Lesson Title	Learning Light Microscopy
Length of Lesson	50 min class period
Created By	Kendra Wright
Subject	Science
Grade Level	7th grade
State Standards	7th grade Inquiry: 1c, 1f
DOK Level	DOK 1, DOK 2
DOK Application	Recall, Skill/Concept
National Standards	5-8th grade: A (Inquiry)
Graduate Research Element	Microscopy is critical to bacterial observation in my research.

Student Learning Goal

MS 7th grade

c. Collect and display data using simple tools and resources to compare information (using standard, metric, and non-standard measurement). (DOK 2)
f. Explain how science and technology are reciprocal. (DOK 1)

National Science Education Standards 5-8th grade

Content Standard A: Abilities necessary to do scientific inquiry.

Materials Needed (supplies, hand-outs, resources):

Light Microscopes, Ready-made slides with "e" and threads, Light Microscope Worksheet (Light Microscope.docx), Light Microscope Powerpoint

Lesson Performance Task/Assessment:

The purpose of this lesson is to learn how to use a light microscope. Students will have to identify the parts of the light microscope and understand their functions. Also, students will learn how to calculate total magnification, how and object such as the letter "e" appears upside down, what happens when you move an object under a microscope, and how to focus on three different colored, layered threads for optimal visualization.

Lesson Relevance to Performance Task and Students:

Microscopy is critical to numerous types of scientific research. For example, I use microscopy to identify bacterial structures regularly. For students to understand how science uses this type of technology, it is beneficial for them to understand light microscopes.

Anticipatory Set/Capture Interest:

The teacher has previously gone over a diagram of a light microscope in class. Now, with the actual microscopes in front of the students they are given an oral "pop quiz."

Guided Practice:
Students must work through the Light microscope worksheet (Light Microscope.docx).

Independent Practice:
Students must calculate total magnification for each objective lens setting. Students will examine how a typed "e" (of around 10 size font or lower) appears upside down under the microscope, how if you move a slide right the image moves left, how as magnification increases the image's size increases, and how to focus on three different layered and colored threads and identify the order of layering.

Remediation and/or Enrichment:
Follow IEP. Have other prepared slides for examination.

Check(s) for Understanding:
Magnification drawings and the answers to the worksheet questions.

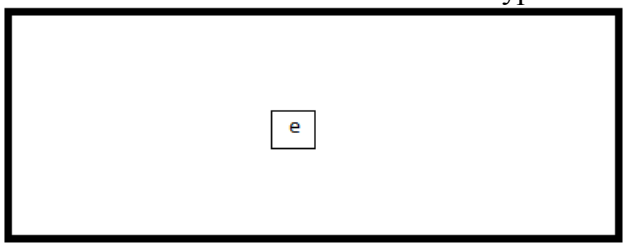
Closure:
Go over the worksheet questions.

Possible Alternate Subject Integrations:
Talking about the physics of lens.

Teacher Notes: Used some of the activities from
http://www.biologycorner.com/worksheets/e-lab.html.

The two sides:

1. Cut out several "e" letters from typed fonts of size 10 or smaller.



2. Layer three different colored threads and have them identify the order of layering.