

Exploring the Microbial World Beyond the Text Using Print and Internet Resources

Resource Type: Curriculum: Classroom

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(except that the students serve as "critics" and *their* observations and opinions are being read!). The reviews allow students to espouse their opinions about the efficacy (or inefficacy) of specific sites and stimulates exploration of Internet resources. To share the basic information about each site, each student can submit a *brief* WWW "mini-review" (50 words or less) with a site "rating". The mini-reviews and ratings can be easily compiled and disseminated to the entire class as a handout or posted on the course home page. Example guidelines for this type of assignment are provided in the Sample Applications section below.

3. *"Meet the Microbe!" Poster Presentation:* Bergey's Manual of Systematic Bacteriology is a comprehensive "catalog" of well-studied microorganisms. It contains descriptions of over 5,000 bacterial species, which may represent less than 0.1% of the bacteria on this planet! Many described species have medical and commercial importance. Bacteria profoundly influence our world, whether they are producing nitrogen-rich compounds in the soil, fermenting food and beverage products for human consumption, causing diseases in plants and animals, or simply causing last week's leftovers to become rancid. Keep in mind other types of microorganisms exist such as fungi (like molds, yeasts, and mushrooms), protozoa (like the agents that cause malaria), helminths (parasitic tapeworms and flukes), viruses (agents like HIV and influenza), viroids ("RNA-like things" that cause potato spindle disease and coconut kdang-kdang), and prions ("self-replicating proteins" that cause kuru and mad cow disease). Certain arthropods (vectors such as ticks and mosquitoes) merit study in microbiology because they can spread infectious agents. Only a few specific microorganisms can be studied in one semester, but students learn many concepts that describe how various forms of life survive and affect humans. How can students possibly get to know some of the many microorganisms on this planet? Have a day where they "meet the microbes"! This exercise is meant to help students learn about various microorganisms through an alternative form of presentation. When you have been to a doctor's or dentist's office, you may have seen wall posters about microorganisms. Even breweries, pharmaceutical plants, and agriculture extension agencies have posters about microorganisms. Such materials educate the public about a topic without additional resources or instructors. The poster assignment should offer the same result. Students are encouraged to use numerous visual references to design posters that attract the interest of students not enrolled in microbiology. This activity works very well when discussing microbial diversity or infectious diseases. Example guidelines are provided in the Sample Applications section below.

4. *"Build a Web Site" Class Web Site Project:*

"HOT TOPICS!" Report Guidelines

News about major breakthroughs in microbiology and related fields is discussed in newspapers and periodicals daily. The purpose of the "Hot Topics!" report is to encourage you to read about and discuss contemporary issues in microbiologically related sciences. Microbiology is far from being a stagnant science. In fact, advances in medicine, genetics, immunology, and molecular biology, have accelerated this discipline into a Renaissance Period! Examples of recent issues include:

- the discovery of anticancer compounds in tomatoes
- the use of defective retroviruses to kill cancer cells
- the increased incidence of infections with antibiotic-resistant *Mycobacterium tuberculosis* strains (the causative agent of tuberculosis) and *Bordetella pertussis* (the causative agent of whooping cough)
- the use of protease inhibitors to slow the onset of HIV
- the high incidence of meningitis in Arkansas
- the identification of an HIV cofactor that is required for infection

Selecting Articles. Read at least three brief articles from magazines or newspapers (such as USA Today, Newsweek, Science, Nature, Time, Arkansas Democrat Gazette, Scientific American, Discover, etc.) that report topics related to microbiology. Your choices must be published within the past twelve (12) months. The article should be readable by anyone in the class. Stay away from technical articles, non-refereed publications, brochures, and "FYI" articles. If the article is from a WWW site, the site must be a legitimate source that publishes only peer-reviewed work. No personal home page information allowed! The article can be about medical microbiology, industrial microbiology, cancer research, epidemiology, food microbiology, virology, etc. Each article should be at least one-half page in length (roughly 500 words or more). The topic can reflect a national or regional issue. I recommend that you grab a stack of recent back issues of magazines or newspapers at the library and look through them. Excuses such as "I couldn't find anything" or "I couldn't find any magazines" are rubbish! Plenty of microbiology-related items are published daily.

Be sure to record the complete citation for each article. Each component of the citation must be included in your final report to receive full credit. A complete citation includes:

- the names of all authors

entirely your own work, **so work independently**. Do not solicit or receive assistance (other than typing services) from others.

- At the top of your review, provide your name, lab section, review title, site title, and the full URL.
- Begin your review with a brief synopsis about the site (Who created it? Why? Who is the intended audience?). This type of introduction should provide sufficient information about the site so that anyone will understand what you are discussing.
"Walk" the reader through the links and their contents as you explore a site. The majority of your

Format for the Submitted Poster. My advice to you - *do not wait until the last minute to work on this assignment!!* You will need time to acquire your resources, design the poster, write the text, and assemble the poster.

- The entire poster presentation must be contained on the front side of ONE sheet of poster board.
- The poster can take any creative form you choose. You may make it colorful, include three-dimensional attachments, include a brochure holder to dispense literature, or however you wish.
- Use a word processor to prepare your text - hand-written submissions will not be accepted.
- Check your work to make certain no grammatical or spelling errors are present. Read your work before you submit your poster!
- **DO NOT PLAGIARIZE!!!**
- The poster must be written in first person voice. You may use a character or modified drawing of your microorganism to "walk" your audience through the poster's content.
- *Keep the text brief but informative.* Partition the text into small manageable sections that a reader can quickly understand.
- Carefully consider appearance, design, organization, and content. Organize information in a logical and uncongested procession. Because most people are visual learners, incorporate several helpful visual aids such as pictures, diagrams, drawings, etc.

