Lesson Plan

| Course/class: Science | Name: Ashley Farnsworth | Date: Jan 31, 2013 |
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| Topic: Introduction to Microorganisms | Unit: Life Science: Diversity of Life | Grade: 6B |

A. Intents/Objectives/Purpose

By the end of the lesson, students will be able to understand that microorganism are living organisms that cannot be seen with the naked eye. They will form hypotheses about where they can be found and take samples to be used in their next lab. Students will have an understanding that microorganisms are found everywhere on earth (water, air, surfaces, in our bodies, etc.) and can be advantageous or disadvantageous. Students will begin to understand how certain organisms move around using flagella or cilia and how some obtain food by phagocytosis or photosynthesis.

Curriculum Outcomes addressed:
107-1 Describe products and techniques that can be used at home to protect against unwanted microorganism growth
107-6 Provide examples of how science and technology have been involved in identifying and controlling the growth of microorganisms
204-8 Identify and use correctly appropriate tools to examine and describe some living things that cannot be seen with the naked eye
300-19 Examine and describe some living things that cannot be seen with the naked eye
302-12 Describe how microorganisms meet their basic needs, including obtaining food, water, and air, and moving around

| B. Activities | C. Resources | D. Students are… |
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| Administration/Homework<br>Display starter problem "Inverted Invertebrates"<br>Take attendance<br>Collect completed "Arthropods at Odds" activity | Ppt slide 1 | Have completed activity on desk and working individually on starter problem |
| Introduction/Set/Advanced Organizers<br>Go over starter problem | | Students providing their answer when prompted |

Aoki (1979), Hunter (1982), and Rosenshine and Stevens (1986)

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| Noticeable drop 1 food item (bagel) on the floor and perhaps 'accidentally' kick it in front of desks so as to draw student attention. Then act as though you are going to take a bite.<br><br>(if students are uncooperative in that they do not interject that you should not eat the bagel, drop it again, or take a bite of the 'clean' one and make it look like you are eating the dirty one to see if that engenders a response) | 2 Bagels or other food items that would travel when dropped | Students attention drawn to the fact you are about to eat a 'dirty' bagel and they will hopefully intervene before you bite it with comments such as 'it's germy' or 'dirty'. |
| Clarifying/Creating-Understanding/Concept-Development<br>Engage students in discussion with why you shouldn't eat the bagel, even after dusting it off, and have them explain to their best of their ability what 'germs' or 'dirt' are as well as what they know about them. Write ideas on board.<br>• Ask questions such as 'how do I know they're there if I can't see them? Are they living? Non-living? How do I clean my bagel so I can eat it (spray with strong antibacterial cleaner while wearing gloves)? Where are they found? Are they all bad (introduce probiotic yogurt sitting noticeably on desk if students don't mention it)?<br><br>*note: if viruses come up at any time, advise them of debate regarding whether or not they are 'living' organisms<br><br>Provide students with "Microorganisms: Macro-fascinating" worksheet | Gloves, Lysol spray (or another strong cleaner with antibacterial written on it), probiotic yogurt (activia preferably so students may recognize from commercial)<br><br>"Microorganisms: Macro-fascinating" | Students taking turns offering ideas as to their concept of 'germs' and why we can't see them, how people get rid of them, where they are found, and if there are good ones too.<br><br>Students take one worksheet and pass remainder along and work collaboratively in small |

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| | worksheet | groups |
| Engage students in lead-up questions to taking bacteria sample from someone's teeth (or your own if no one volunteers).<br>Stain sample and use oil immersion to show bacteria from mouth.<br><br>Repeat with pond water sample, (drinking water?), archaea slide, and paramecium video<br><br>Circulate and facilitate students. Regroup after each sample to discuss results as a class. | Negative stain (nigrosin), slide, slide toothpick, microscope hooked up to projector, and bacteria sample from teeth microscope slide with depression, cover slip, pond water sample, drinking water sample, paramecium video, ppt slide 2 | Students and listening and offer responses when called upon |
| Closure/Summary<br>Tell students they will be using microscopes in the lab soon and show them how to collect samples. Provide each group with a fungal and a bacteria plate, emphasizing that they only get one each so choose location carefully.<br><br>Collect and store samples properly so as they can be used during the next lab. | 5 of each fungal and bacterial agar plates, 5 loops | Students listen to instructions and ask for clarification if needed. Plan in their group where they'd like to gather samples and then collect in the plates provided using loops. Students will note group # on plates and where sample |

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| | | is from. They will also note this on their worksheet. |
| Homework<br>Ask students to read text section on good vs bad bacteria. | | Add assignment to their student calendars |