AMBIENT – Elementary Level
Viewing Bacteria

Purpose
To compare harmful and helpful bacterial cells and observe the structures within the bacterial cells.

Overview
This investigation is to familiarize students with the characteristics harmful and helpful bacteria. Students will use micro-slide viewers to observe the shapes of various bacteria and the structures within the bacterial cell.

Time
1 hour

Key Concepts
Bacterial cells are quite simple and different from animal cells. Bacterial cell shape or structures (such as cilia and flagella) can be important factors relating to their survival within their natural environment.

Skills
Making observations
Forming hypotheses
Comparing similarities and differences among organisms
Understanding and describing interrelationships in nature
Communicating observations and interpretations graphically and in writing

Materials
Class set of micro-slide viewers
Micro-slide lesson set – Harmful and Helpful Bacteria

Facilitator Preparation
The micro-slide viewer is used to view 35mm photomicrographs. The Harmful and Helpful Bacteria Lesson Set consists of images as photographed through a microscope, plus accompanying text folders. Arrows and letters printed on the micro-slide help the
student locate important features to be studied. Each student views the same carefully selected images. The film is mounted in a clear acetate holder which protects it on both sides. Micro-slides cannot be scratched.

Background

Discuss with students the various environments in which bacteria can be found. What are some adaptations that various bacteria have to help them survive in so many different environments?
Ask students if they think that one type of bacteria has a wide tolerance range for different variables or do they think that there are many different species of bacteria.

Procedure

*Using Micro-viewers / Harmful and Helpful Bacteria*
Discuss with students the concept that there are many different types of bacteria. Explain to the students that they are going to observe an image of a bacterium as if they were looking through a microscope, but by using the micro-slide viewers, we can be sure that all students are observing the same image.

1. Pass out the micro-slide viewers so that each student gets their own viewer.
2. Tell students to draw exactly what they see as they look through the micro-slide viewer for each of the numbered slides 1-6 on their worksheet. Some students may have trouble beginning this task if they do not feel comfortable drawing. The circle is to symbolize the exact view that they see as they look down the tube of the micro-slide viewer and see the image of the bacterial cell.
3. When finished, have students read the accompanying text and answer questions on the exercise sheet.

Student Assessment

Give students points for the following tasks
- Using the micros-slide viewer
- Drawing in each circle
- Labeling each drawing with the appropriate name
- Answering the following three questions

Exercise

Answer the following questions.
1. What are some bacteria causing disease in humans?
2. Are all bacteria harmful?
3. What are some examples of helpful bacteria?
**Student Canvas and Worksheet**

Directions: Draw what you see in each slide. Comment on your observations. Take note of particular characteristics of the organisms (color, size, shape, etc).

Slide 1

Bacteria Name

Comments

Slide 2

Bacteria Name

Comments

Slide 3

Bacteria Name

Comments

Slide 4

Bacteria Name

Comments

Slide 5

Bacteria Name

Comments

Slide 6

Bacteria Name

Comments