Lab Assistant: Discovering Cells in Pond Water

Student Lab Objectives:
-Students investigate pond water samples with Meeka the microscope to see that plants and animals are made of cells
-Students visually see how cells connect to make living organisms and that cells have organelles inside them.
-Students will be able to identify unicellular and multicellular organisms

Pre-Lab Assignment- Collect a water sample:

1. **Print and cut take home water sampling fliers** – PDF doc is on the lab web page. Sheet contains simple instructions for parents. 6 fliers per page.
2. **Play the in-class water sampling homework movie for your class:** Movie explains how to collect a water samples that contain microscopic life.
3. **Pass out one Pippi Pipette, one Tedros Test Tube, and one homework flier per student:** Allow students to take their sample collection STEMTools home to collect a water sample. The STEMTools need to be returned to Kea after the microscopy lab. Emphasize that if students can collect green moss, algae, or water plants, there will likely be microscopic life in their sample.

Microscopy Lab Prep:

1. **Room Prep** – In class for the lab, ask students to arrange their water sample test tube in the wooden test tube holders (*Sienna Sampler*) on your classroom sample table. Ask students label their sample with their name and the sample location on a sticky note. Place one Pippi Pippete in each sample Tedros Test tube.
2. **Bring to class: Microscope cart containing 32 microscopes, 32 petri dishes (Microscopy Koa) for sample viewing, and print student lab sheets and Pocket pet cards.**

Running the Lab Activity: 2 labs recomended

1. **Introduce Lab** – Talk to students for 5 minutes about what they can learn from the lab and how it relates to your teaching objectives on cells (*Eukaryotic, Procaryotic, organelles, cell walls, they can find protists and diatoms which are unicellular, and larger creatures which are multicellular. They can look for the ribbon like chloroplasts in algae and cell walls in algae and water plants*).
2. **Show class movie**: "Discovering Cells in Pond Water"
3. Remind students to use the **bottom light** on the microscope
4. Demonstrate how to collect a sample; Use Pippi Pipette to place drops of water into the Petri Dish. They can also tear off a small piece of plant or algae to view.
5. Ask students to draw the cells and organisms they see on their lab sheet.
6. Explain the Pocketpets part of the activity: When they find a microscopic organism in real life that corresponds to a Pocketpet card, they can add the card to their collection by cutting it out and coloring it. The objective of the Pocketpet card activity is to find all the pocket pets in real life. They can also write a journal entry of their observations on the back of the pocket pet card if they wish.
7. It's best to give students two days or more to complete this lab. You can space labs out by a week to add excitement or do the labs back to back. There is so much to discover and document. Take your time to let your students be scientists.

Discussion:

- **"Did you see any unicellular organisms?"** The Diatoms and protists are much smaller than the multicellular organisms, but they are visible with a Microscope.
- **"what did you notice about the size of protest, and animal cells compared to plant cells?"** Plant cells are generally larger than animal cells. One plant cell can be as large as 1000 animal cells.