACHER NOTE Might want to bring in a health professional speaker to discuss common diseases and how they spread. Topics could include epidemics throughout history such as Bubonic Plague and current epidemics as well.

Step 3 - Infectious diseases have re-emerged as worldwide threats to public health. Have individuals choose a health threat that interests them. Group students accordingly. Each group forms a task force to research and advise the government on ways to halt the disease. Teams need to find out when the disease was identified and how many people it has infected. What are its symptoms? How does it spread? How can it be prevented or treated? What social, economic, or environmental factors contribute to its spread?

TEACHER NOTE Teachers can also search yahooligans.com on “disease” for more information.

After completing its research, each task force should prepare at least three recommendations to the government for limiting the spread of the disease. These could include changes to laws, spending on research, public awareness ads, or other measures. Students may think of familiar campaigns (such as anti-smoking) as potential models. After the task forces present and explain their recommendations to the class, encourage questions. For example: How will strategies be implemented? What are possible drawbacks? How can recommendations balance individual rights and the public welfare?

TEACHER NOTE Evaluation could be done by developing a rubric. Teacher and students would work together to establish the parameters of the rubric before starting the task force activity.

Assessment/Evidence *(based on outcome)*

Task Force Recommendations

Teacher Reflection/Lesson Evaluation

Not yet completed.

Next Steps

Technology Integration

Epidemics Through Time <http://www.pbs.org/frontlineworld/stories/hongkong/epidemicsa.html>

Hong Kong: Chasing the Virus <http://www.pbs.org/frontlineworld/stories/hongkong/thestory.html>

Purposeful/Transparent

During this activity, students will monitor their own progress toward reaching their goal of analyzing the impact of infectious diseases and determining a public health policy.

Contextual

Doing research on infectious diseases and determining a health policy helps students extend their learning and develop their knowledge base of health related terminology.

Building Expertise

Scaffolding is provided as students work through the task force activity by outlining the methodology for tackling this health issue.



Colds 101 Experiment

Put a small dab of glitter Vaseline on your finger, and spread it all over your hands. Shake hands with someone in your family. Record below what happens.

If you had a cold, what would the glitter represent?

What happens when you have a cold, blow your nose, and touch someone else?

Perform these 4 actions and record the time it takes for glitter to fully disappear in each instance. Remember to apply a little Vaseline to your hands before each procedure.

Number of Seconds Until
All Glitter Disappears

Wipe hands with paper towels.	_____
Wash hands in cold water.	_____
Wash hands in warm water.	_____
Wash hands in soapy water.	_____

Which procedure worked best to get rid of glitter?

Why do you think so?

What have you learned about the spread of germs?

Public Health Task Force Activity

Your group has been nominated to serve on a Public Health Task Force – and you are needed now!

A certain disease may soon become an epidemic in your community. Your team must research the disease, think of ways to limit its spread, weigh the strengths and weaknesses of your strategies, and recommend a public health policy.

Part I

Research the Disease

1. Choose a disease from the list:

- tuberculosis (antibiotic-resistant)
- polio
- HIV/AIDS
- cholera
- rubella (German measles)
- malaria
- smallpox
- SARS
- infectious mononucleosis
- scarlet fever
- diphtheria
- ebola fever
- influenza
- lyme disease
- meningitis
- yellow fever

2. Find out as much as you can about the disease. Use these questions as a guide, and add your own:

- What is the biological cause of the disease?
- How is the disease spread?
- What methods are available to prevent, treat, or cure the disease?
- What individual actions or circumstances might lead a person to **contract** the disease?
- What social actions or circumstances might influence the **spread** of the disease?



Part II

Create a Public Health Policy

1. Once you've learned as much as you can about the disease, it's time to think of strategies to limit its spread. Your policy can include laws, ads promoting awareness, spending on research, and educational programs. Use the chart below to brainstorm and evaluate your strategies.
2. As a team, choose one strategy to recommend. On a separate sheet of paper list your chosen strategy and evaluate it by answering the following questions:
 - o Why is this the most effective strategy?
 - o How would you implement this strategy?
 - o What would be the economic costs of the strategy?
 - o Who would oppose this strategy? Why?

Strategy Summary

Disease:

	Describe Strategy	Strategy's strengths	Strategy's weaknesses
Strategy #1			
Strategy #2			
Strategy #3			

Public Health Task Force

Teacher Notes

From their research, students should be able to identify the cause of the disease, the mode of transmission, and methods for prevention or cure. See chart below.

Recommendations from each team will vary. Students may have to infer information regarding actions and circumstances affecting the spread of disease. Sample strategies for limiting spread of disease might be making sure food is well cooked, wearing isolation gowns when caring for ill individuals, using community water treatment facilities, implementing education campaigns, and setting up quarantines. Students may want to consider familiar public health campaigns, such as anti-smoking or AIDS prevention, as models for strategies. As they prepare to support their recommendation, students should consider the effectiveness of their strategy, how it will be implemented, and potential opposing views.

Disease Facts

Disease	Caused by	Mode of transmission
tuberculosis (antibiotic-resistant)	bacterium, <i>Mycobacterium tuberculosis</i>	mainly through airborne droplets
AIDS	HIV retrovirus	exchange of body fluids (primarily semen and blood), contaminated blood product, or hypodermic needle
cholera	bacterium, <i>Vibrio cholerae</i>	fecal-contaminated food and water or raw/undercooked seafood
rubella (German Measles)	rubella virus	airborne droplets
malaria	protozoan of the genus <i>Plasmodium</i>	disease-carrying female <i>Anopheles</i> mosquito
infectious mononucleosis	Epstein-Barr virus	airborne droplets or carrier's saliva
scarlet fever	bacterium, <i>Streptococcus pyrogens</i>	contact with strep throat carrier
influenza	various influenza viruses	airborne droplets