Subject: Science Grade: 6 Unit #: 3 Title: Good Friends and Germs

UNIT OVERVIEW

STAGE ONE: Identify Desired Results

Established Goals/Standards

Standard 1: MA
M1.1a, b
M2.1, b
M3.1, a
S1.1, c
S1.2, a, c
S1.3
S1.4
S2.1, b, c, d
S2.2, b, c, d, e
S2.3, b ,c
S3.1, a
S3.2, a, c, d, e, f, g, h
S3.3
T1.1, a
T1.3, a
T1.4, a, b
T1.5, a,b
1.4a, b, c
2.1a, b
Standard 6: Interconnectedness
1.2
1.3
1.4
2.1
2.2
3.1
4.1
4.2
5.2
6.1
Standard 7: IPS
1.1
1.3
1.4
Standard 4:PS
2
3
4
7
8
9
Standard 4:LE
1.1 a, b, c, d, e, g
1.2 a, b, c, d, e, f, h, I, j
4.4d
5.1 a, c, f

Long-Term Transfer Goal

At the end of this unit, students will use what they have learned to independently…

- *Work together and share findings*
- *Refine ideas and build on other's ideas*
- *Keep clear accurate and descriptive records*
- *Use tables as a way to communicate results*
- *Differentiate between observations and interpretations*
- *Make claims based on evidence*
- *Use models to simulate processes*
- *Define criteria and constraints*

Meaning

Enduring Understandings

Students will understand that…

- *Scientific questions are directed toward objects and events that can be described, explained, or predicted by scientific investigations*
- *Studying the work of different scientists provides understanding of scientific inquiry and that science is a human endeavor*
- *Observations and measurements are considered reliable if the results are repeatable by other scientists using the same procedure*
- *In a fair test, only the manipulated variable and the responding variable change. All others are held constant*
- *Scientists measure surface temp a short distance above ground in order to measure the temp of the environment*
- *Explanations are claims supported by evidence, accepted ideas, and facts*
- *Models are a representation of something in the world*
- *Simulations use a model to imitate, or act-out, real life situations*

Essential Questions

Students will consider such questions as…

How can you prevent your good friends from getting sick?

Acquisition

What knowledge will students learn as part of this unit?

- *The cell is the basic unit of structure/function in all living things*

What skills will students learn as part of this unit?

- *Manipulate a compound microscope*
- *Determine size of microscopic object*

		• *Cells are usually microscopic in size* • *Cells have specialized structures that perform specific functions* • *Most cells have a cell membrane, cytoplasm and genetic material. Many cells* • *Many cells have a nucleus* • *Some cells have cell walls and/or chloroplasts* • *Some living things are single cells; others, including humans, are multicellular* • *In multicellular living things, cells are organized for more effective functioning into tissues, organs, and organ systems* • *Tissues, organs, and organ systems help to provide all of the cells in the organism with nutrients, oxygen, and to remove wastes.* • *Organ systems are composed of organs and tissues which perform specific functions and interact with each other* • *Disease is a breakdown in the structures or functions of an organis* • *Some diseases are the result of failures of a body system* • *Other diseases are the result of damage by infection from other organisms (germs)* • *Communicable diseases are diseases that spread from one person to another* • *Noncommunicable diseases cannot be passed from the person who is sick to other people* • *Communicable diseases may be transmitted by direct contact with an infected person or by indirect contact with an infected object or substance* • *Communicable diseases are commonly spread through hand-to-hand contact* • *Hand-washing is a simple habit that can help keep you healthy* • *Many diseases are caused by bacteria or viruses* • *An antibiotic is a drug that kills or prevents the growth of bacteria*	• *Prepare wet mount slide* • *Identify pulse points/rates* • *Identify structure and function relationships in organisms* • *Identify factors that lead to variation* • *Make claims based on evidence obtained from reliable investigations* • *Recognize and analyze patterns and trends* • *Sequence events* •

		• *Immunization is a medical treatment that helps protect you from disease* • *Vaccination is the process by which a person is given a vaccine – a substance that protects a person from a disease* • *Certain specialized cells protect the body from germs that cause communicable diseases. These cells produce chemicals that can identify and destroy germs that enter the body*	

