MIND TREKKERS
Digital Microscope Lesson Plan

Amount of time Demo takes: 2-10 min

Materials :
1. Digital microscope
2. Laptop computer
3. Monitor
4. Pond water, pond water plant and animal identification info
5. Rock and mineral collection
6. Cloth, coins, etc. (whatever might look interesting under the scope)

Set up instructions:
1. Plug the USB cable into the laptop after setting up an external monitor. Open up program for viewing - note: this may not work on Macs.
2. Practice focusing and getting the LED light placed correctly to get the best view.
3. Set out items to view under microscope. If the microscope is working well and it is easy to change focus, invite students to choose different things to look at. If the equipment is being temperamental, set up one thing to look at and change it occasionally.

SAFETY! -- Safe Demo.

Lesson’s big idea
- Depending on what you are showing people, the big idea might change.
- One example: aquatic ecology using pond water. Help people look up and identify what they see in the microscope, learn the basic creatures you will see under the scope to help guide them. Discuss what an ecosystem is. In this case, it is a community that is interdependent: algae and other plants gather energy from sun, herbivores eat plants, omnivores and meat eaters eat them. Food chains are a good topic for younger crowds. Identification may be better for older crowds.
- Another example: have a rock ID book, or know what the rocks are to begin with. Know some general facts about the rocks on display (what is is made out of, are there any uses for this rock or interesting facts about it?).
- Additionally, the physics behind how microscopes work might be interesting to some students.

Instructional Procedure
1. Similar to the set-up and big ideas; set up the microscope as described and choose items to look at that are either interesting or reflect an area in which you have a lot of knowledge.

Assessment
*Questions vary and will reflect the material students are observing under the microscope.

1. Why is it helpful to zoom in and look at things in detail?
2. What is an ecosystem? What are some characteristics that help us identify different minerals? What do you notice about the fibers that make up the cloth?

Conclusion
The microscope can only zoom in to about 150x magnification. This is a great improvement on what we can see - but it is not as small as we can go. Seeing things in detail can help us learn about tiny organisms that make up the world around us, can reveal details of everyday items that we never notice, and more. Students should realize the importance of tiny things to our everyday lives, and the implications of being able to examine the smallest details of plants, animals, rocks, etc.

Clean Up
Be sure to exit the microscope program and eject the microscopes from the computer. Package them appropriately and shut down the computer. Put samples back in the kit or dispose of any easily-replaceable ones that would be messy or perishable (foods, water samples, etc).