Disease

Title: Disease

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Grade Level: 9-12

Subject/Content: Science / Biology

Summary of Lesson: Students will learn about, evaluate and then educate others about the potential of virus' and bacteria.

Focus Question: What is the difference between a virus and bacteria and what are the potential harms and benefits of each?

Database(s):

Science In Context

Procedures:

Steps/Activities by teacher:


<table>
<thead>
<tr>
<th></th>
<th>Living or nonliving?</th>
<th>Sketch 2 examples</th>
<th>Five disease caused</th>
<th>Prevention / treatment</th>
<th>Two Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacteria</td>
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<tr>
<td>Virus</td>
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- During a class share time, create a master table on the board of all the examples students have uncovered in their searches, highlighting in particular the benefits of each.
- Instruct students to construct an informative article, newspaper ad, pamphlet, etc. that will inform the general public about how scientists are now using bacteria and virus' to benefit the general human population. Be sure to lay out your specific guidelines for the content they should include: catchy title/headline,
background history or information about bacteria and virus', procedures currently used, costs, overall benefits, illustrations/diagrams, etc.

Have students share their end products with the class or in small groups. Perhaps create a bulletin board outside the classroom to display their informative work.

**Steps/Activities by student(s):**

- Copy the following table onto a piece of paper:

<table>
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- Share the ideas you have collected with the class as your teacher creates a master table on the board of all the examples students have uncovered in their searches.
- Construct an informative article, newspaper ad, pamphlet, etc. that will inform the general public about how scientists are now using bacteria and virus' to benefit the general human population. Be sure to follow your teacher's guidelines and be creative.
- Share your end product with the class or in a small group. Perhaps display your work on a bulletin board outside the classroom.

**Outcome:** Students will be able to effectively communicate general information about bacteria and virus' and the benefits they can potentially have to the general public.

**Related Activities:** This activity is easily integrated with:

- **Math** can be incorporated by:
  - Discussing the reproduction potential of bacteria and graphing their growth rates.
  - Estimating sizes and colony numbers if examining actual bacteria samples under the microscope.
- **Global Studies** can be incorporating by:
  - Additional information on the history of disease could be introduced, including timeline work, etc.
- **English** can be incorporated by:
Have students listen to, read or watch Edgar Allen Poe’s Mask of the Red Death. Discuss the timeframe in history that this story was written and the symbolic nature of the writing.

**Standard Date:** December 1994

**Content Standard(s):** NS.9-12.3(C) The cell; NS.9-12.4(D) Biological evolution; Interdependence of organisms; Behavior of organisms; NS.9-12.6(F) Personal and community health

**Learning Expectation:** As a result of activities, students will be able to distinguish between bacteria and viruses, the diseases they cause and their harmful and helpful potentials.

**Performance Indicators:**

- At Level 1, the student is able to:
  - Fill in a table that defines the characteristics of a bacteria and a virus.
- At Level 2, the student is able to:
  - Research potential benefits of bacteria and virus' based on their characteristics.
- At Level 3, the student is able to:
  - Create an informational tool that can be used to educate the public on the current biotechnological benefits of bacteria and viruses.

**Computer Literacy and Usage Standards 9-12:**

- The student will demonstrate proficiency in the care and use of computer-based technology.
- The student will develop skills using a variety of computer resources to increase productivity, support creativity, conduct and evaluate research, and improve communications.
- The student will use technology resources to improve problem solving and decision-making skills and apply these skills to real world situations.

**ISTE NETS for Students 2007**

- B1 create original works as a means of personal or group expression.
- B3 locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.
- A4 identify and define authentic problems and significant questions for investigation
- B4 plan and manage activities to develop a solution or complete a project.
- A6 Understand and use technology systems

**Information Power; Information Literacy Standards:**
• Standard 1: The student who is information literate accesses information efficiently and effectively.
• Standard 2: The student who is information literate evaluates information critically and competently.
• Standard 3: The student who is information literate uses information accurately and creatively.