STAGE TWO: Determine Acceptable Evidence	
	Assessment Evidence
Criteria for to assess understanding: *(This is used to build the scoring tool.)* • Rubric • Answer Key	Performance Task focused on Transfer: • Project board
	Other Assessment Evidence: • Science journals • Observations/observing cells BLM • Teacher observations • Group interaction Data collection • Class heart rate data BLM • Communicable disease information table BLM • Create your explanation BLM • Experiment results BLM • Experiment page BLM • Solution showcase/poster • Reflection questions

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T, M, A *(Code for Transfer, Meaning Making and Acquisition)*	**STAGE THREE: Plan Learning Experiences**	
	Learning Events:	Evidence of learning: *(formative assessment)*
M	• The Big Question is introduced in a discussion about colds and symptoms as students become aware of the focus of the Unit.	
M	• Students consider what they know and what they do not know about getting sick to establish a foundation for their investigations.	
A	• Students simulate the exchange of body fluids and then test whether they got infected with a disease.	
M	• Students are introduced to the terms communicable disease and noncommunicable disease, allowing students to relate this science knowledge to their simulations and consolidating the information learned about getting sick through person-to-person contact.	
M	• Students return to the Big Question and review what they have learned in the Learning Set that will help them to answer it.	
M	• Students start to think about the Learning Set question by considering what they already know and what they still want to know about what makes a person sick.	
M	• Students define the indicators that they are sick as symptoms. Through the reading, they learn the importance of focusing on symptoms to diagnose a disease. They will also see that sometimes diseases are not easy to detect. Having this understanding will help students consider how to begin answering the Big Question.	
M	• To consider the body and processes of how germs make a person sick, students focus on these at a cellular level.	
M	• Students apply their knowledge of cells to understanding bacteria. The more students understand about the things that make us sick, the better they will be able to understand how to prevent it.	
M	• Students are introduced to the case study. Looking at a case shows students an everyday example of the spread of disease, giving students a better understanding of how it happens.	
A	• Students will act as microbiologists by designing a procedure and investigating bacteria more closely.	
A	• Students consider what they learned from their classroom bacteria investigation and ask questions about their observations and results.	
M	• The section begins by introducing students to another infectious agent, a virus. In addressing the Learning Set question, this section informs students of another thing that makes us sick.	
M	• Given the case study of smallpox, students learn from a real-life example that disease can be prevented by eradication. Seeing this makes the Big Question and its challenge relevant to students' lives.	
M	• To gain more experience with a variety of diseases, students study five common ones to answer the Learning Set question, What kinds of things make you sick?	
A	• Students recall and consolidate what they have learned about cells, bacteria, and viruses in Learning Set 2. They return to the Big Question and relate and apply their new science knowledge and findings to begin to answer that question.	
M	• Students consider what they know about systems to prepare them for upcoming investigations, where they focus on body systems.	
M	• The text briefly reminds students of what they have learned about cells in preparation for learning how they make up tissues and organs.	
M	• Students begin to examine the respiratory system as a start toward understanding the systems of the human body.	
M	• A reading introduces the parts of the respiratory system, which the students will simulate.	
M	• Students continue their investigations of the systems of the human body by taking an initial look at the circulatory system. This connects to the Learning Set question, What happens to you when you get sick?	
	• Students read about the relationship between the respiratory system and	

M M M A M M M M M T	circulatory system and the role each system plays in the exchange of gases taking place in the lungs. • Now that students understand how the circulatory system spreads disease through the body, they learn how the digestive system does the same. • The concept of immunity is introduced as students read about the immune system. Learning about this system helps students gain a better understanding of the Learning Set question, What happens to you when you get sick? • The class reviews what they have learned about the body systems and how they work together. In their groups, each member draws a different body system. Then they compile their drawings to diagram how the systems work together. • Students begin to consider how a virus or bacteria can cause an outbreak to engage their thinking for the Learning Set. • Students consider several examples of disease outbreaks and the ways in which scientists tried to identify and contain the outbreaks. This reading prepares students for the content that will be covered in this section. • Students are introduced to the steps epidemiologists take to track a disease to prepare them to participate in similar investigation simulations. • The reading engages students in considering the factors that enable epidemics to become pandemics, how pandemics have influenced history, and how governments and scientists work together to identify disease outbreaks and contain them before they become pandemic. • Students reflect on what they have come to understand about identifying and stopping disease outbreaks and the challenges associated with tracking interactions among large groups of people. • As the wrap-up of the Unit, students choose a disease to study and make recommendations about how to prevent its spread.	