LEARNING PARTS OF A MICROSCOPE

Objective:

Students will learn the parts of a microscope and use the microscope to view prepared slides.

Materials:

Magnifying glasses (one per student), microscopes, microscope parts activity, prepared slides of hair and blood cells, power strip, extension cord

Check for prior learning:

How can we see things too small to see with just our eyes? Give each student a magnifying glass and ask them to look at their fingers, arms. What do they see? What else could you use the magnifying glass to see? Why do we need microscopes? Why can't we just use magnifying glasses?

New learning:

Students will first do the matching activity with parts of the microscope. Review the key parts and what they do:

Eyepiece: The eyepiece is what you look through. It magnifies the object 10 times.

Objective lenses: The objective lenses vary in magnification from 4x to 10x to 40x. When combined with the eyepiece, they magnify 40x, 100x, 400x.

Stage: The stage is where the sample is placed. It moves up and down when you move the focus knobs.

Diaphragm: The diaphragm controls the amount of light that passes through the sample into the objective lens.

Focus knobs: The focus knobs move the stage up and down to bring the sample into focus.

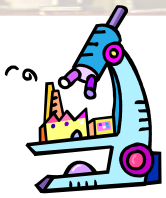
Procedure:

1. Carefully place a prepared slide under the microscope objective lens onto the stage.
2. Be sure to start out with the smallest objective (4x, which is actually 40x because the eyepiece is 10x).
3. Focus the sample clearly with the 4x objective, then switch to 10x and then to 40x. Helpful hint: Be sure to move the diaphragm so the colored dot matches the colored ring on the objective…that will be the perfect amount of light for that magnification.

Check for learning: Do the matching activity again and discuss what happened as the students viewed samples. How did the hair look at different magnifications? How did the blood cells look at different magnifications? What other things could we look at using this kind of microscope?

MICROSCOPES

Background Information



EYEPIECE

The eyepiece is the part a person looks through to see the magnified object. It also has a lens that magnifies the object to 10x its actual size.

NOSEPIECE

The nosepiece contains the objective lenses and can be rotated to select different magnifications.

OBJECTIVE LENSES

The three objective lenses magnify the object 4x, 10x and 40x its actual size. Combining these lenses with the lens in the eyepiece, the object is actually magnified 40x, 100x, and 400x.

STAGE

The stage is the flat plate where the microscope slides are placed.

DIAPHRAGM

The diaphragm is also called the iris and it controls the amount of light allowed to shine through the slide.

STAGE ADJUSTMENT KNOBS

These knobs move the stage left, right, forward, and backward to help one see the entire microscope slide (not all models have these).

COARSE FOCUS KNOB

Also known as the coarse adjustment knob, this knob moves the stage up and down to bring the object roughly into focus.

FINE FOCUS KNOB

Also known as the fine adjustment knob, this knob moves the stage slightly up and down to bring the object sharply into focus.

USING THE MICROSCOPE CORRECTLY

Always start at the lowest objective lens—this makes it easier to find the object. To see the object at a higher magnification, change the objective lens and use the fine adjustment knobs to focus.