

READING WRITING IN THE DISCIPLINES

Making Observations Like a Scientist Video Transcript

Catherine Rohrbaugh:

What our objective is at the end of class, you'll be able to do this. You'll be able to create a wet-mount slide to view under different objective powers using a microscope.

Literacy is hard in science because it is a brand-new language. And I tell the kids this is the hardest unit, not because of the content, but because we are learning a new language.

Today, we're going to talk about Antonie van Leeuwenhoek and what he did. He invented the microscope.

I teach something in my science class, to question everything. Question it, look at it, and arrive at your own ideas.

Instead of believing that this piece of paper was a piece of paper, he said, "You know what? I bet something's making this piece of paper." And today with your microscopes, you're going to see what this piece of paper is made of.

Sophia:

"Back in the 1600s, people thought it was crazy that little things can make big things, and that's how the microscope kind of came to be."

Rohrbaugh:

What I need you to do is, I need you to take your lab sheet right here and I need you to open up just the bottom piece. You have a beautiful little reading. You are going to answer these two questions: "I wonder what" and "I wonder why."

They're the same questions they're asked in Language Arts class, just to get the kids to think differently.

Who would like to volunteer one? Jackson?

Jackson:

I wonder why they thought that earthworms fell from the sky when they were found several feet below the ground.

Rohrbaugh:

Interesting.

There was no right and wrong answer with it. That's very hard for them to do. Two months ago, they wouldn't have been able to do that. Now, they're able to accomplish that.

Excellent. What's your question?

Student:

Like, I wonder what made him decide to think that there was a very small world, like, in this bigger world.

Shelby:

She asked you questions. Like, thinking questions to get your brain going and get you interested in what you're doing.

Rohrbaugh:

We've learned to question and look at science differently, and today, I'm going to invite you to do exactly what Antonie van Leeuwenhoek did: actually look at a microscopic world.

Today is the first time I've ever handed them a microscope. Last week, we went over the chart we learned, we pointed to different things, but today was the first time they could turn it on, they got to see something, so it was getting them to go from maybe just words on a page to what it actually looks like in front of them.

As we go through each of the different parts, I want you to point to that part on your microscope. Everyone point to the eyepiece for me.

It's that tactile recognition that helps students make that connection.

This next piece revolves, or rotates, around with objective lens on it. And it has a funny name. What is that going to be called? You guys have good memories. It's called the revolving nosepiece. I want you to point to it for me.

Every time I say, "You adjust this," I need to be more specific in what that vocabulary term is. As scientists, we must use scientific language. Which

means, instead of saying, "Hey, will you twist the thingy?", you need to be a little bit more specific. If you need to focus it, say, "I need to focus the coarse objective knob."

One of the ways that I help students with their literacy is by doing prefix and suffix quizzes every week. We're talking about the microscope this week. The word "micro" and "macro" are on there. And that's what I want the kids to see. More than just memorize all these words, they need to see it in a context that's going to help them in all of the other classes, as well.

You're going to be looking at the word "microscope," but specifically, the letter R. And to help keep everybody on track, your labs are broken down into sections. So as we do each section, you're going to open up one tab and do what it asks you.

The point of that is to have students be able to follow a list of procedures. In science class, you can be the best scientist in the world, but if you can't follow procedure, you don't have anything for science.

Every time you complete a step, you're going to want to put a check in that box.

Student:

Find the diagonal... in front of the stage.

Rohrbaugh:

Just something as simple as "Put a slide on your table" is making them use vocab -- the correct vocab -- and it's making them follow step by step what they need to actually be doing-- so able to focus it on that one thing, check it off when I'm done.

Rohrbaugh:

Tell me, what does number seven ask you to do?

Shelby:

It's asking you to draw what you see on the microscope slide.

Rohrbaugh:

Good, draw exactly what you see. Not what you think you see. Draw what you see. I like details. Scientists are about detail, the answer is in the detail.

They were citing their evidence when they were asked to actually draw what they saw. It's so important to get that objective data and not that subjective data.

It does turn it upside down.

They need to draw what they see and not flip the R the correct way.

You're exactly right. Like, when you look in the mirror -- when you're looking at one of your bracelets in the mirror -- does it read correctly?

Student:

It reads backwards.

Rohrbaugh:

It reads it backwards. Here, you have a mirror inside here and a mirror inside here, so it's actually going to flip it around. So good job, you already figured it out. I want you to draw it upside down, that's the point. I want you to think about it.

Sophia:

It looks normal when you look at it, like, just looking at it, but through the microscope, it's like a totally different thing and you're like, "Whoa." And I thought that was really cool.

Rohrbaugh:

Are we checking it off as we go?

Literacy is not as difficult as you might think to incorporate. And when I started thinking about it, everything I do is reading and writing and thinking and seeing and observing. That's literacy.

Did we accomplish our objective today? Did we use a wet mount slide under different objectives using a microscope? If we accomplished that, I want to hear you say, "Yes!"

Students:

Yes!

Rohrbaugh:

Awesome. If you say no, I want you to say, "No." Awesome, all right. So, we did accomplish what we set out to do today.