Flu Transmission

STEM Sims

Lesson 1: How Does Influenza Spread Through a School?

Have you ever been sick? Have you ever had the flu? The flu is short for a virus called influenza. Many thousands of people die each year from the flu. The flu most often strikes during the winter months when people are inside more. Can you find out how the flu spreads? Grab a tissue and get ready for this activity.

Here are some definitions to help you in your investigation.

Genes -	the material inside cells that results in various traits		
Virus -	a small collection of material that make up genes that can infect and damage cells		
Influenza -	a virus that attacks the lungs, throat, and nose		
Epidemic -	a disease that is widespread		
Pandemic -	a disease that has spread worldwide		
Linear growth -	growing by the same amount each time		
Exponential growth -	growing by doubling each time		

Preparing for the Science

A person starts with \$2 in their bank account. Each week that person receives 1. \$5 for completing chores around the house. Use this information to complete Table 1 below.

Table 1.

Time	Money earned	Total Money in their bank	
Start	0	\$2	
End of Week 1			
End of Week 2			

End of Week 3	
End of Week 4	

- 2. The previous example is of linear growth. Each week the person's bank account increased by the same amount. How much did the person's account increase by each week?
- 3. On your own paper, create a graph of total amount of money in the bank versus number of weeks.
- 4. A different person also starts with \$2 in the bank. However, each week this person has the total money in the bank doubled. To double something means to multiply the number by 2. Use this information to complete Table 2 below.

Table 2.

Time	Money earned	Total Money in their bank	
Start	0	\$2	
End of Week 1			
End of Week 2			
End of Week 3			
End of Week 4			

- 5. The previous example is of exponential growth. Did the person's total bank account increase by the same amount each week?
- 6. On your own paper, create a graph of total amount of money in the bank versus number of weeks.

Doing the Science

1. Start the Flu Transmission Simulation by clicking on the "Simulation" tab.

- 2. Click on the "None" button under the Factor menu on the left-bottom of the screen.
- 3. Click on the "Run" button at the bottom center of the screen.
- 4. Note the Progress bar, which shows time running for a six-week period.
- 5. Click on the "1" icon on the Progress bar.
- 6. Count and record in Table 3 the number of infected students at the end of the first week of the flu outbreak.
- 7. Click on the "2" icon on the Progress bar.
- 8. Count and record in Table 3 the number of infected students at the end of the second week of the flu outbreak.
- 9. Repeat this process until you have counted and recorded data for all six weeks.

Week	Infected	Uninfected	Week	Infected	Uninfected
1			4		
2			5		
3			6		

Table 3.

Do You Understand?

1. As time progressed, how did the number of students who were infected by the flu change?

2. Provide a possible reason for your answer to the previous question.

3. Is the spread of flu more like linear growth or exponential growth? Please support your response with evidence.

4. Coronavirus is another virus that spreads in a similar way as the flu. Why do experts say people should social distance to avoid the coronavirus?