

Observing with a Microscope

Boys and Girls Club After School Science NSF Center for Chemical Innovation Chemistry at the Space Time Limit (CaSTL) https://www.castl.uci.edu/

Standard(s) Addressed:

California Department of Education, Science Content Standards, Grade 2 IE: Use magnifiers or microscopes to observe and draw descriptions of small objects or small features of objects.

Lesson Objective:

Children will practice observing small objects under the microscope. They will make microscope slides. Then, they will record details and characteristics of the objects under view.

Materials Used:

a Brock Microscope
Index cards to make their own slide
crayons
poster paper
salt
sugar
thread
construction paper- about 5 different co

construction paper- about 5 different colors (one per table)

Book: Greg's Microscope by Millicent E. Selsam and Arnold Lobel

Classroom Management:

Setting up: Have 1 microscope per team/pair/individual. Have materials (salt, sugar, thread) ready in small cups for each table.

During Explore: Encourage students to use caution with and care for the microscopes. Support students in making mounts of salt, sugar, and thread.

Clean Up: Make sure students give back all materials. Paper towels with some water to clean up the salt and sugar.

Signal: Stand silently in front of the room, raising hand in the air to get the children's attention.

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ENGAGE: Connect to Prior Knowledge and Experience, Create Emotionally Safe
Learning Environment, Preview New Vocabulary

Estimated time: 5 minutes

Description of Engage: Students will connect to their prior knowledge by reviewing what they know about microscopes. They will preview the new vocabulary word, "slide".

Teacher's Role	Teacher Questions	Children's Role
Teacher shows students a	What is this tool? What does	"It's a microscope."
Brock Magiscope	it do? How does it work?	"You can see really small
(Microscope) and asks them		things in there."
what it is and what it does?		"It has two lenses to magnify
		objects."
		"The image of the object
		appears upside down."
Teacher tells students that they		
will be looking at some		
objects that they have seen		
before, but this time they will		
be looking at them under the		
microscope. In order for them		
to see the object under the		
microscope, they need to		
make a "slide" (a dry mount,		
where the object is placed on a		
slide without liquid).		
Teacher previews the		
vocabulary word "slide" and	Have you heard the word slide	"We have a slide on the
connects it to its homonym.	before? What is a slide that	playground."
Teacher helps with the	you know of?	"You can go down a slide at
scientific definition of slide	you know or.	the park."
for this lesson and writes it on		ine paine.
the board for future reference.		

EXPLORE: Hands-On Learning, Contextualize Language, Use of Scaffolding (Graphic Organizers, Thinking Maps, Cooperative Learning), Use of Multiple Intelligences, Check for Understanding

Estimated time: 20 – 25 minutes

Description of Explore: Students will observe four objects with their naked-eye. They will record their observation on an index card. Then they will make a dry mount slide to observe the object under the microscope. They will draw what they see on the other side of the index card.

Teacher's Role	Teacher Questions	Children's Role
First, she models how to draw		Students observe and record a
the hair as she observes it with		piece of hair with the naked-
her naked-eye. All students		eye and the microscope.
draw what they see of their		

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own hair on 1 side of an index	What do you notice? How can	"Mine is brown and thin."
card.	I draw good scientific details	"Yours is curly."
	here?	"You can draw the color."
Teacher models how to place		
the hair on a dry mount to		
create a slide. She		
demonstrates how to place it		
under the microscope, view it		
correctly, make observations,		
and record them.		
Then, with support, students		
follow her steps- recording		
their observations on the other		
side of the index card.		
*She writes down the steps on	What looks different now?	"It looks like it's cracked."
the board as she does them*	What do you notice? How can	"I can see more detail, like"
the board as she does them	you draw what you see?	Tean see more detail, like
Teacher reviews steps of (1)	you draw what you see:	Now with the sugar, salt, and
observing with the naked-eye,		threat, students repeat the
		<u> </u>
(2) drawing their observation		observations using the
on one side of the index card,		microscope. They follow the
then (3) making a dry mount,		steps of (1) observing with the
(4) observing the object under		naked-eye, (2) drawing their
the microscope, and then (5)		observation on one side of the
drawing their observation on		index card, then (3) making a
the other side of the index		dry mount, (4) observing the
card.		object under the microscope,
		and then (5) drawing their
		observation on the other side
		of the index card.

EXPLAIN: Listening, Speaking, Reading, and Writing to Communicate Conceptual Understanding Estimated time: 10 minutes

Description of Explain: Students put their index cards on a poster for the particular item. Students discuss similarities and differences between the cards for the same item. They discuss how the item looked under the microscope and posit reasons why it looked that way.

Teacher's Role	Teacher Questions	Children's Role
Teacher reviews that		
microscopes allow scientists		
to examine everyday objects		
in extraordinary ways.		
Teacher has students put all	What do you notice about all	Students put cards on poster
the salt cards (sugar, hair,	the salt (sugar, thread, hair)	and look at the similarities and
thread) on one large poster	cards? What is the same?	differences.
each- with the microscope side	What is different? Why do	"The hair looks like they are
facing out.	you think it looks this way?	different colors."

"I see that everyone saw the thread the same. There are really lots of little threads inside it."

"The microscope shows us a very detailed look at the object."

EVALUATE: Thinking Maps, Summarize Lesson and Review Vocabulary, Variety of Assessment Tools, Games to Show Understanding

Estimated time: 5-10 minutes

Description of Evaluate: The children will be assessed on their understanding a slide is and what other things they could put on a slide to look at.

Teacher's Role	Teacher Questions	Children's Role
Teacher gives each table a		
piece of construction paper.	What would you want to see?	Make a list with peers of what
She asks each group at the	How would you make it on a	they would like to see under a
table to make a list of things	dry mount slide?	microscope. Draw a picture of
they would like to see on a		how a dry mount would look
slide and how it would look if		if they made it.
they made on a dry mount (see		"We would want to see a leaf.
example below). One person		We think we could see all the
from each group will report		lines insides really closely and
what they wrote.		that would be neat. We would
		put it on a glass or paper slide
		and put it under the
		microscope."
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EXTEND/ELABORATE: Group Projects, Plays, Murals, Songs, Connections to Real World, Connections to Other Curricular Areas Estimated time: 10 minutes

Description of Extend/Elaborate: Students will connect to literacy by listening to a story called, "Greg's Microscope" by Millicent E. Selsam and Arnold Lobel. They will use literacy strategies of connecting, predicting, and summarizing throughout the story.

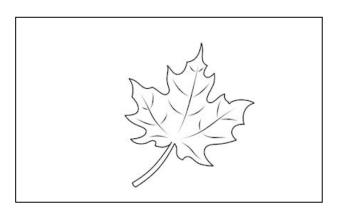
Teacher's Role	Teacher Questions	Children's Role
Teacher tells students they are		
going to read a book about a		
little boy who wants to see		
things in a microscope.	Greg wants to see an ant.	"It might be too big!"
Teacher tells students that	How could he look at that?	
she'll need their help to		
predict what he should find,	What else on this page could	"Some grass."
relate/connect their own	Greg look at? What would he	"A leaf."
experiences of what Greg	need to make to see it under	"He needs to make a dry
wants to see, and summarize	the microscope?	mount."
what is happening at different		

places in the story.	What is Greg looking at? Did	
	you see something like that	
	under your microscope?	
	What just happened here?	
	Can someone summarize what	
	is going on?	

Example:

My list of things I would like to see on a slide and how it would look if I made it on a dry mount.

Leaf



A bug's eye

