

8-9-2006

## Bird Flu and Homeostasis

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### Recommended Citation

Sherrill, Reggie, "Bird Flu and Homeostasis" (2006). *Lesson Plans*. Paper 51.  
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**Name:**

**Grade level(s)/Subject taught:** Living Environment and Earth Science

**Objectives:**

- Describe how diseases disrupt homeostasis.
- Describe the effects of viruses interfering with normal life functions
- Describe the sequence of a pathogenic infection.
- Demonstrate factors affecting spread of a virus

**Science Concept:**

**1.2d** If there is a disruption in any human system, there may be a corresponding imbalance in homeostasis.

**5.2b** Viruses, bacteria, fungi, and other parasites may infect plants and animal and interfere with normal life functions

**Materials :**

- projector
- smartboard
- software
- computer lab access

**Lesson:**

I will begin the lesson by showing several news clips dealing with the possible outbreak of bird flu. The students will then read news articles from three different sources discussing causes and methods of transmission of bird flu. These articles will also contain information on the origin of the virus and associated mortality rates. We will discuss this information as a class to assess student understanding of the material and possible misconceptions related to prior knowledge of this topic.

I will then use the smartboard to introduce the agentsheets model of the bird flu. I will demonstrate the functions of the model and show students how the virus may be spread through the population in the model. We will identify variables which may restrict the spread of the virus or enhance the spread of the virus. We will identify segments of the population which will not be affected by the virus and those that are at greatest risk for contraction and spread of the virus. I will then demonstrate basic functions of the model such as changing probabilities to increase or decrease mortality rate and ease of spread of the disease. I will also demonstrate a method to limit access to health care through blocking entry to the hospital or decreasing the number of doctors available to treat the infected population.

Following this whole group lesson students will be partnered in the computer lab. Each pair will have access to the model on their assigned computer. They will then begin to make changes to the model following the guidelines given during the whole group discussion. They will track the spread of the virus through the population after making each of these changes to the model. They

will then note which changes seem to promote spread of the virus and those which will mitigate the spread of the virus.

We will meet a second time as a whole group to discuss and compare results obtained during the partner exercise. Students will need to use this information to complete the assigned homework for the evening. This assignment will require that they develop a plan, based upon the data they collected from the model, to mitigate the spread of the bird flu if an outbreak were to occur in Rochester.

“...a rich **one-page, single-spaced**, description or a *vision* of your best thinking...”

Prompts:

1. How will you assess the prior knowledge of the student?
2. How will you begin the lesson?
3. What are the teacher and students doing every 5-10 minutes? (Teacher Actions and Student Actions)
4. How will you assess the learning for the lesson?

**Using** \_\_\_\_\_ **I plan on having my students...**  
(software / modeling package(s))